

Microwave Digital Archive

IEEE Microwave Theory and Techniques Society

1984-1986

Welcome

Getting Started

Publications

Issues

Papers

Authors



Welcome

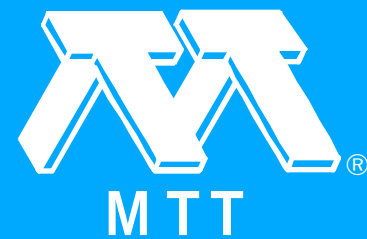
The Microwave Theory and Techniques Society of the IEEE has finished a complete archive of all reviewed and published material since 1953. Yearly updates of the published material will be compiled in the future. As digital media changes over the years, it will be necessary to update the format of the material, so this initial electronic release blazes a trail into the future.

The section "Getting Started" tells you how to optimize the Acrobat Reader Preferences to improve the readability of the document. If you need customer support before January 2001, call 831.657.2420 or 800.447.9100. If you find errors in the CD-ROM, e-mail a note to c.jackson@ieee.org, or mail a comment to the current President of the MTT Society.

Remember that the quality of the old journals is not perfect, and that some photographs will not be as clear as Technicolor. Also, the optical character recognition is good, but not perfect, so some spelling errors will occur. None the less, you can copy and paste the material for your own uses and personal study.

All papers were electronic files or images scanned from hard copy and converted to Adobe Acrobat PDF file format for cross-platform access. Since some of the papers were scanned from hard copy, the viewing quality will vary with the size and quality of fonts used. Even though the viewing quality on your monitor may vary, all papers print clearly.

Thank You and Enjoy!



IEEE

Contents



Welcome

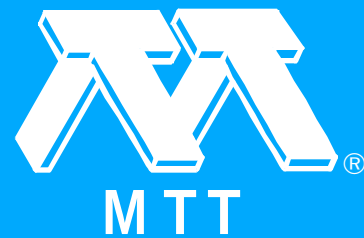
ACKNOWLEDGMENTS

This CD- ROM was assembled from the electronic files provided to us by Adam Philippidis at IEEE headquarters and from scanned originals provided by Ted Saad. Many people have contributed to the entire CD-ROM Archival effort. Most notably, Ted Saad provided nearly all the hard copy material, and sacrificed his entire collection of journals for the project. He also wrote a number of the original articles. Another notable contributor, Roger Pollard convinced the Society that this was a worthwhile project. The team at Sony Electronic Publishing Services, and Adam Philippidis, at the IEEE Headquarters, have also provided substantial amounts of help in completing this archival project.

REFERENCES

IEEE Catalog Number: JP-17-0-0-C-0

ISBN: 0-7803-9906-4



IEEE

Contents



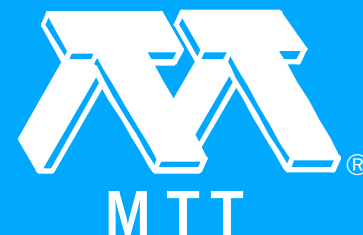
Welcome

COPYRIGHT

Copyright discussions are appropriate, although, at times they seem tedious. The amount of Intellectual Property contained in this Microwave Digital Archive is astounding. Please treat it with the respect that our profession demands.

Libraries are permitted to photocopy beyond the limits of U.S. copyright law, for private use of patrons, those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923. For other copying, reprint, or republication permission, write to the Manager, IEEE Intellectual Property Rights, IEEE Operations Center, 445 Hoes Lane, Piscataway, NJ 08855-1331. All rights reserved.

Copyright © 1999 by The Institute of Electrical and Electronics Engineers, Inc.



IEEE

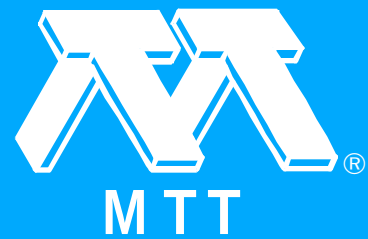
Contents



Welcome

TRADEMARKS

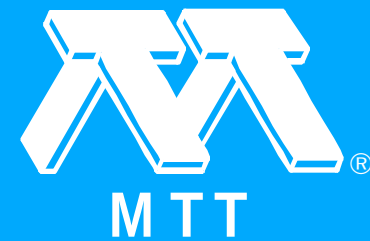
Sony is a registered trademark of Sony Corporation. Adobe, the Adobe logo, Acrobat and the Acrobat logo are trademarks of Adobe Systems Incorporated or its subsidiaries and may be registered in certain jurisdictions. Macintosh is a registered trademark of Apple Computer, Inc. HP is a registered trademark and HP-UX is a trademark of Hewlett-Packard Company. Motif is a trademark of Open Software Foundation, Inc. Solaris is a registered trademark of Sun Microsystems, Inc., Sun and OpenWindows are trademarks of Sun Microsystems, Inc. SPARC is a registered trademark of SPARC International, Inc. SPARCstation is a registered trademark of SPARC International, Inc., licensed exclusively to Sun Microsystems, Inc. and is based upon an architecture developed by Sun Microsystems, Inc. UNIX is a registered trademark in the United States and other countries, licensed exclusively through X/Open Company, Ltd. Windows is a trademark of Microsoft Corporation. X Window System is a trademark of the Massachusetts Institute of Technology. I386, 486 and Pentium are trademarks of Intel Corporation. All other products or name brands are trademarks of their respective holders.



IEEE
Contents



Getting Started



IEEE
Contents

INTRODUCTION

This Electronic Guide file contains hypertext links to separate article files. Links are represented by colored text (e.g. a name or title); clicking on the text activates the link.

Before you start browsing and using the information on this CD-ROM, you will need to install Adobe Acrobat Reader + Search 3.0. If you already have Acrobat Reader installed on your system, make sure it is version 3.0 or higher and includes the Search plug-in.

In many instances, we refer to the “menu bar”, shown here for reference.

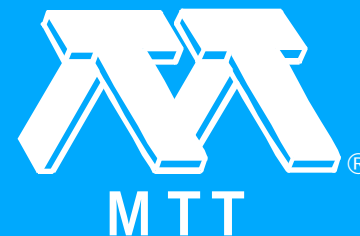


ACROBAT PREFERENCES

To make viewing and searching easier, we recommend changing two default Acrobat Preferences (found under File > Preferences on the menu bar.)



Getting Started



IEEE
Contents

In the dialog box shown for **General** Preferences, turn OFF the “Open Cross-Document Links in Same Window” option; this will keep the Guide file open when you view article files and allows you to return to the same page in the Guide when you close an article.

In the dialog box shown for **Search** Preferences, turn ON the “Show Fields” option so that Title, Author, Keywords, and Subject fields are visible when specifying search criteria. If for some reason this preference option is not present on your system, check to see that you have the Search plug-in installed. The

Search icon  will be present on the Acrobat Toolbar if the function is properly installed. Specifics of the Search function are described later in this section.

EXITING AN ARTICLE

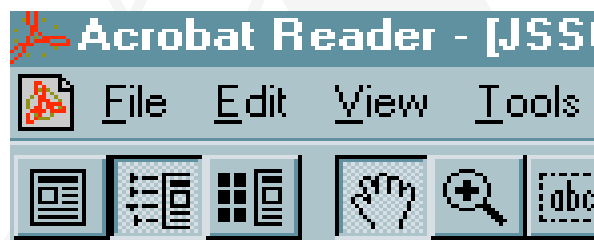
To exit an article after viewing, and return to the electronic guide, select File > Close from the menu bar. To switch between the article and the electronic guide or any other PDF file that is open, select “Window” and pick the open file you wish to return to.



Getting Started

USING BOOKMARKS

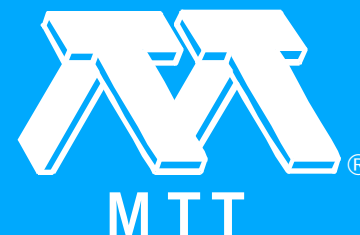
In addition to links, you can navigate through the Electronic Guide using Bookmarks. If they are not already visible, choose View > Bookmarks and Page from the menu bar or press the “Display Page and Bookmarks” button on the tool bar. A panel opens on the left side of the screen displaying Bookmarks in a hierarchy.



- Contents
- Welcome
- Getting Started
- ▷ □ Publications
- ▷ □ Authors
- ▷ □ Subjects
- ▷ □ Conferences

Each Bookmark corresponds to a page in the Guide. Click on the text in a Bookmark to go to that page.

Entries with lower level Bookmarks show an arrowhead, pointing down when subordinate Bookmarks are visible, pointing right when hidden. To view subordinate Bookmarks, click on the arrowhead. To hide them, click on the arrowhead again. Dragging the right margin of the bookmark panel resizes it.



IEEE

Contents



Getting Started

PRINTING ARTICLES

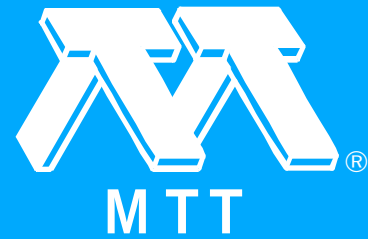
Articles may have text outside normal print-area defaults. We recommend selecting “Shrink to Fit” in the print menu (File > Print) to capture the complete image for your printout. This setting will become your new default.

SELECTING GRAPHICS

To copy graphics to the Clipboard, choose Tools > Select Graphics from the menu bar. The cursor changes to the cross-hair icon.

Drag a rectangle around the graphic to select it. When you release the mouse button, the selected graphic is highlighted.

Choose Edit > Copy from the menu bar to copy the selected graphic to the Clipboard. To view the graphic, choose Window > Show Clipboard. The graphic is copied in the WMF (Windows), PICT (Macintosh), or XPIXMAP (UNIX) format. With UNIX, the graphic is pasted in the primary selection.



IEEE

Contents



Getting Started

NAVIGATION BUTTONS

This Guide contains a variety of navigational aids to help you easily explore the contents.

Section Map

The Electronic Guide is constructed in sections: e.g. Sessions, Authors, Getting Started. The current section is shown at the top of each page. The “path” to this section is shown at the right. Clicking these text buttons moves you to the start of that section.

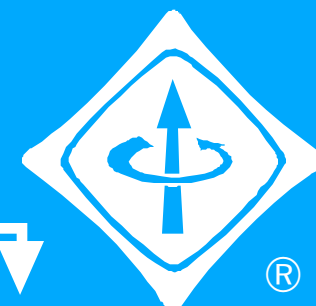
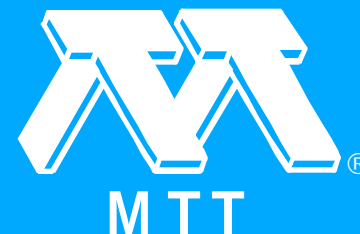
Next Page button

Click to advance to the next page in the section.

Previous Page button

Click to go back to the previous page in the section. The first and last pages of a section show only one button.

The Page Up and Page Down keys perform the same functions.

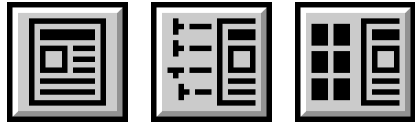


Contents

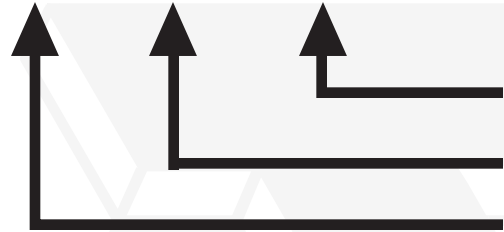


Getting Started

ACROBAT TOOLBAR



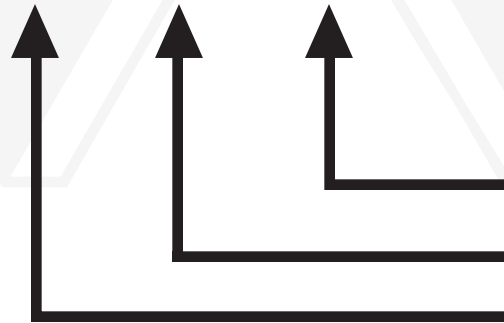
View Modes



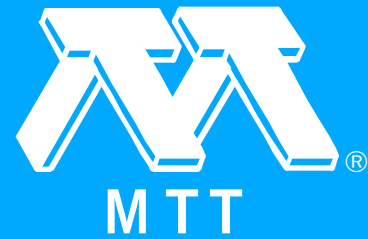
Display Thumbnails and Page
Display Bookmarks and Page
Display Page



Zoom/Selection



Select Text
Zoom In (Magnify)
Move Page Image



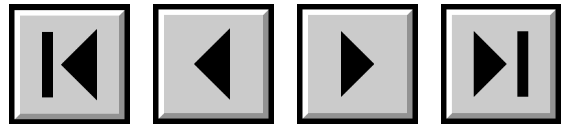
IEEE

Contents

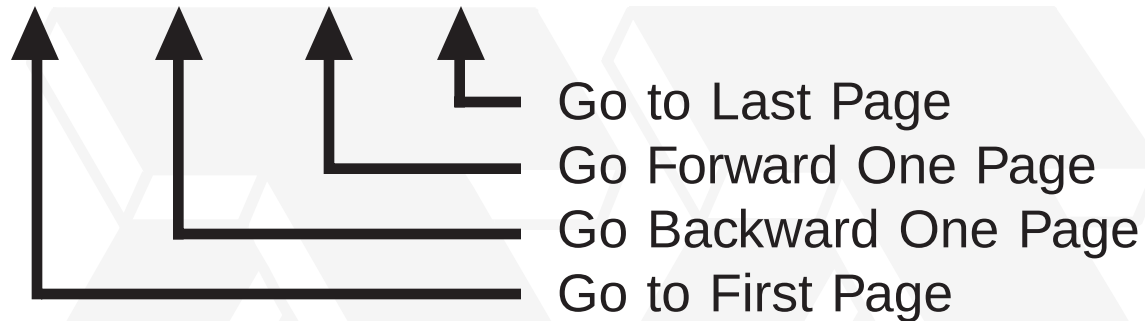


Getting Started

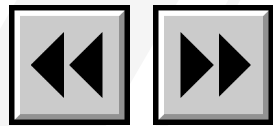
ACROBAT TOOLBAR (continued)



Navigation



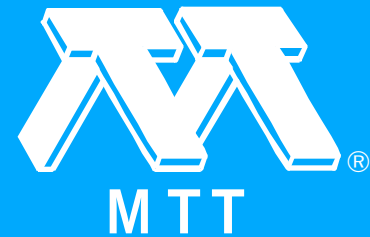
Go to Last Page
Go Forward One Page
Go Backward One Page
Go to First Page



History



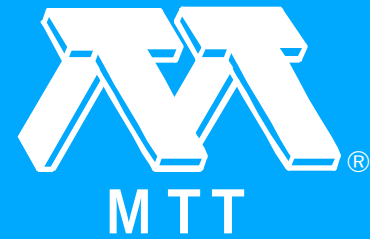
Next (One Link)
Previous (One Link)



IEEE
Contents



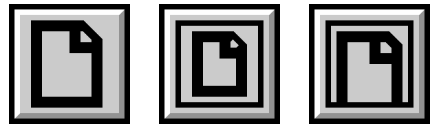
Getting Started



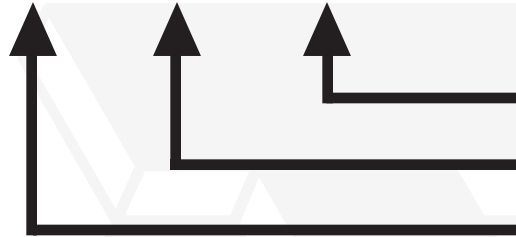
IEEE

Contents

ACROBAT TOOLBAR (continued)



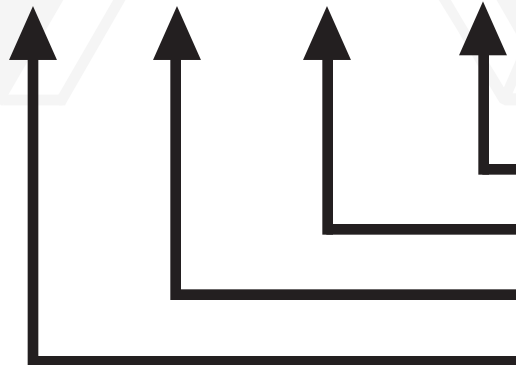
Page View



Fit Width
Fit Page
Actual Size



Find/Search



Next Hit
Previous Hit
View Search Results
Search
Find



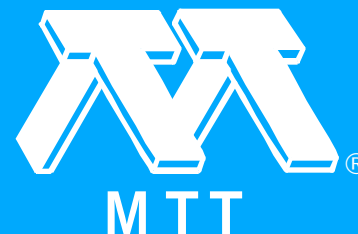
Getting Started

SEARCHING

Two types of searching are possible with Acrobat: Find and full-text Search. Choosing Find (from the Toolbar or Tools > Find) opens a dialog box. Type a search string in the field provided, check the appropriate options and press the “Find” button. Find searches linearly through the currently open Acrobat file (not necessarily the entire Electronic Guide) from the cursor forward.

Choosing the Search button or Search menu item (Tools > Search), selecting the Query item, opens a dialog box from which you can access the more powerful full-text search engine (if you installed Acrobat with the Search plug-in from this CD-ROM). Its dialog box is shown on the next page.

Typing a term in the text box at the top of the Search dialog box and pressing the “Search” button causes a full-text search of all words in the body of papers in the collection. Entering a term in one or more of the fixed fields (Title, Author, Subject or Keywords) will cause a search for hits in only those fields.



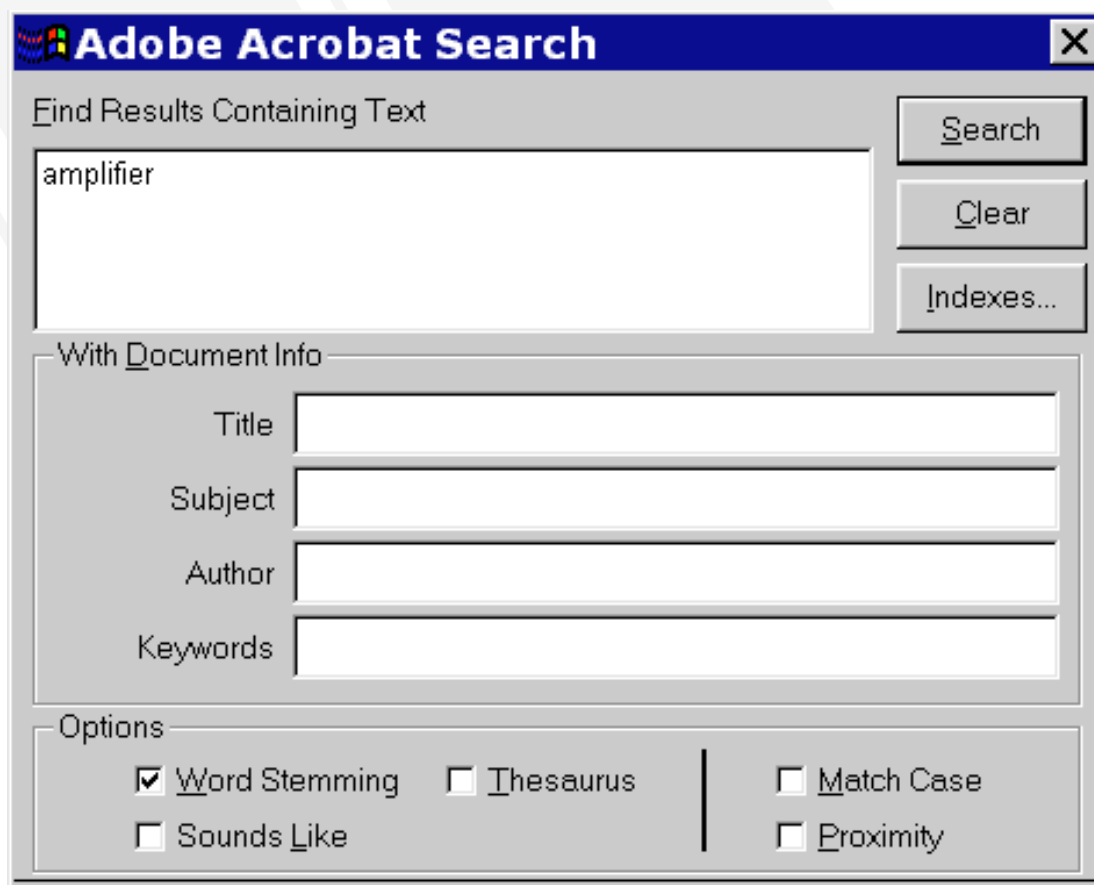
IEEE
Contents



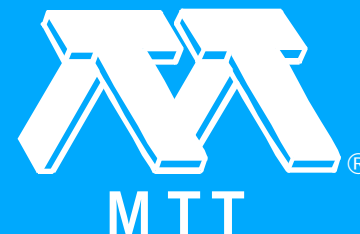
Getting Started

If you are not finding files you think should show in the results list, Acrobat may not be attached to the correct index file. To check, press the “Indexes...” button for a list of available indexes. If this title is not listed, press the “Add...” button and look in the root directory of the CD-ROM for a file called “index.pdx”. Click on that file to add it to the list. If none exists, this title was not indexed.

See the Search Online Guide (on Help menu) for more complete instructions on selecting appropriate options, constructing boolean queries, etc.



The screenshot shows the 'Adobe Acrobat Search' dialog box. It has a title bar with the Adobe logo and the text 'Adobe Acrobat Search'. The main area is titled 'Find Results Containing Text' and contains a text input field with the word 'amplifier'. To the right of this field are three buttons: 'Search', 'Clear', and 'Indexes...'. Below this is a section titled 'With Document Info' containing four labeled text input fields: 'Title', 'Subject', 'Author', and 'Keywords'. At the bottom is an 'Options' section with four checkboxes: 'Word Stemming' (checked), 'Thesaurus' (unchecked), 'Match Case' (unchecked), and 'Sounds Like' (unchecked). The 'Proximity' checkbox is also present but is partially obscured by the bottom edge of the dialog.



IEEE

Contents



Publications

- ❑ [1984 Transactions on Microwave Theory and Techniques](#)
- ❑ [1985 Transactions on Microwave Theory and Techniques](#)
- ❑ [1984 MTT-S International Microwave Symposium Digest](#)
- ❑ [1985 MTT-S International Microwave Symposium Digest](#)
- ❑ [1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest](#)
- ❑ [1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest](#)



MTT

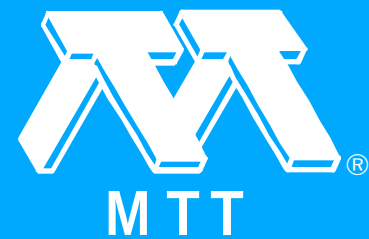


IEEE

Contents

Click on title for a list of issues.

Issues by Publication



IEEE

[Contents](#)

[Publications](#)

1984 Transactions on Microwave Theory and Techniques

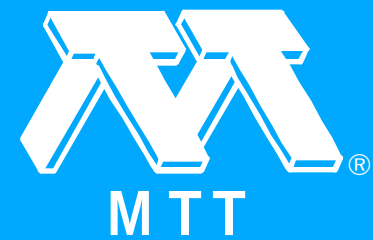
- ☐ [Jan. 1984 \[T-MTT\]](#)
- ☐ [Feb. 1984 \[T-MTT\]](#)
- ☐ [Mar. 1984 \[T-MTT\] \(Special Issue on Power and Low-Noise GaAs FET Circuits and Applications\)](#)
- ☐ [Apr. 1984 \[T-MTT\]](#)
- ☐ [May 1984 \[T-MTT\]](#)
- ☐ [Jun. 1984 \[T-MTT\]](#)
- ☐ [Jul. 1984 \[T-MTT\]](#)
- ☐ [Aug. 1984 \[T-MTT\] \(Special Issue on Electromagnetic-Wave Interactions with Biological Systems\)](#)
- ☐ [Sep. 1984 \[T-MTT\] \(Special Centennial Issue Historical Perspectives of Microwave Technology\)](#)
- ☐ [Oct. 1984 \[T-MTT\]](#)
- ☐ [Nov. 1984 \[T-MTT\]](#)

Click on issue for a list of papers.



Issues by Publication

- ▣ Dec. 1984 [T-MTT] (1984 Symposium Issue)



IEEE

Contents

Publications

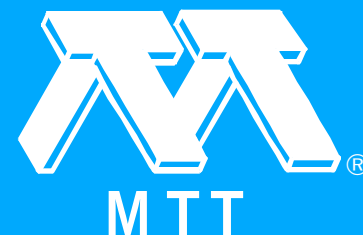
Click on issue for a list of papers.



Issues by Publication

1985 Transactions on Microwave Theory and Techniques

- ☐ Jan. 1985 [T-MTT]
- ☐ Feb. 1985 [T-MTT]
- ☐ Mar. 1985 [T-MTT]
- ☐ Apr. 1985 [T-MTT]
- ☐ May 1985 [T-MTT]
- ☐ Jun. 1985 [T-MTT]
- ☐ Jul. 1985 [T-MTT]
- ☐ Aug. 1985 [T-MTT]
- ☐ Sep. 1985 [T-MTT]
- ☐ Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)
- ☐ Nov. 1985 [T-MTT]
- ☐ Dec. 1985 [T-MTT] (1985 Symposium Issue)



Contents

Publications

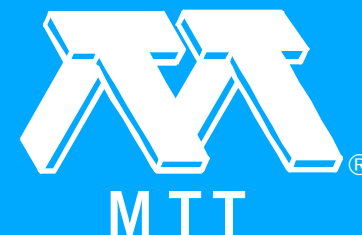
Click on issue for a list of papers.



Issues by Publication

1984 MTT-S International Microwave Symposium Digest

□ [1984 \[MWSYM\]](#)



[Contents](#)

[Publications](#)

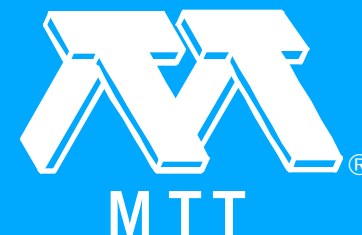
Click on issue for a list of papers.



Issues by Publication

1985 MTT-S International Microwave Symposium Digest

☐ [1985 \[MWSYM\]](#)



IEEE

[Contents](#)

[Publications](#)

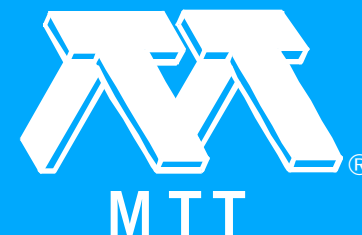
Click on issue for a list of papers.



Issues by Publication

1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest

□ [1985 \[MCS\]](#)



IEEE

[Contents](#)

[Publications](#)

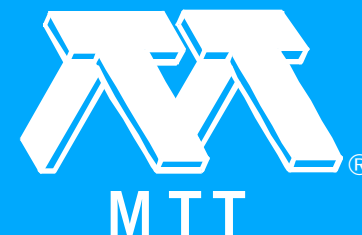
Click on issue for a list of papers.



Issues by Publication

1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest

□ [1986 \[MCS\]](#)



IEEE

[Contents](#)

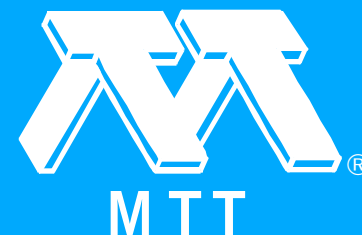
[Publications](#)

Click on issue for a list of papers.



Issues

- ❑ Jan. 1984 [T-MTT]
- ❑ Feb. 1984 [T-MTT]
- ❑ Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)
- ❑ Apr. 1984 [T-MTT]
- ❑ May 1984 [T-MTT]
- ❑ Jun. 1984 [T-MTT]
- ❑ Jul. 1984 [T-MTT]
- ❑ Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)
- ❑ Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)
- ❑ Oct. 1984 [T-MTT]
- ❑ Nov. 1984 [T-MTT]
- ❑ Dec. 1984 [T-MTT] (1984 Symposium Issue)
- ❑ Jan. 1985 [T-MTT]
- ❑ Feb. 1985 [T-MTT]
- ❑ Mar. 1985 [T-MTT]



IEEE

Contents

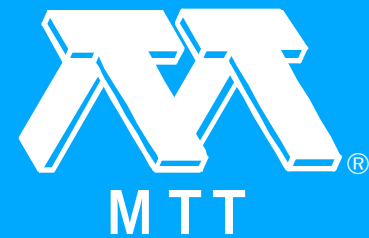
Publications

Click on issue for a list of papers.



Issues

- ☐ Apr. 1985 [T-MTT]
- ☐ May 1985 [T-MTT]
- ☐ Jun. 1985 [T-MTT]
- ☐ Jul. 1985 [T-MTT]
- ☐ Aug. 1985 [T-MTT]
- ☐ Sep. 1985 [T-MTT]
- ☐ Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)
- ☐ Nov. 1985 [T-MTT]
- ☐ Dec. 1985 [T-MTT] (1985 Symposium Issue)
- ☐ 1984 [MWSYM]
- ☐ 1985 [MWSYM]
- ☐ 1985 [MCS]
- ☐ 1986 [MCS]



IEEE

Contents

Publications

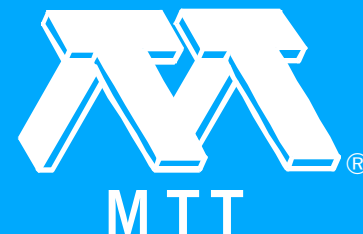
Click on issue for a list of papers.



Papers by Issue

Jan. 1984 [T-MTT]

- ☐ [Front Cover \(Jan. 1984 \[T-MTT\]\)](#)
- ☐ [An Alternative Procedure for Implementing the Desegmentation Method](#)
- ☐ [Analysis of High-Speed GaAs Source-Coupled FET Logic Circuits](#)
- ☐ [Scattering of Surface Waves on Transverse Discontinuities in Symmetrical Three-Layer Dielectric Waveguides](#)
- ☐ [Finite-Element Analysis of Optical and Microwave Waveguide Problems](#)
- ☐ [Field Distribution of Two Conducting Posts in a Waveguide](#)
- ☐ [Design of Multisection Impedance-Matched Dielectric-Slab Filled Waveguide Phase Shifters](#)
- ☐ [Rectangular Bars Coupled Through a Finite-Thickness Slot](#)
- ☐ [Experimental Study of the W-Band Dielectric-Guide Y-Branch Interferometer](#)



IEEE

[Contents](#)

[Publications](#)

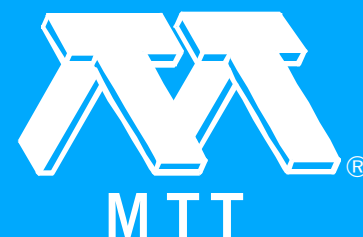
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Properties of the Symmetrical Five-Port Circuit and Its Broad-Band Design
- ❑ A 125--260-GHz Gyrotron
- ❑ An Analysis of a Hybrid-Mode in a Twisted Rectangular Waveguide
- ❑ 2--20-GHz GaAs Traveling-Wave Amplifier
- ❑ A Dual Six-Port Network Analyzer Using Diode Detectors
- ❑ Accurate Wide-Range Design Equations for the Frequency-Dependent Characteristic of Parallel Coupled Microstrip Lines
- ❑ Dispersion Characteristics of Twisted Rectangular Waveguides
- ❑ A Planar Quasi-Optical Subharmonically Pumped Mixer Characterized by Isotropic Conversion Loss
- ❑ The Microstrip Open-Ring Resonator
- ❑ Characteristics of Some Asymmetrical Coupled Transmission Lines (Short Papers)



IEEE

Contents

Publications

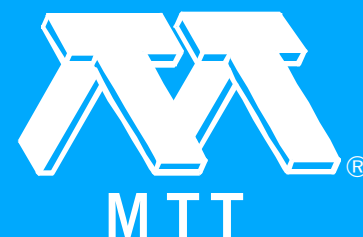
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Plasma-Dielectric Sandwich Structure Used as a Tunable Bandpass Microwave Filter (Short Papers)
- ❑ Dielectric Waveguide Corner and Power Divider with a Metallic Reflector (Short Papers)
- ❑ Broadside-Coupled Slot-Line Field Components (Short Papers)
- ❑ Radar-Echo Location of Conducting Spheres in Waveguide (Short Papers)
- ❑ Propagation on a Sheath Helix in a Coaxially Layered Lossy Dielectric Medium (Short Papers)
- ❑ Impedance Calculation of Three Narrow Resonant Strips on the Transverse Plane of a Rectangular Waveguide (Short Papers)
- ❑ Accurate Approximations for a Function Appearing in the Analysis of Microstrip (Short Papers)
- ❑ W-Band Low-Insertion-Loss E-Plane Filter (Short Papers)
- ❑ S- and X-Band GaAs FET Mixers with Thin-Film Lumped Elements (Short Papers)



IEEE

Contents

Publications

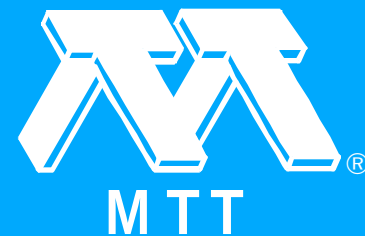
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ Patent Abstracts (Jan. 1984 [T-MTT])
- ☐ Membership Application (Jan. 1984 [T-MTT])
- ☐ IEEE Copyright Form (Jan. 1984 [T-MTT])
- ☐ Back Cover (Jan. 1984 [T-MTT])



IEEE

Contents

Publications

Issues

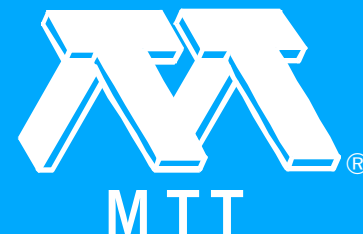
Click on title for a paper summary.



Papers by Issue

Feb. 1984 [T-MTT]

- ☐ [Front Cover \(Feb. 1984 \[T-MTT\]\)](#)
- ☐ [On the Resolution of Dicke-Type Radiometers](#)
- ☐ [Measurements of the Photo-Induced Complex Permittivity of Si, Ge, and Te at 9 GHz](#)
- ☐ [An Analysis of an Electronically Tunable n-GaAs Distributed Oscillator](#)
- ☐ [Some Properties of the Matched, Symmetrical Six-Port Junction](#)
- ☐ [Integrated Tunable Cavity Gunn Oscillator for 60-GHz Operation in Image Line Waveguide](#)
- ☐ [Two-Port Equivalent Circuits of Two-Wire Parabolic Tapered Coupled Transmission Lines](#)
- ☐ [Scattering Analysis of a Millimeter-Wave Scalar Network Analyzer](#)
- ☐ [Hybrid-Mode Analysis of Arbitrarily Shaped Planar Microwave Structures by the Method of Lines](#)



IEEE

[Contents](#)

[Publications](#)

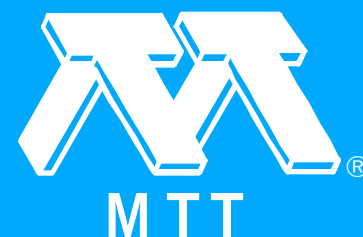
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ One-Root Intervals of Dispersion Relations for a Resonator with Dielectric Sample (Short Papers)
- ❑ Normal-Mode Parameters of Microstrip Coupled Lines of Unequal Width (Short Papers)
- ❑ An Analysis of a Width-Modulated Microstrip Periodic Structure (Short Papers)
- ❑ Semiconductor Antenna: A New Device in Millimeter- and Submillimeter-Wave Integrated Circuits (Short Papers)
- ❑ Dynamic Behavior of Pulsed-IMPATT Oscillators (Short Papers)
- ❑ Spectral Domain Analysis of an Elliptic Microstrip Ring Resonator (Short Papers)
- ❑ Characteristic Impedance of Rectangular Coaxial Transmission Lines (Correction)
- ❑ Microwave Automatic Impedance Measuring Schemes Using Three Fixed Probes (Correction)



IEEE

Contents

Publications

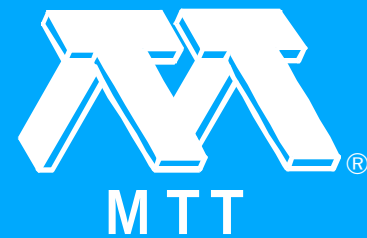
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [Scattering of Guided Modes Caused by an Arbitrarily Shaped Broken End in a Dielectric Slab Waveguide \(Correction\)](#)
- ❑ [Loop-Gap Resonator: A Lumped Mode Microwave Resonant Structure \(Correction\)](#)
- ❑ [Patent Abstracts \(Feb. 1984 \[T-MTT\]\)](#)
- ❑ [Membership Application \(Feb. 1984 \[T-MTT\]\)](#)
- ❑ [Back Cover \(Feb. 1984 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

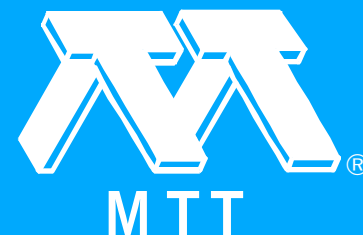
Click on title for a paper summary.



Papers by Issue

Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)

- ☐ [Front Cover \(Mar. 1984 \[T-MTT\]\)](#)
- ☐ [Foreword \(Mar. 1984 \[T-MTT\]\)](#)
- ☐ [A 22--24-GHz Cryogenically Cooled GaAs FET Amplifier](#)
- ☐ [Characterization of GaAs FET's in Terms of Noise, Gain, and Scattering Parameters through a Noise Parameter Test Set](#)
- ☐ [Stability Margins in Microwave Amplifiers](#)
- ☐ [A Simplified Microwave Model of the GaAs Dual-Gate MESFET](#)
- ☐ [Dual-Gate MESFET Mixers](#)
- ☐ [GaAs Dual-Gate FET for Operation up to K-Band](#)
- ☐ [Design of Broad-Band Power GaAs FET Amplifiers](#)
- ☐ [MESFET Distributed Amplifier Design Guidelines](#)
- ☐ [A GaAs FET Model for Large-Signal Applications](#)



IEEE

[Contents](#)

[Publications](#)

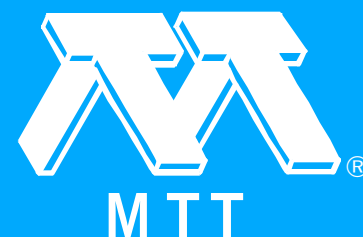
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Computer-Aided Synthesis of Lumped Lossy Matching Networks for Monolithic Microwave Integrated Circuits (MMIC's)
- ❑ 2--20-GHz GaAs Traveling-Wave Power Amplifier (Mar. 1984 [T-MTT])
- ❑ Computer-Aided Error Correction of Large-Signal Load-Pull Measurements
- ❑ A 6-GHz 80-W GaAs FET Amplifier with a TM-Mode Cavity Power Combiner
- ❑ A Packaged 20-GHz 1-W GaAs MESFET with a Novel Via-Hole Plated Heat Sink Structure
- ❑ A K-Band GaAs FET Amplifier with 8.2-W Output Power
- ❑ The Dynamical Behavior of a Single-Mode Optical Fiber Strain Gage (Correction to Comments)
- ❑ New Narrow-Band Dual-Mode Bandstop Waveguide Filters (Corrections)
- ❑ Patent Abstracts (Mar. 1984 [T-MTT])
- ❑ Membership Application (Mar. 1984 [T-MTT])



IEEE

Contents

Publications

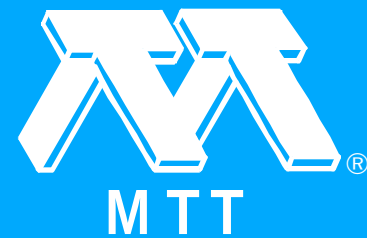
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [IEEE Open Order Plan \(Advertisement\) \(Mar. 1984 \[T-MTT\]\)](#)
- ❑ [IEEE Annual Combined Index \(Advertisement\) \(Mar. 1984 \[T-MTT\]\)](#)
- ❑ [Back Cover \(Mar. 1984 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

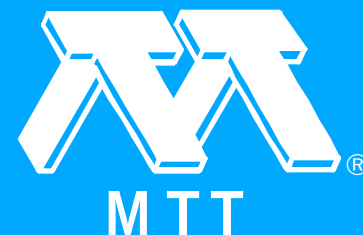
Click on title for a paper summary.



Papers by Issue

Apr. 1984 [T-MTT]

- ☐ [Front Cover \(Apr. 1984 \[T-MTT\]\)](#)
- ☐ [On the Solution of a Microstripline with Two Dielectrics](#)
- ☐ [Analysis of Wave Propagation in Anisotropic Film Waveguides with Bent Optical Axes](#)
- ☐ [A New Method for Calculating TE and TM Cutoff Frequencies of Uniform Waveguides with Lunar or Eccentric Annular Cross Section](#)
- ☐ [Fast-Fourier-Transform Method for Calculation of SAR Distributions in Finely Discretized Inhomogeneous Models of Biological Bodies](#)
- ☐ [Characteristics of Transmission Lines with a Single Wire for a Multiwire Circuit Board](#)
- ☐ [Multiple-Post Inductive Obstacles in Rectangular Waveguide](#)
- ☐ [Theory and Numerical Modeling of a Compact Low-Field High-Frequency Gyrotron](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

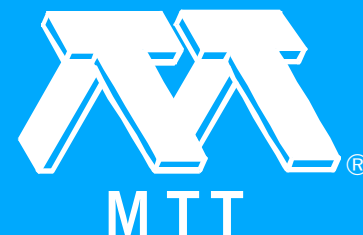
Click on title for a paper summary.



Papers by Issue

- ❑ The Displaced Rectangular Waveguide Junction and Its Use as an Adjustable Reference Reflection
- ❑ Theoretical Analysis of Intermodulation Distortion of Reflection-Type IMPATT Amplifiers
- ❑ The Inverse Problem for Biaxial Materials
- ❑ Perturbation Analysis and Design Equations for Open- and Closed-Ring Microstrip Resonators
- ❑ Characteristics of Metal-Insulator-Semiconductor Coplanar Waveguides for Monolithic Microwave Circuits
- ❑ An Efficient 200--290-GHz Frequency Tripler Incorporating a Novel Stripline Structure
- ❑ A Novel Quasi-Optical Frequency Multiplier Design for Millimeter and Submillimeter Wavelengths
- ❑ Analysis and Design of Branch-Line Hybrids with Coupled Lines
- ❑ Lumped Capacitance, Open-Circuit End Effects, and Edge-Capacitance of Microstrip-Like Transmission Lines for Microwave and Millimeter-Wave Applications

Click on title for a paper summary.



Contents

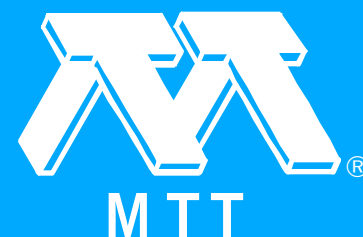
Publications

Issues



Papers by Issue

- ❑ Multiconductor Transmission Lines In Multilayered Dielectric Media
- ❑ Determination of the Characteristic Impedance by a Step Current Density Approximation (Short Papers)
- ❑ Definition of Nonlinear Reflection Coefficient of a Microwave Device Using Describing Function Formalism (Short Papers)
- ❑ Application of Boundary-Element Method to Electromagnetic Field Problems (Short Papers)
- ❑ Optimum Design of a Potentially Dispersion-Free Helical Slow-Wave Circuit of a Broad-Band TWT (Short Papers)
- ❑ Magnetostatic Forward Volume Wave Propagation--Finite Width (Short Papers)
- ❑ Determination of the Admittance of a General Waveguide-Coaxial Line Junction (Short Papers)
- ❑ Coupled Microstrips on Double Anisotropic Layers (Short Papers)



Contents

Publications

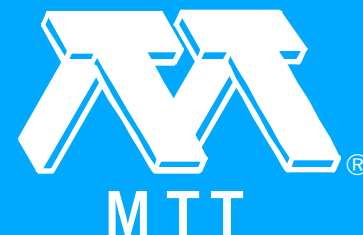
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [A Complete GaAs MESFET Computer Model for SPICE \(Short Papers\)](#)
- ❑ [Microwave Diffraction Tomography for Biomedical Applications \(Comments\)](#)
- ❑ [Variational Methods for Nonstandard Eigenvalue Problems \(Further Comments\)](#)
- ❑ [A Planar Quasi-Optical Subharmonically Pumped Mixer Characterized by Isotropic Conversion Loss \(Corrections\)](#)
- ❑ [Patent Abstracts \(Apr. 1984 \[T-MTT\]\)](#)
- ❑ [Back Cover \(Apr. 1984 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

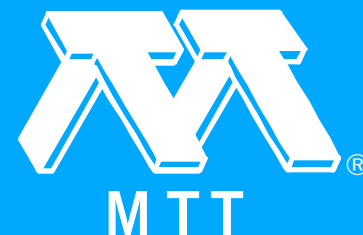
Click on title for a paper summary.



Papers by Issue

May 1984 [T-MTT]

- ☐ [Front Cover \(May 1984 \[T-MTT\]\)](#)
- ☐ [Multimode Oscillation and Mode Competition in High-Frequency Gyrotrons](#)
- ☐ [Transient Analysis of a Stripline Having a Corner in Three-Dimensional Space](#)
- ☐ [A Broad-Band, Ultra-Low-Noise Schottky Diode Receiver from 80 to 115 GHz Diode](#)
- ☐ [Imaging Polarimeter Arrays for Near-Millimeter Waves](#)
- ☐ [Wave Propagation and Attenuation in the General Class of Circular Hollow Waveguides with Uniform Curvature](#)
- ☐ [The Propagation Characteristics of Signal Lines in a Mesh-Plane Environment](#)
- ☐ [Computer Analysis of Dielectric Waveguides: A Finite-Difference Method](#)
- ☐ [GaAs Monolithic Low-Power Amplifiers with RC Parallel Feedback \(Short Papers\)](#)



IEEE

[Contents](#)

[Publications](#)

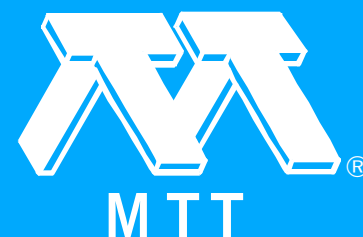
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ☐ Tolerance Analysis of Shielded Microstrip Lines (Short Papers)
- ☐ Heating Pattern in a Multi-Layered Material Exposed to Microwaves (Short Papers)
- ☐ On Temperature Characteristics for a GaAs Monolithic Broad-Band Amplifier Having Resistive Loads (Short Papers)
- ☐ Radiometric Technique for Measuring Changes in Lung Water (Short Papers)
- ☐ An Empirical Design Technique for Microwave Oscillators (Short Papers)
- ☐ The Measurement of Noise in Microwave Transmitters (Comments) (May 1984 [T-MTT])
- ☐ The Design Parameters of Nonsymmetrical Coupled Microstrips (Comments)
- ☐ Patent Abstracts (May 1984 ([T-MTT])
- ☐ Membership Application (May 1984 [T-MTT])
- ☐ Back Cover (May 1984 [T-MTT])



IEEE

Contents

Publications

Issues

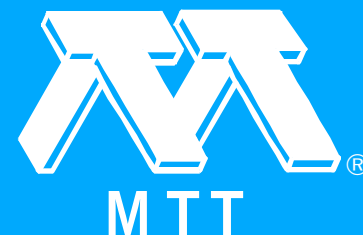
Click on title for a paper summary.



Papers by Issue

Jun. 1984 [T-MTT]

- ☐ [Front Cover \(Jun. 1984 \[T-MTT\]\)](#)
- ☐ [EM Local Heating with HF Electric Fields](#)
- ☐ [Microwave Modeling of Rectangular Tunnels](#)
- ☐ [Reflection Coefficient of a Conducting Sphere on the Broad Wall of a Rectangular Waveguide](#)
- ☐ [Approximate Scalar Finite-Element Analysis of Anisotropic Optical Waveguides with Off-Diagonal Elements in a Permittivity Tensor](#)
- ☐ [Limitations on the Size of Miniature Electric-Field Probes](#)
- ☐ [Calculation of TM/sub 0n/ Dispersion Relations in a Corrugated Cylindrical Waveguide](#)
- ☐ [Inductive Posts and Diaphragms of Arbitrary Shape and Number in a Rectangular Waveguide](#)
- ☐ [Composite Coupler Design](#)
- ☐ [Directly Connected Image Guide 3-dB Couplers with Very Flat Couplings](#)



IEEE

[Contents](#)

[Publications](#)

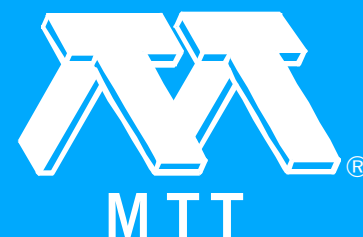
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ☐ Analytical and Experimental Investigations on Several Resonant Modes in Open Dielectric Resonators
- ☐ Analysis of Hybrid Field Problems by the Method of Lines with Nonequidistant Discretization
- ☐ High-Order Mode Cutoff In Rectangular Striplines (Short Papers)
- ☐ Field Patterns and Resonant Frequencies of High-Order Modes in an Open Resonator (Short Papers)
- ☐ Phased-Dipole Applicators for Torso Heating in Electromagnetic Hyperthermia (Short Papers)
- ☐ Microwave Diffraction Tomography for Biomedical Applications (Further Comments)
- ☐ Patent Abstracts (Jun. 1984 [T-MTT])
- ☐ Membership Application (Jun. 1984 [T-MTT])
- ☐ Back Cover (Jun. 1984 [T-MTT])



IEEE

Contents

Publications

Issues

Click on title for a paper summary.

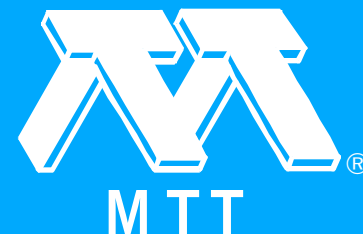


Papers by Issue

Jul. 1984 [T-MTT]

- ☐ [Front Cover \(Jul. 1984 \[T-MTT\]\)](#)
- ☐ [Cell Membrane Nonlinear Response to an Applied Electromagnetic Field](#)
- ☐ [A Quasi-Optical Method for Measuring the Complex Permittivity of Materials](#)
- ☐ [Q-Factor Measurement with Network Analyzer](#)
- ☐ [A Nonlinear Analysis of the Effects of Transient Electromagnetic Fields on Excitable Membranes](#)
- ☐ [A Novel K-Band Balanced FET Up-Converter](#)
- ☐ [An Investigation of Striplines and Fin Lines with Periodic Stubs](#)
- ☐ [Bragg Interaction of Electromagnetic Waves in a Ferrite Slab Periodically Loaded with Metal Strips](#)
- ☐ [Design of Waveguide E-Plane Filters with All-Metal Inserts](#)
- ☐ [Losses on Multiconductor Transmission Lines in Multilayered Dielectric Media](#)

Click on title for a paper summary.



IEEE

[Contents](#)

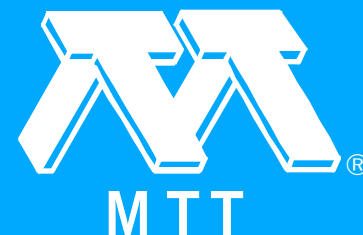
[Publications](#)

[Issues](#)



Papers by Issue

- ❑ [Analysis of Low-Loss Broadside-Coupled Dielectric Image Guide Using the Mode-Matching Technique \(Short Papers\)](#)
- ❑ [A Method of Avoiding the Edge Current Divergence in Perturbation Loss Calculations \(Short Papers\)](#)
- ❑ [A Technique for the Design of Microwave Transistor Oscillators \(Short Papers\)](#)
- ❑ [Microwave Helix Waveguide Absorption Cell for Passive Frequency Standard \(Short Papers\)](#)
- ❑ [94-GHz 4-Port E-Plane Junction Circulator \(Short Paper\)](#)
- ❑ [Patent Abstracts \(Jul. 1984 \[T-MTT\]\)](#)
- ❑ [Back Cover \(Jul. 1984 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

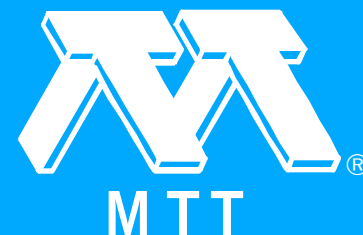
Click on title for a paper summary.



Papers by Issue

Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)

- ☐ [Front Cover \(Aug. 1984 \[T-MTT\]\)](#)
- ☐ [Editorial \(Aug. 1984 \[T-MTT\]\)](#)
- ☐ [A Review of Numerical Models for Predicting the Energy Deposition and Resultant Thermal Response of Humans Exposed to Electromagnetic Fields](#)
- ☐ [Limitations of the Cubical Block Model of Man in Calculating SAR Distributions](#)
- ☐ [Average SAR and SAR Distributions in Man Exposed to 450-MHz Radiofrequency Radiation](#)
- ☐ [Human Body Impedance for Electromagnetic Hazard Analysis in the VLF to MF Band](#)
- ☐ [Effect of Separation from Ground on Human Whole-Body RF Absorption Rates](#)



IEEE

[Contents](#)

[Publications](#)

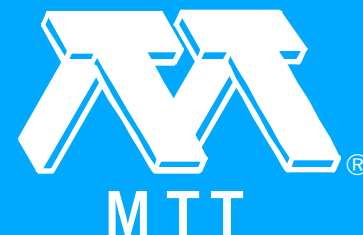
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Specific Absorption Rate Distribution in a Full-Scale Model of Man at 350 MHz
- ❑ Interaction of the Near-Zone Fields of a Slot on a Conducting Sphere with a Spherical Model of Man
- ❑ The Absence of Significant Short-Term Electromagnetic Bioeffects in Giant Algal Cells Exposed to CW and Pulse-Modulated X-Band Bursts
- ❑ Some Results on Low-Level Microwave Treatment of the Mountain Pine Beetle and the Darkling Beetle
- ❑ Exposure of Human Mononuclear Leukocytes to Microwave Energy Pulse-Modulated at 16 or 60 Hz
- ❑ Effects of 2450-MHz Microwave Energy on the Blood-Brain Barrier: An Overview and Critique of Past and Present Research
- ❑ A High-Power Automatic Network Analyzer for Measuring the RF Power Absorbed by Biological Samples in a TEM Cell



Contents

Publications

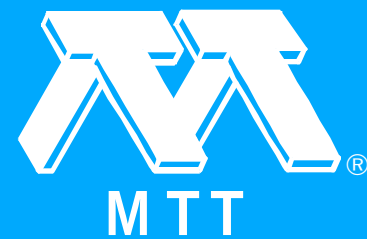
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [Probing Electromagnetic Fields in Lossy Spheres and Cylinders](#)
- ❑ [Aperture Synthesis Thermography -- A New Approach to Passive Microwave Temperature Measurements in the Body](#)
- ❑ [Microwave-Induced Thermoacoustic Effect in Dielectrics and its Coupling to External Medium--A Thermodynamical Formulation](#)
- ❑ [A Local Field Study of a Water-Immersed Microwave Antenna Array for Medical Imagery and Therapy](#)
- ❑ [Microwave Thermoelastic Tissue Imaging--System Design](#)
- ❑ [Limitations of Imaging with First-Order Diffraction Tomography](#)
- ❑ [Hyperthermia and Inhomogeneous Tissue Effects Using an Annular Phased Array](#)
- ❑ [Microwave-Induced Post-Exposure Hyperthermia: Involvement of Endogenous Opioids and Serotonin](#)



[Contents](#)

[Publications](#)

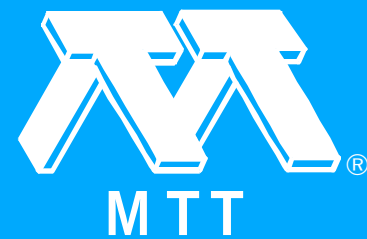
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Focused Electromagnetic Heating of Muscle Tissue (Short Papers)
- ❑ On the Nonthermal Microwave Response of *Drosophila Melanogaster* (Short Papers)
- ❑ Changes in Liposomes Permeability Induced by Gramicidin D After Microwave Irradiation (Short Papers)
- ❑ A Multifrequency Water-Filled Waveguide Applicator: Thermal Dosimetry in Vivo (Short Papers)
- ❑ Multi-Octave Performance of Single-Ended Microwave Solid-State Amplifiers
- ❑ Design of Waveguide Circulators with Chebyshev Characteristics Using Partial-Height Ferrite Resonators
- ❑ Cyclotron Maser and Peniotron-Like Instabilities in a Whispering Gallery Mode Gyrotron
- ❑ Penalty Function Improvement of Waveguide Solution by Finite Elements
- ❑ Time Dispersion Properties of Cascaded Multimode Fiber Links



IEEE

Contents

Publications

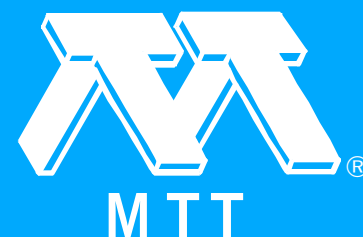
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Characterization of a Dual-Mode Horn for Submillimeter Wavelengths (Short Papers)
- ❑ An Analytical Method for the Capacitance of the Rectangular Inhomogeneous Coaxial Line Having Anisotropic Dielectrics (Short Papers)
- ❑ Incremental Frequency Rule for Computing the Q-Factor of a Shielded TE/sub omp/ Dielectric Resonator (Short Papers)
- ❑ Loss Measurements of Nonradiative Dielectric Waveguide (Special Papers)
- ❑ The Microstrip Open-Ring Resonator (Comments)
- ❑ Patent Abstracts (Aug. 1984 [T-MTT])
- ❑ Call for Papers - Numerical Methods for Microwave and Millimeter Wave Characterizations and Designs (Aug. 1984 [T-MTT])
- ❑ Information for Authors (Aug. 1984 [T-MTT])
- ❑ Back Cover (Aug. 1984 [T-MTT])



IEEE

Contents

Publications

Issues

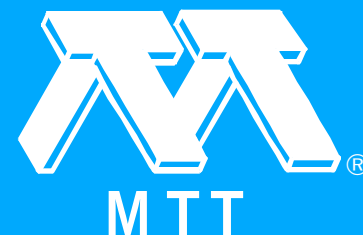
Click on title for a paper summary.



Papers by Issue

Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)

- ☐ [Front Cover \(Sep. 1984 \[T-MTT\]\)](#)
- ☐ [Table of Contents \(Sep. 1984 \[T-MTT\]\)](#)
- ☐ [Introduction \(Sep. 1984 \[T-MTT\]\)](#)
- ☐ [History of the Administrative Committee of the Microwave Theory and Techniques Society](#)
- ☐ [The Origin of Waveguides: A Case of Multiple Rediscovery](#)
- ☐ [Coaxial Transmission Lines, Related Two-Conductor Transmission Lines, Connectors, and Components: A U.S. Historical Perspective](#)
- ☐ [Microwave Printed Circuits - The Early Years](#)
- ☐ [Microwave Integrated Circuits--An Historical Perspective](#)
- ☐ [Monolithic Microwave Integrated Circuits: An Historical Perspective](#)



IEEE

[Contents](#)

[Publications](#)

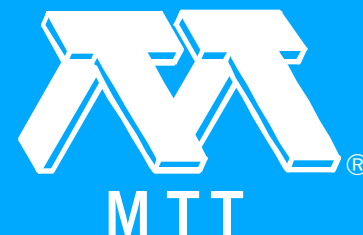
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ☐ Reflection Charts Relating to Impedance Matching
- ☐ Historical Perspectives on Microwave Field Theory
- ☐ History of Microwave Passive Components with Particular Attention to Directional Couplers
- ☐ A History of Microwave Filter Research, Design, and Development
- ☐ An Historical View of the Evolution of Low-Noise Concepts and Techniques
- ☐ Solid-State Microwave and Millimeter-Wave Sources Development--A Personal Account
- ☐ Microwave Ferrite Devices: The First Ten Years
- ☐ The Virtues of Nonlinearity--Detection, Frequency Conversion, Parametric Amplification and Harmonic Generation
- ☐ Origins of High-Power Diode Switching
- ☐ History of Millimeter and Submillimeter Waves
- ☐ A Short History of Microwave Acoustics



IEEE

Contents

Publications

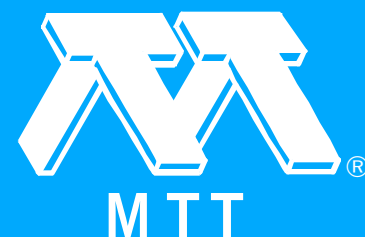
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ The Birth of Lightwave Technology and Its Implications to Microwaves
- ☐ The Historical Development of GaAs FET Digital IC Technology
- ☐ Microwave Instrumentation: An Historical Perspective
- ☐ A Half Century of Radar
- ☐ Microwave Communications--An Historical Perspective
- ☐ History of Biological Effects and Medical Applications of Microwave Energy
- ☐ A History of Microwave Heating Applications
- ☐ 50 Years of Radio Astronomy
- ☐ The History of Power Transmission by Radio Waves
- ☐ A Conversation Between Harold Barlow and Alec Cullen, on November 24, 1983
- ☐ From the Inventor and the Pilot Russell and Sigurd Varian
- ☐ Patent Abstracts (Sep. 1984 [T-MTT])



Contents

Publications

Issues

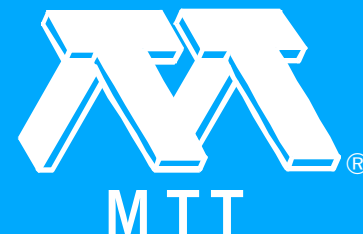
Click on title for a paper summary.



Papers by Issue

Oct. 1984 [T-MTT]

- ☐ [Front Cover \(Oct. 1984 \[T-MTT\]\)](#)
- ☐ [Finite-Element Analysis of Dielectric-Loaded Waveguides](#)
- ☐ [Phase Shifts in Single- and Dual-Gate GaAs MESFET's for 2-4-GHz Quadrature Phase Shifters](#)
- ☐ [Correction Due to a Finite Permittivity for a Ring Resonator in Free Space](#)
- ☐ [Theory and Numerical Simulation of a TE/sub 111/ Gyroresonant Accelerator](#)
- ☐ [Analysis of Slotted, Dielectrically Loaded, Ridged Waveguide](#)
- ☐ [Stability of Multifrequency Negative-Resistance Oscillators](#)
- ☐ [Scattering at a Junction of Two Waveguides with Different Surface Impedances](#)
- ☐ [High-Temperature Microwave Characterization of Dielectric Rods](#)



IEEE

[Contents](#)

[Publications](#)

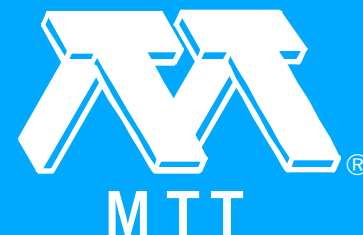
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Electromagnetic Waves in Toroidal Vessels of Arbitrary Cross Section Filled with Radially Inhomogeneous Dielectric Medium
- ❑ Effect of Doping Profile Variation on GaAs Hybrid and Double-Read IMPATT Diode Performance at 60 and 94 GHz
- ❑ Effects of Doping Profile on GaAs, Double-Drift IMPATT Diodes at 33 and 44 GHz Using the Energy-Momentum Transport Model
- ❑ Hyperbolic Secant Coupling in Overmoded Waveguide
- ❑ Technology Summaries for Microwave Theory and Techniques--1983
- ❑ A New Microstrip Dispersion Model (Short Papers)
- ❑ Microwave Point Contact Diode Responsivity Improvement through Surface Effects in Vacuum (Short Papers)
- ❑ Effect of Inner Conductor Offset in a Coplanar Waveguide (Short Papers)



Contents

Publications

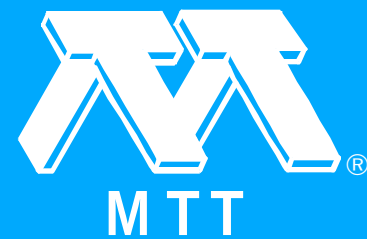
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ E-Plane Integrated Circuit Filters with Improved Stopband Attenuation (Short Papers)
- ❑ A Comparison of IMPATT Oscillator Power and Frequency Above 100 GHz with Results Derived from Theoretical Models (Short Papers)
- ❑ Generation of High-Frequency Radiation by Quasi-Optical Gyrotron at Harmonics of the Cyclotron Frequency (Short Papers)
- ❑ Theory and Analysis of GaAs MESFET Mixers (Short Papers)
- ❑ Microwave Hyperthermic Distributions in a Layered Living Body with Nonlinear Thermoregulatory Properties (Short Papers)
- ❑ Numerical Study of the Current Distribution on a Post in a Rectangular Waveguide (Short Papers)
- ❑ Modes in Anisotropic Rectangular Waveguides: An Accurate and Simple Perturbation Approach (Short Papers)
- ❑ The Interdigitated Three-Strip Coupler (Short Papers)



Contents

Publications

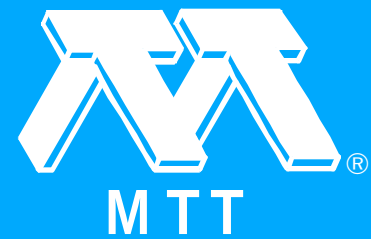
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Coaxial Transmission Lines, Related Two-Conductor Transmission Lines, Connectors, and Components: A U.S. Historical Perspective (Corrections)
- ❑ Patent Abstracts (Oct. 1984 [T-MTT])
- ❑ IEEE Conference Records (Advertisement) (Oct. 1984 [T-MTT])
- ❑ Back Cover (Oct. 1984 [T-MTT])



IEEE

Contents

Publications

Issues

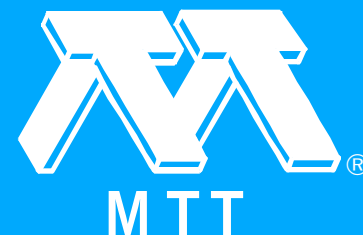
Click on title for a paper summary.



Papers by Issue

Nov. 1984 [T-MTT]

- ☐ [Front Cover \(Nov. 1984 \[T-MTT\]\)](#)
- ☐ [A Generalized Formulation of Electromagnetically Coupled Striplines](#)
- ☐ [Amplification by Interdigital Excitation of Space-Charge Waves in Semiconductors](#)
- ☐ [The Electrostatic Field of Conducting Bodies in Multiple Dielectric Media](#)
- ☐ [A True Elliptic-Function Filter Using Triple-Mode Degenerate Cavities](#)
- ☐ [Accurate Hybrid-Mode Finline Configurations Including Analysis of Various Multilayered Dielectrics, Finite Metallization Thickness, and Substrate Holding Grooves](#)
- ☐ [Regenerative Frequency Division with a GaAs FET](#)
- ☐ [Coupled-Mode Theory of Two Nonparallel Dielectric Waveguides](#)



IEEE

[Contents](#)

[Publications](#)

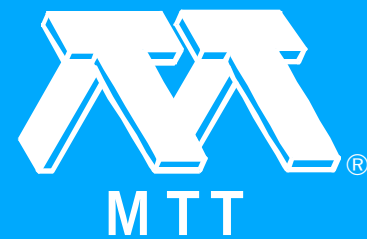
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Even- and Odd-Mode Impedances of Coupled Elliptic Arc Strips (Short Papers)
- ❑ Computer-Optimized Multisection Transformers Between Rectangular Waveguides of Adjacent Frequency Bands (Short Papers)
- ❑ Analysis of Finline with Finite Metallization Thickness (Short Papers)
- ❑ An Evanescent Mode Waveguide Bandpass Filter at Q Band (Short Papers)
- ❑ Extension of Levy's Large-Aperture Design Formulas to the Design of Circular Irises in Coupled-Resonator Waveguide Filters (Short Papers)
- ❑ A Technique to Identify Electromagnetic Modes in Oversize Waveguides (Short Papers)
- ❑ Waveguide Modes Via an Integral Equation Leading to a Linear Matrix Eigenvalue Problem (Short Papers)
- ❑ Quasi-Optical Method for Measuring the Complex Permittivity of Materials (Corrections)



Contents

Publications

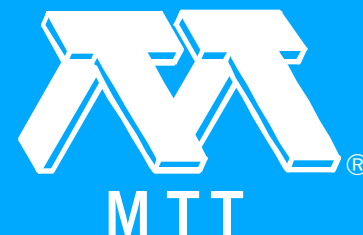
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [Patent Abstracts \(Nov. 1984 \[T-MTT\]\)](#)
- ❑ [Asian Abstracts \(Nov. 1984 \[T-MTT\]\)](#)
- ❑ [IEEE Annual Combined Index \(Advertisement\) \(Nov. 1984 \[T-MTT\]\)](#)
- ❑ [IEEE Standard Dictionary \(Advertisement\) \(Nov. 1984 \[T-MTT\]\)](#)
- ❑ [IEEE on Microfilm \(Advertisement\) \(Nov. 1984 \[T-MTT\]\)](#)
- ❑ [Back Cover \(Nov. 1984 \[T-MTT\]\)](#)



[Contents](#)

[Publications](#)

[Issues](#)

Click on title for a paper summary.



Papers by Issue



IEEE

Contents

Publications

Issues

Dec. 1984 [T-MTT] (1984 Symposium Issue)

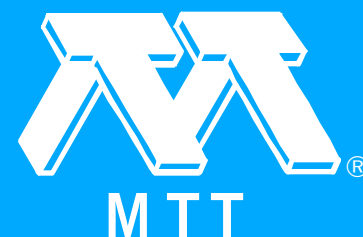
- ☐ [Front Cover \(Dec. 1984 \[T-MTT\]\)](#)
- ☐ [Table of Contents \(Dec. 1984 \[T-MTT\]\)](#)
- ☐ [Editor's Overview \(Dec. 1984 \[T-MTT\]\)](#)
- ☐ [1984 MTT-S International Microwave Symposium \(Dec. 1984 \[T-MTT\]\)](#)
- ☐ [Awards \(Dec. 1984 \[T-MTT\]\)](#)
- ☐ [1984 IEEE MTT-S International Microwave Symposium Keynote Address \(Dec. 1984 \[T-MTT\]\)](#)
- ☐ [Table of Contents, 1984 MTT Symposium Digest \(Dec. 1984 \[T-MTT\]\)](#)
- ☐ [A 26-GHz High-Performance MIC Transmitter/Receiver for Digital Radio Subscriber Systems \(Dec. 1984 \[T-MTT\]\)](#)
- ☐ [Analysis and Design of a Single-Resonator GaAs FET Oscillator with Noise Degeneration](#)
- ☐ [RF Spectrum of Thermal Noise and Frequency Stability of a Microwave Cavity-Oscillator](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Self-Consistent GaAs FET Models for Amplifier Design and Device Diagnostics
- ❑ The Measured and Computed Performance of a 140--220 GHz Schottky Diode Mixer
- ❑ Impedance Measurement in Frequency-Halving Networks Using a Two-Frequency Synthetic Loading Technique
- ❑ Dielectric Measurements of Millimeter-Wave Materials
- ❑ Computed Modal Field Distributions for Isolated Dielectric Resonators
- ❑ Fourier Transformed Matrix Method of Finding Propagation Characteristics of Complex Anisotropic Layered Media (Dec. 1984 [T-MTT])
- ❑ Space-Domain Decoupling of LSE and LSM Fields in Generalized Planar Guiding Structures
- ❑ Transverse Resonance Analysis Discontinuities of Finline
- ❑ Synthesis of Optimum Finline Tapers Using Dispersion Formulas for Arbitrary Slot Widths and Locations



IEEE

Contents

Publications

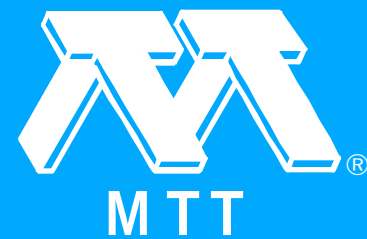
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Quarter-Wave Matching of Waveguide-to-Finline Transitions (Short Papers)
- ❑ Theoretical and Experimental Investigation of Asymmetric Coplanar Waveguides (Short Papers)
- ❑ Planar Circuit Analysis of Microstrip Radial Stub (Short Papers)
- ❑ Broad-Band Millimeter-Wave E-Plane Bandpass Filters (Short Papers)
- ❑ Design of Nonradiative Dielectric Waveguide Filters (Short Papers)
- ❑ 60-GHz Integrated-Circuit High Data Rate Quadriphase Shift Keying Exciter and Modulator (Short Papers)
- ❑ Fundamental-Mode Pierce Oscillators Utilizing Bulk-Acoustic-Wave Resonators in the 250--300-MHz Range (Short Papers)
- ❑ YIG Oscillators: Is a Planar Geometry Better? (Short Papers)



IEEE

Contents

Publications

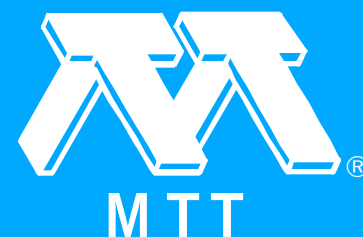
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Injection Laser Modulation at 2 Gbit/s by Monolithic Silicon Multiplexer (Short Papers)
- ❑ A New Method for Six-Port Swept Frequency Automatic Network Analysis (Short Papers)
- ❑ A Dual Six-Port Automatic Network Analyzer and its Performance (Short Papers)
- ❑ Foreword (Dec. 1984 [T-MTT])
- ❑ Si Monolithic Microwave Prescaler
- ❑ A 2--18-GHz Monolithic Distributed Amplifier Using Dual-Gate GaAs FET's
- ❑ A Monolithic Direct-Coupled GaAs Amplifier with 12-GHz Bandwidth
- ❑ Capacitively Coupled Traveling-Wave Power Amplifier (Dec. 1984 [T-MTT])
- ❑ Wide-Band Monolithic Phase Shifter
- ❑ Analysis of Crosstalk in Very High-Speed LSI/VLSI's Using a Coupled Multiconductor MIS Microstrip Line Model



Contents

Publications

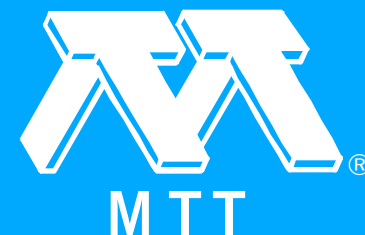
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [Analysis of Interconnection Delay on Very High-Speed LSI/VLSI Chips Using an MIS Microstrip Line Model](#)
- ❑ [Patent Abstracts \(Dec. 1984 \[T-MTT\]\)](#)
- ❑ [Index, IEEE Transactions on Microwave Theory and Techniques, Volume MTT-32, 1984](#)
- ❑ [Back Cover \(Dec. 1984 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

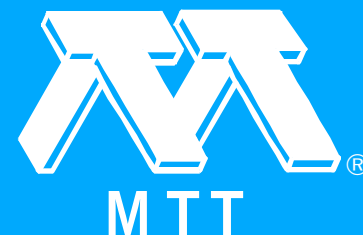
Click on title for a paper summary.



Papers by Issue

Jan. 1985 [T-MTT]

- ☐ [Front Cover \(Jan. 1985 \[T-MTT\]\)](#)
- ☐ [Editorial \(Jan. 1985 \[T-MTT\]\)](#)
- ☐ [Impedance Transformation and Matching for Lumped Complex Load with Nonuniform Transmission Line](#)
- ☐ [Lossy Inductive-Post Obstacles in Lossy Waveguide](#)
- ☐ [Complex Propagation Constants of Bent Hollow Waveguides with Arbitrary Cross Section](#)
- ☐ [Noise Due to Pulse-to-Pulse Incoherence in Injection-Locked Pulsed-Microwave Oscillators. Part II-Effects of Phase-Locking Dynamics](#)
- ☐ [Accurate Analysis Equations and Synthesis Technique for Unilateral Finline](#)
- ☐ [General Stability Analysis of Periodic Steady-State Regimes in Nonlinear Microwave Circuits](#)
- ☐ [Hybrid-Mode Analysis of Coupled Microstrip-Slot Resonators](#)



IEEE

[Contents](#)

[Publications](#)

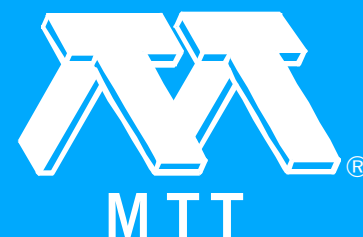
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ A Continuous Comparison at 97 GHz Radiometer
- ❑ Active Stabilization of Crystal Oscillator FM Noise at UHF Using a Dielectric Resonator (Short Papers)
- ❑ 140-GHz Finline Components (Short Papers)
- ❑ Radial-Line/Coaxial-Line Stepped Junction (Short Papers)
- ❑ New Analysis of Semiconductor Isolators: The Modified Spectral Domain Analysis (Short Papers)
- ❑ Biological Tissues Characterization at Microwave Frequencies (Short Papers)
- ❑ Higher Order Mode Cutoff in Polygonal Transmission Lines (Short Papers)
- ❑ An Explicit Six-Port Calibration Method Using Five Standards (Short Papers)
- ❑ Theory and Measurement of Back Bias Voltage in IMPATT Diodes (Comments)
- ❑ Theory and Application of Coupling Between Curved Transmission Lines (Corrections)



IEEE

Contents

Publications

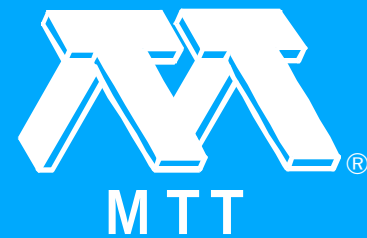
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ Coupling of Degenerate Modes on Curved Dielectric Slab Sections and Application to Directional Couplers (Corrections)
- ☐ Patent Abstracts (Jan. 1985 [T-MTT])
- ☐ IEEE on Microfilm (Advertisement) (Jan. 1985 [T-MTT])
- ☐ Copyright Form (Jan. 1985 [T-MTT])
- ☐ Membership Application (Jan. 1985 [T-MTT])
- ☐ Table of Contents, Preview of February (Jan. 1985 [T-MTT])
- ☐ Back Cover (Jan. 1985 [T-MTT])



IEEE

Contents

Publications

Issues

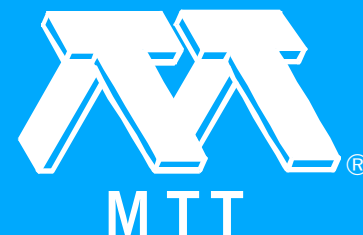
Click on title for a paper summary.



Papers by Issue

Feb. 1985 [T-MTT]

- ☐ [Front Cover \(Feb. 1985 \[T-MTT\]\)](#)
- ☐ [Power-Handling Capabilities of Circular Dielectric Waveguide at Millimeter Wavelengths](#)
- ☐ [85--115-GHz Receivers for Radio Astronomy](#)
- ☐ [Field Theory Design of Rectangular Waveguide Broad-Wall Metal-Insert Slot Couplers for Millimeter-Wave Applications](#)
- ☐ [12-GHz-Band GaAs Dual-Gate MESFET Monolithic Mixers](#)
- ☐ [Variational Analysis of Ridged Waveguide Modes](#)
- ☐ [The Electric-Field Problem of an Interdigital Transducer in a Multilayered Structure](#)
- ☐ [Computer Calculation of Large-Signal GaAs FET Amplifier Characteristics](#)
- ☐ [Short Millimeter Low Local Wavelength Mixer with Oscillator Power](#)
- ☐ [Exact Wave Resistance of Coaxial Regular Polygonal Conductors \(Short Papers\)](#)



IEEE

[Contents](#)

[Publications](#)

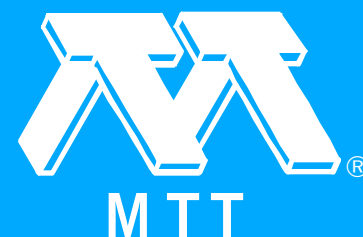
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Analysis of the Transmission Characteristics of Inhomogeneous Grounded Finlines (Short Papers)
- ❑ Phase-Matched Waveguide Using the Artificial Anisotropic Structure and its Application to a Mode Converter (Short Papers)
- ❑ A Design Method of Bandpass Filters Using Dielectric-Filled Coaxial Resonators (Short Papers)
- ❑ Conservation Laws for Distributed Four-Ports (Short Papers)
- ❑ A Broad-Band Directional Coupler for Both Dielectric and Image Guides (Short Papers)
- ❑ An Iterative Moment Method for Analyzing the Electromagnetic Field Distribution Inside Inhomogeneous Lossy Dielectric Objects (Short Papers)
- ❑ On the Graceful Degradation Performance of Multiple-Device Oscillators (Short Papers)
- ❑ EM Local Heating with HF Electric Fields (Comments)



Contents

Publications

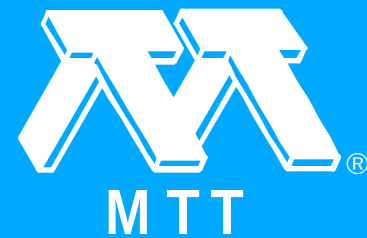
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [On the Definition of Parameters in Ferrite-Electromagnetic Wave Interactions \(Comments\)](#)
- ❑ [A Short History of Microwave Acoustics \(Corrections\)](#)
- ❑ [Patent Abstracts \(Feb. 1985 \[T-MTT\]\)](#)
- ❑ [IEEE on Microfilm \(Advertisement\) \(Feb. 1985 \[T-MTT\]\)](#)
- ❑ [Membership Application \(Feb. 1985 \[T-MTT\]\)](#)
- ❑ [Table of Contents, Preview of March \(Feb. 1985 \[T-MTT\]\)](#)
- ❑ [Back Cover \(Feb. 1985 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

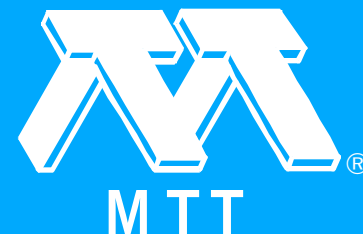
Click on title for a paper summary.



Papers by Issue

Mar. 1985 [T-MTT]

- ☐ [Front Cover \(Mar. 1985 \[T-MTT\]\)](#)
- ☐ [Theoretical and Experimental Studies of Gain Compression of Millimeter-Wave Self-Oscillating Mixers](#)
- ☐ [On the Graphical Representation of Electric Field Lines in Waveguide](#)
- ☐ [Optical Fiber Delay-Line Signal Processing](#)
- ☐ [Graphic Design of Matching and Interstage Lossy Networks for Microwave Transistor Amplifier](#)
- ☐ [Field Analysis of a Millimeter-Wave GaAs Double-Drift IMPATT Diode in the Traveling-Wave Mode](#)
- ☐ [Coupling Parameters Between a Dielectric Resonator and a Microstripline](#)
- ☐ [Improved Finite-Element Formulation in Terms of the Magnetic Field Vector for Dielectric Waveguides](#)
- ☐ [Analysis of Noise Upconversion in Microwave FET Oscillators](#)



IEEE

[Contents](#)

[Publications](#)

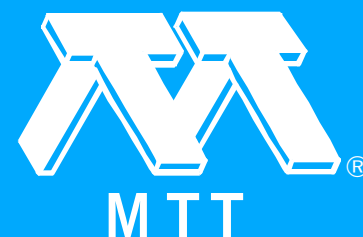
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Design Consideration for Frequency-Stabilized MIC IMPATT Oscillators in the 26-GHz Band
- ❑ Boundary Element Method Approach Magnetostatic Wave Problems
- ❑ Locking Behavior of a Microwave Multiple-Device Ladder Oscillator
- ❑ Coaxial E-Field Probe for High-Power Microwave Measurement (Short Papers)
- ❑ Computation of Inductance of Simple Vias Between Two Striplines Above a Ground Plane (Short Papers)
- ❑ Analyzing Lossy Radial-Line Stubs (Short Papers)
- ❑ Plot of Modal Field Distribution in Rectangular and Circular Waveguides (Short Papers)
- ❑ Computations of Frequencies and Intrinsic Q Factors of TE/sub 0nm/ Modes of Dielectric Resonators (Short Papers)
- ❑ Cross-Coupled Coaxial-Line/Rectangular-Waveguide Junction (Short Papers)



IEEE

Contents

Publications

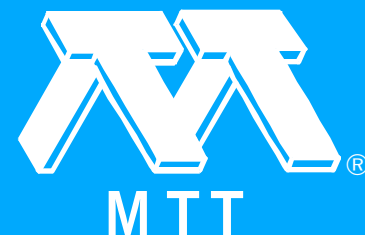
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [Accurate Six-Port Operation with Uncalibrated Nonlinear Diodes Digital \(Short Papers\)](#)
- ❑ [Scalar Variational Analysis of Single-Mode Waveguides with Rectangular Cross Section \(Short Papers\)](#)
- ❑ [A Rigorous Technique for Measuring the Scattering Matrix of a Multiport Device with a Two-Port Network Analyzer \(Comments\) \(Mar. 1985 \[T-MTT\]\)](#)
- ❑ [High-Temperature Microwave Characterization of Dielectric Rods \(Corrections\)](#)
- ❑ [Accurate Wide-Range Design Equations for the Frequency-Dependent Characteristics of Parallel Coupled Microstrip Lines \(Corrections\)](#)
- ❑ [Patent Abstracts \(Mar. 1985 \[T-MTT\]\)](#)
- ❑ [Membership Application \(Mar. 1985 \[T-MTT\]\)](#)
- ❑ [Table of Contents, Preview of April \(Mar. 1985 \[T-MTT\]\)](#)
- ❑ [Back Cover \(Mar. 1985 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

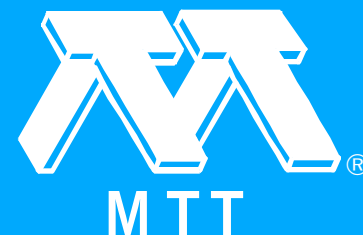
Click on title for a paper summary.



Papers by Issue

Apr. 1985 [T-MTT]

- ☐ [Front Cover \(Apr. 1985 \[T-MTT\]\)](#)
- ☐ [Editorial \(Apr. 1985 \[T-MTT\]\)](#)
- ☐ [Waveguide and Cavity Oscillations in the Presence of Nonlinear Media](#)
- ☐ [Functional Approach to Microwave Postproduction Tuning](#)
- ☐ [Highly Stable Dielectric Resonator FET Oscillators \(Short Papers\)](#)
- ☐ [The Annular Slot Antenna in a Lossy Biological Medium \(Short Papers\)](#)
- ☐ [Mathematical Expression of the Loading Characteristics of Microwave Oscillators and Injection-Locking Characteristics \(Short Papers\)](#)
- ☐ [A New Cylindrical Electron Gun for Low-Power Tunable Gyrotrons with High Magnetic Compression Ratios \(Short Papers\)](#)



IEEE

[Contents](#)

[Publications](#)

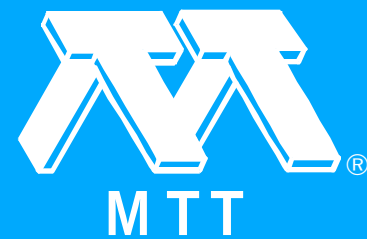
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ [Probe Mutual Impedance in a Rectangular Waveguide \(Short Papers\)](#)
- ❑ [Slow-Wave Propagation in Two Types of Cylindrical Waveguides Loaded with a Semiconductor \(Short Papers\)](#)
- ❑ [Adjustment of In-Phase Mode in Circulators Using Turnstile Junctions \(Short Papers\)](#)
- ❑ [Optical Injection Locking of BARITT Oscillators \(Comments\)](#)
- ❑ [Integration Method of Measuring Q of the Microwave Resonators \(Further Comments\)](#)
- ❑ [New Narrow-Band Dual-Mode Bandstop Waveguide Filters \(Comments\)](#)
- ❑ [Fast-Fourier-Transform Method for Calculation of SAR Distributions in Finely Discretized Inhomogeneous Models of Biological Bodies \(Comments\)](#)
- ❑ [Application of Boundary-Element Method to Electromagnetic Field Problems \(Comments\)](#)
- ❑ [Limitations of the Cubical Block Model of Man in Calculating SAR Distributions \(Comments\)](#)



IEEE

[Contents](#)

[Publications](#)

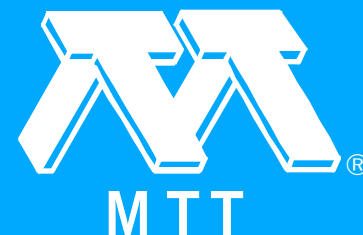
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ [Interaction of the Near-Zone Fields of a Slot on a Conducting Sphere with a Spherical Model of Man \(Corrections\)](#)
- ❑ [Technology Summaries for Microwave Theory and Techniques--1983 \(Corrections\)](#)
- ❑ [Patent Abstracts \(Apr. 1985 \[T-MTT\]\)](#)
- ❑ [Membership Application \(Apr. 1985 \[T-MTT\]\)](#)
- ❑ [IEEE Annual Combined Index \(Advertisement\) \(Apr. 1985 \[T-MTT\]\)](#)
- ❑ [Table of Contents, Preview of May \(Apr. 1985 \[T-MTT\]\)](#)
- ❑ [Back Cover \(Apr. 1985 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

Click on title for a paper summary.

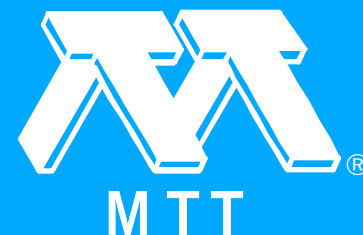


Papers by Issue

May 1985 [T-MTT]

- ☐ [Front Cover \(May 1985 \[T-MTT\]\)](#)
- ☐ [The Reflection from an Open-Ended Rectangular Waveguide Terminated by a Layered Dielectric Medium](#)
- ☐ [Fast Microwave Detectors Based on the Interaction of Holes with Phonons](#)
- ☐ [Double Dielectric-Slab-Filled Waveguide Phase Shifter](#)
- ☐ [Synthesis of Quarter-Wave Coupled Junction Circulators with Degrees 1 and 2 Complex Gyrator Circuits](#)
- ☐ [Rigorous Hybrid-Mode Analysis of the Transition from Rectangular Waveguide to Shielded Dielectric Image Guide](#)
- ☐ [Predistortion Techniques for Multicoupled Resonator Filters \(Short Papers\)](#)
- ☐ [Singularity Extraction from the Electric Green's Function for a Spherical Resonator \(Short Papers\)](#)
- ☐ [Characteristic Impedance Design Considerations for a High-Speed Superconducting Packaging System \(Short Papers\)](#)

Click on title for a paper summary.



IEEE

[Contents](#)

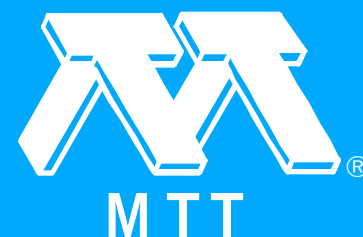
[Publications](#)

[Issues](#)



Papers by Issue

- ❑ Calculation of High-Resolution SAR Distributions in Biological Bodies Using the FFT Algorithm and Conjugate Gradient Method (Short Papers)
- ❑ Characteristic Impedance of the Slab Line with an Anisotropic Dielectric (Short Papers)
- ❑ Edge-Guided Magnetostatic Mode in a Ridged-Type Waveguide (Short Papers)
- ❑ A New Recurrence Method for Determining the Green's Function of Planar Structures with Arbitrary Anisotropic Layers (Short Papers)
- ❑ Theoretical and Experimental Study of a Novel H-Guide Transverse Slot Antenna (Short Papers)
- ❑ Large-Signal Equivalent-Circuit Model of a GaAs Dual-Gate MESFET Mixer (Short Papers)
- ❑ Single-Post Inductive Obstacle in Rectangular Waveguide (Comments)



Contents

Publications

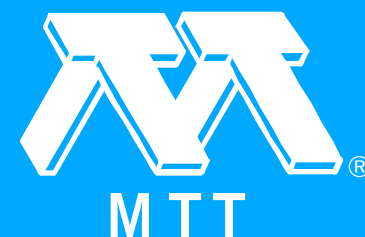
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [A New Method for Calculating TE and TM Cutoff Frequencies of Uniform Waveguides with Lunar or Eccentric Annular Cross Section \(Comments\)](#)
- ❑ [E-Plane Integrated Circuit Filters with Improved Stopband Attenuation \(Comments\)](#)
- ❑ [Patent Abstracts \(May 1985 \[T-MTT\]\)](#)
- ❑ [Call for Papers - Phased Arrays for Hyperthermia Treatment of Cancer \(May 1985 \[T-MTT\]\)](#)
- ❑ [IEEE Annual Combined Index \(Advertisement\) \(May 1985 \[T-MTT\]\)](#)
- ❑ [Membership Application \(May 1985 \[T-MTT\]\)](#)
- ❑ [Table of Contents, Preview of June \(May 1985 \[T-MTT\]\)](#)
- ❑ [Back Cover \(May 1985 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

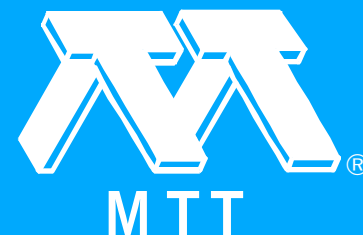
Click on title for a paper summary.



Papers by Issue

Jun. 1985 [T-MTT]

- ☐ [Front Cover \(Jun. 1985 \[T-MTT\]\)](#)
- ☐ [Responses of Electric-Field Probes Near a Cylindrical Model of the Human Body](#)
- ☐ [A Technique for Extending the Dynamic Range of the Dual Six-Port Network Analyzer](#)
- ☐ [The Intrinsic Noise Figure of the MESFET Distributed Amplifier](#)
- ☐ [A Vlasov Description of the Gridded Gap-Electron Flow Interaction](#)
- ☐ [On the Variational Reaction Theory for Dielectric Waveguides](#)
- ☐ [Magnetostatic Surface-Wave Propagation in Ferrite Thin Films with Arbitrary Variations of the Magnetization Through the Film Thickness](#)
- ☐ [Active Matching with Common-Gate MESFET's](#)
- ☐ [Characteristic Modes for Aperture Problems](#)



[Contents](#)

[Publications](#)

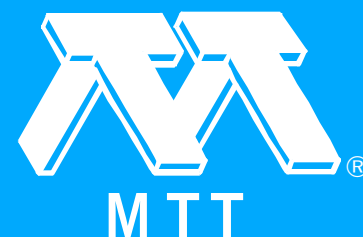
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Experimental Study of Dielectric Waveguide Y-Junctions for Millimeter-Wave Integrated Circuits
- ❑ 800-MHz High-Performance SAW Filter Using New Resonant Configuration
- ❑ Measurements of Microwave Conductivity and Dielectric Constant by the Cavity Perturbation Method and Their Errors
- ❑ Analysis of Multilayer Interconnection Lines for a High-Speed Digital Integrated Circuit
- ❑ High-Output, Single- and Dual-Diode, Millimeter-Wave Frequency Doublers
- ❑ A Transition from Rectangular to Nonradiating Dielectric Waveguide (Short Papers)
- ❑ A Low-Noise GaAs Monolithic Broad-Band Amplifier Using a Drain Current Saving Technique (Short Papers)
- ❑ Polygonal Coaxial Line with Round Center Conductor (Short Papers)



IEEE

Contents

Publications

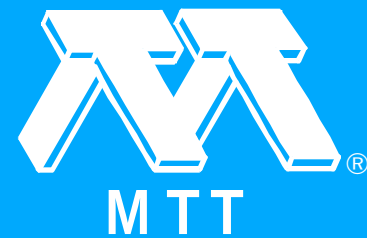
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [Impedance of an Elliptic Conductor Arbitrarily Located Between Ground Planes Filled with Two Dielectric Media \(Short Papers\)](#)
- ❑ [An Evanescent Mode Waveguide Bandpass Filter at Q-Band \(Comments\)](#)
- ❑ [Single-Post Inductive Obstacle in Rectangular Waveguide \(Reply to Comments\)](#)
- ❑ [Patent Abstracts \(Jun. 1985 \[T-MTT\]\)](#)
- ❑ [Table of Contents, Preview of July \(June 1985 \[T-MTT\]\)](#)
- ❑ [Back Cover \(Jun. 1985 \[T-MTT\]\)](#)



IEEE

Contents

Publications

Issues

Click on title for a paper summary.

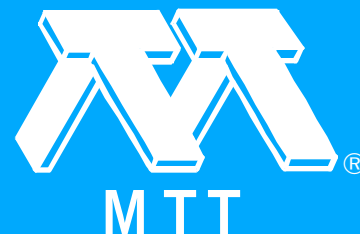


Papers by Issue

Jul. 1985 [T-MTT]

- ☐ [Front Cover \(Jul. 1985 \[T-MTT\]\)](#)
- ☐ [A New Four-Port Automatic Network Analyzer: Part I--Description and Performance](#)
- ☐ [A New Four-Port Automatic Network Analyzer: Part II--Theory](#)
- ☐ [Finite-Element Analysis of Dielectric Waveguides with Curved Boundaries](#)
- ☐ [Microwave Measurement of Dielectric Properties of Low-Loss Materials by the Dielectric Rod Resonator Method](#)
- ☐ [Stability of the Oscillation Mode in a Multiple-Oscillator System](#)
- ☐ [Circuit Analysis and Design of Radial Pretuned Modules Used for Millimeter-Wave Oscillators](#)
- ☐ [A Continuously Tunable 65--115-GHz Gunn Oscillator](#)
- ☐ [Linearity Limits of the Varactor-Controlled Osc-Mod Circuits](#)
- ☐ [Circuit Design of the Loaded-Line Phase Shifter](#)

Click on title for a paper summary.



[Contents](#)

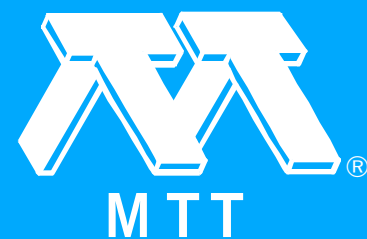
[Publications](#)

[Issues](#)



Papers by Issue

- ☐ The Finite-Element Method for Finding Modes of Dielectric-Loaded Cavities (Short Papers)
- ☐ Large-Signal Microwave Performance Prediction of Dual-Gate GaAs MESFET Using an Efficient and Accurate Model (Short Papers)
- ☐ Analysis of Asymmetric Coupled Striplines (Short Papers)
- ☐ Focused Heating in Cylindrical Targets: Part I (Short Papers)
- ☐ Convergence of Local and Average Values in Three-Dimensional Moment-Method Solutions (Short Papers)
- ☐ E-Plane Integrated Parallel-Strip Screen Waveguide Filters (Short Papers)
- ☐ Patent Abstracts (Jul. 1985 [T-MTT])
- ☐ Membership Application (Jul. 1985 [T-MTT])
- ☐ IEEE on Microfilm (Advertisement) (Jul. 1985 [T-MTT])
- ☐ IEEE Press Books (Advertisement) (Jul. 1985 [T-MTT])
- ☐ Back Cover (Jul. 1985 [T-MTT])



Contents

Publications

Issues

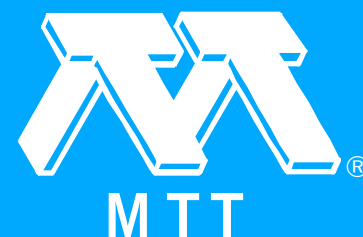
Click on title for a paper summary.



Papers by Issue

Aug. 1985 [T-MTT]

- ☐ [Front Cover \(Aug. 1985 \[T-MTT\]\)](#)
- ☐ [Vector Analyses of Propagation Constants in Dielectric Optical Waveguides with Perturbed Refractive-Index Profile](#)
- ☐ [An Exposure System for Variable Electromagnetic-Field Orientation Electrophysiological Studies](#)
- ☐ [A Variational Analysis of Dielectric Waveguides by the Conformal Mapping Technique](#)
- ☐ [Design and Performance of Monolithic GaAs Direct-Coupled Preamplifiers and Main Amplifiers](#)
- ☐ [Bandstop Filter Design Using a Dielectric Waveguide Grating](#)
- ☐ [Efficient, Linear Amplification of Varying-Envelope Signals Using FET's with Parabolic Transfer Characteristics](#)
- ☐ [A Method for Evaluating and the Evaluation of the Influence of the Reverse Transfer Gain on the Transducer Power Gain of Some Microwave Transistors \(Short Papers\)](#)



IEEE

[Contents](#)

[Publications](#)

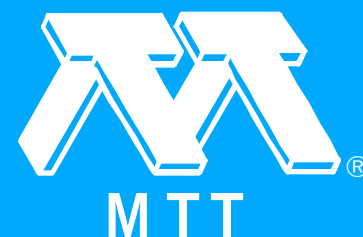
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ [Attenuation Constants of UHF Radio Waves in Arched Tunnels \(Short Papers\)](#)
- ❑ [The Thermal and Spatial Resolution of a Broad-Band Correlation Radiometer with Application to Medical Microwave Thermography \(Short Papers\)](#)
- ❑ [Dispersion Characteristics for Wide Slotlines on Low-Permittivity Substrates \(Short Papers\)](#)
- ❑ [Transient Analysis of Microstrip Gap in Three-Dimensional Space \(Short Papers\)](#)
- ❑ [Ka-Band FET Oscillator \(Short Papers\)](#)
- ❑ [Integral Transforms Useful for the Accelerated Summation of Periodic, Free-Space Green's Functions \(Short Papers\)](#)
- ❑ [Constant-Frequency Synthesis of Lossy Microwave Two-Ports \(Short Papers\)](#)
- ❑ [A New Transmission Line of Round Conductor and Parallel Plane with Symmetrically Placed Slit \(Short Papers\)](#)
- ❑ [Optical Fiber Delay-Line Signal Processing \(Corrections\)](#)



IEEE

[Contents](#)

[Publications](#)

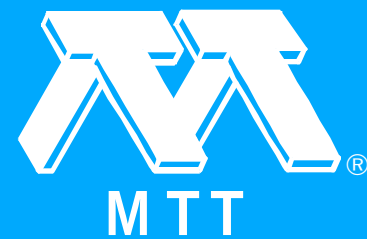
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ [Scattering at a Junction of Two Waveguides with Different Surface Impedances \(Comments\)](#)
- ❑ [A Novel Quasi-Optical Frequency Multiplier Design for Millimeter and Submillimeter Wavelengths \(Corrections\)](#)
- ❑ [Design of Nonradiative Dielectric Waveguide Filters \(Corrections\)](#)
- ❑ [Patent Abstracts \(Aug. 1985 \[T-MTT\]\)](#)
- ❑ [GaAs IC Symposium \(Announcement\) \(Aug. 1985 \[T-MTT\]\)](#)
- ❑ [Back Cover \(Aug. 1985 \[T-MTT\]\)](#)



[Contents](#)

[Publications](#)

[Issues](#)

Click on title for a paper summary.

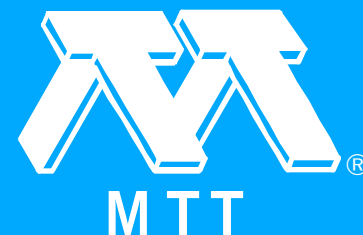


Papers by Issue

Sep. 1985 [T-MTT]

- ☐ [Front Cover \(Sep. 1985 \[T-MTT\]\)](#)
- ☐ [Editorial \(Sep. 1985 \[T-MTT\]\)](#)
- ☐ [New Phase-Lock Loop Circuit Providing Very Fast Acquisition Time](#)
- ☐ [The Dominant Mode Properties of Open Groove Guide: An Improved Solution](#)
- ☐ [Transmission Matrix Representation of Finline Discontinuities](#)
- ☐ [Quasi-Static Characteristics of Asymmetrical and Coupled Coplanar-Type Transmission Lines](#)
- ☐ [A Method for Dielectric Loss Measurements by a Microwave Cavity in Fixed Resonance Condition](#)
- ☐ [Longitudinal and Transverse Current Distributions on Microstriplines and Their Closed-Form Expression](#)
- ☐ [Dynamic Three-Dimensional TLM Analysis of Microstriplines on Anisotropic Substrate](#)

Click on title for a paper summary.



IEEE

[Contents](#)

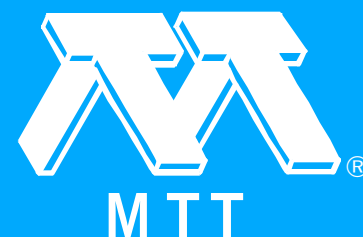
[Publications](#)

[Issues](#)



Papers by Issue

- ❑ [Computation of the Parallel-Plate Capacitor with Symmetrically Placed Unequal Plates](#)
- ❑ [Transverse Modal Analysis of Printed Circuit Transmission Lines](#)
- ❑ [Spectral-Domain Approach for Continuous Spectrum of Slot-Like Transmission Lines \(Short Papers\)](#)
- ❑ [Optical Effects on the Static and Dynamic Characteristics of a GaAs MESFET \(Short Papers\)](#)
- ❑ [Complex Permittivity Instrumentation for High-Loss Liquids at Microwave Frequencies \(Short Papers\)](#)
- ❑ [1.5-GHz GaAs Surface Acoustic Wave Delay Lines \(Short Papers\)](#)
- ❑ [Planar Millimeter-Wave Diode Mixer \(Short Papers\)](#)
- ❑ [Scattering at an N-Furcated Parallel-Plate Waveguide Junction \(Short Papers\)](#)
- ❑ [Microstrip Transmission Line with Finite-Width Dielectric and Ground Plane \(Short Papers\)](#)



IEEE

[Contents](#)

[Publications](#)

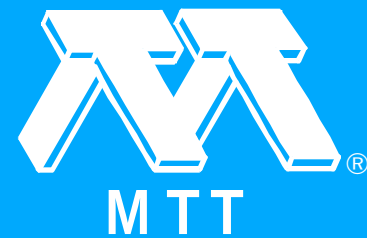
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ [Waveguide Modes Via an Integral Equation Leading to a Linear Matrix Eigenvalue Problem \(Corrections\)](#)
- ❑ [Patent Abstracts \(Sep. 1985 \[T-MTT\]\)](#)
- ❑ [Congressional Fellowships \(Announcement\) \(Sep. 1985 \[T-MTT\]\)](#)
- ❑ [Call for Papers - New and Future Applications of Microwave Systems \(Call for Papers\) \(Sep. 1985 \[T-MTT\]\)](#)
- ❑ [Back Cover \(Sep. 1985 \[T-MTT\]\)](#)



[Contents](#)

[Publications](#)

[Issues](#)

Click on title for a paper summary.

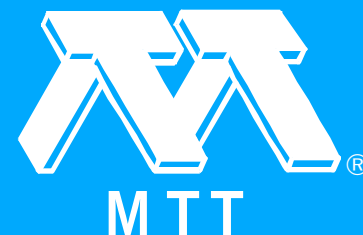


Papers by Issue

Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)

- ☐ [Front Cover \(Oct. 1985 \[T-MTT\]\)](#)
- ☐ [Foreword \(Oct. 1985 \[T-MTT\]\)](#)
- ☐ [Integrated-Circuit Structures on Anisotropic Substrates](#)
- ☐ [The Transmission-Line Matrix Method--Theory and Applications](#)
- ☐ [Review of Numerical Methods for the Analysis of Arbitrarily-Shaped Microwave and Optical Dielectric Waveguides](#)
- ☐ [Finite-Element Formulation in Terms of the Electric-Field Vector for Electromagnetic Waveguide Problems](#)
- ☐ [Integral Formulation for Analysis of Integrated Dielectric Waveguides](#)
- ☐ [A Modified Mode-Matching Technique and its Application to a Class of Quasi-Planar Transmission Lines](#)
- ☐ [Propagation of Quasi-Static Modes in Anisotropic Transmission Lines: Application to MIC Lines](#)

Click on title for a paper summary.



IEEE

[Contents](#)

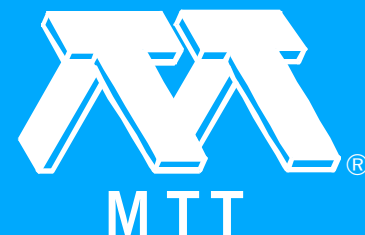
[Publications](#)

[Issues](#)



Papers by Issue

- ❑ Determination of Green's Function Matrix for Multiconductor and Anisotropic Multidielectric Planar Transmission Lines: A Variational Approach
- ❑ Propagation Characteristics of a Microstrip Line Printed on a General Anisotropic Substrate
- ❑ Propagation in Broadside-Coupled Suspended-Substrate Stripline in E-Plane
- ❑ Analysis of Arbitrarily Oriented Microstrip Transmission Lines in Arbitrarily Shaped Dielectric Media Over a Finite Ground Plane
- ❑ Analysis of Finite Conductivity Cylindrical Conductors Excited by Axially-Independent TM Electromagnetic Field
- ❑ Application of Davidenko's Method to the Solution of Dispersion Relations in Lossy Waveguiding Systems
- ❑ Method of Moments as Applied to Electromagnetic Problems
- ❑ Mode Coupling by a Longitudinal Slot for a Class of Planar Waveguiding Structures: Part I--Theory



Contents

Publications

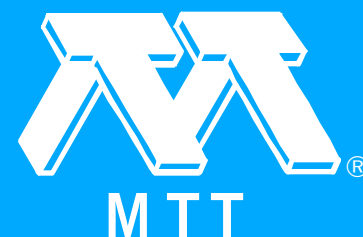
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Mode Coupling by a Longitudinal Slot for a Class of Planar Waveguiding Structures: Part II--Applications
- ❑ Theoretical and Experimental Investigation of Finline Discontinuities
- ❑ Solution of the Finline Step-Discontinuity Problem Using the Generalized Variational Technique
- ❑ Scattering Coefficients of an Inductive Strip in a Finline: Theory and Experiment
- ❑ Comparative Study of Mode-Matching Formulations for Microstrip Discontinuity Problems (Oct. 1985 [T-MTT])
- ❑ Analysis of Microstrip Step Discontinuity by the Modified Residue Calculus Technique
- ❑ Frequency-Dependent Characteristics of Microstrip Discontinuities in Millimeter-Wave Integrated Circuits
- ❑ Full-Wave Analysis of Microstrip Open-End and Gap Discontinuities
- ❑ The Spectral-Domain Approach for Microwave Integrated Circuits



IEEE

Contents

Publications

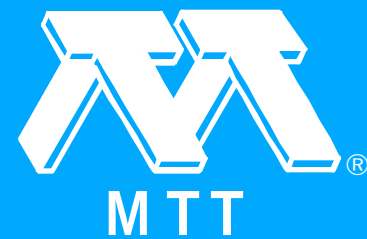
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ Planar Circuits, Waveguide Models, and Segmentation Method
- ☐ Analysis of an Arbitrarily-Shaped Planar Circuit a Time-Domain Approach
- ☐ Use of the FFT to Speed Analysis of Planar Symmetrical 3- and 5-Ports by the Integral Equation Method
- ☐ The Skin-Effect at High Frequencies
- ☐ Approximation Techniques for Planar Periodic Structures
- ☐ Magnetostatic Volume Modes of Ferrite Thin Films with Magnetization Inhomogeneities through the Film Thickness
- ☐ Patent Abstracts (Oct. 1985 [T-MTT])
- ☐ Back Cover (Oct. 1985 [T-MTT])



Contents

Publications

Issues

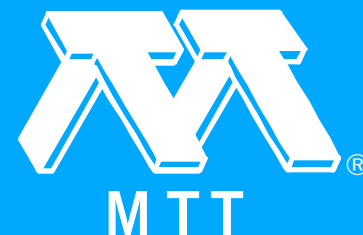
Click on title for a paper summary.



Papers by Issue

Nov. 1985 [T-MTT]

- ☐ [Front Cover \(Nov. 1985 \[T-MTT\]\)](#)
- ☐ [Cutoff Frequency of a Homogeneous Optical Fiber with Arbitrary Cross Section](#)
- ☐ [Approach for Evaluating Effects of Wall Losses on Quarter-Wave Short-Circuit Impedance Standards](#)
- ☐ [On the Higher Order Modes of Elliptical Optical Fibers](#)
- ☐ [A Surface Integral Equations Method for Homogeneous Optical Fibers and Coupled Image Lines of Arbitrary Cross Sections](#)
- ☐ [Time-Domain Perturbational Analysis of Nonuniformly Coupled Transmission Lines](#)
- ☐ [A Rigorous Solution for Dispersive Microstrip](#)
- ☐ [Computer-Aided Testing of Mixers Between 90 and 350 GHz](#)
- ☐ [Polynomial Approximations for the Electric Polarizabilities of Some Small Apertures](#)



[Contents](#)

[Publications](#)

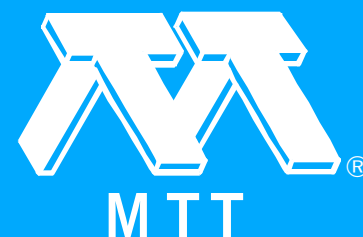
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ [Field in Single-Mode Helically-Wound Optical Fibers](#)
- ❑ [New MIC Power Dividers Using Coupled Microstrip-Slot Lines: Two-Sided MIC Power Dividers](#)
- ❑ [On the Narrow-Band Microwave Filter Design Using a Dielectric Rod](#)
- ❑ [Millimeter-Wave, Shot-Noise Limited, Fixed-Tuned Mixer](#)
- ❑ [A Very Low-Noise Single-Sideband Receiver for 200-260 GHz](#)
- ❑ [A Quasi-Optical Multiplying Slot Array](#)
- ❑ [Equivalent Circuits of Junctions of Slab-Loaded Rectangular Waveguides](#)
- ❑ [The Application of Planar Anisotropy to Millimeter-Wave Ferrite Phase Shifters](#)
- ❑ [Step Response of Lossless Nonuniform Transmission Lines with Power-Law Characteristic Impedance Function \(Short Papers\)](#)
- ❑ [Development and Testing of a 2450-MHz Lens Applicator for Localized Microwave Hyperthermia \(Short Papers\)](#)



[Contents](#)

[Publications](#)

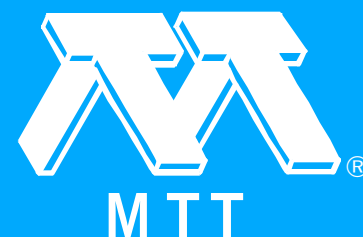
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ On the Analysis and Design of Three Coupled Microstrip Lines (Short Papers)
- ❑ Broad-Band Permittivity Measurements Using the Semi-Automatic Network Analyzer (Short Papers)
- ❑ Design Curves for -3-dB Branchline Couplers (Short Paper)
- ❑ Power Increase of Pulsed Millimeter-Wave IMPATT Diodes (Short Papers)
- ❑ X-Band Low-Noise GaAs Monolithic Frequency Converter (Short Papers)
- ❑ A Novel Rectangular Waveguide with Double T-Septums (Short Papers)
- ❑ Nonradiative Dielectric Waveguide T-Junctions for Millimeter-Wave Applications (Short Papers)
- ❑ A Novel Method for the Analysis of Microwave Two-Port Active Mixers (Short Papers)
- ❑ Single-Stage GaAs Monolithic Feedback Amplifiers (Short Papers)



Contents

Publications

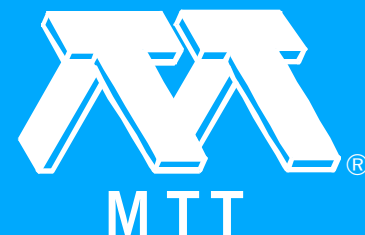
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Homodyne and Heterodyne Studies of GaAs and InP Millimeter-Wave Gunn Mixers (Short Papers)
- ❑ Optimum Noise Measure Terminations for Microwave Transistor Amplifiers (Short Papers)
- ❑ Graph Transformations of Nonuniform Coupled Transmission Line Networks and Their Application (Short Papers)
- ❑ Double-Plane Steps in Rectangular Waveguides and Their Application for Transformers, Irises, and Filters (Comments)
- ❑ Direct Method of Obtaining Capacitance from Finite-Element Matrices (Clarification)
- ❑ A Continuous Comparison Radiometer at 97 GHz (Corrections)
- ❑ Patent Abstracts (Nov. 1985 [T-MTT])
- ❑ Asian Abstracts (Nov. 1985 [T-MTT])
- ❑ Back Cover (Nov. 1985 [T-MTT])



IEEE

Contents

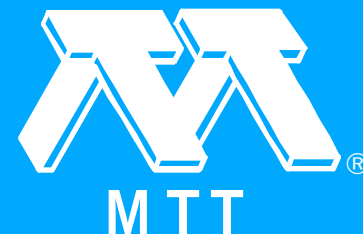
Publications

Issues

Click on title for a paper summary.



Papers by Issue



IEEE

Contents

Publications

Issues

Dec. 1985 [T-MTT] (1985 Symposium Issue)

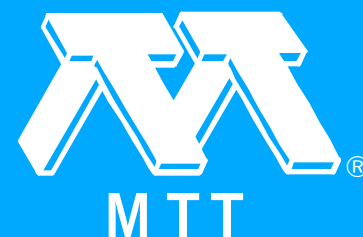
- ☐ [Front Cover \(Dec. 1985 \[T-MTT\]\)](#)
- ☐ [Table of Contents \(Dec. 1985 \[T-MTT\]\)](#)
- ☐ [Editor's Overview \(Dec. 1985 \[T-MTT\]\)](#)
- ☐ [The 1985 MTT-S International Microwave Symposium \(Dec. 1985 \[T-MTT\]\)](#)
- ☐ [Awards \(Dec. 1985 \[T-MTT\]\)](#)
- ☐ [Table of Contents, 1985 MTT Symposium Digest \(Dec. 1985 \[T-MTT\]\)](#)
- ☐ [Coplanar Waveguide Short-Gap Resonator for Medical Applications](#)
- ☐ [Formulation of the Singular Integral Equation Technique for Planar Transmission Lines](#)
- ☐ [Effects of Side-Wall Grooves on Transmission Characteristics of Suspended Striplines \(Dec. 1985 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Design of Microwave Oscillators and Filters Using Transmission-Mode Dielectric Resonators Coupled to Microstrip Lines
- ❑ Finline and Metal Insert Filters with Improved Passband Separation and Increased Stopband Attenuation
- ❑ A Study of W-Band Subharmonically Pumped Mixer
- ❑ A 20--40-GHz Push--Push Dielectric Resonator Oscillator
- ❑ Microwave Active Filters Based on Transversal and Recursive Principles
- ❑ Influence of Conductor Shields on the Q-Factors of a TE /sub 0/ Dielectric Resonator
- ❑ Theoretical Efficiency for Triplers Using Nonideal Varistor Diodes at Submillimeter Wavelengths
- ❑ W-Band (75-110 GHz) Microstrip Components (Dec. 1985 [T-MTT])
- ❑ A Nonlinear GaAs FET Model for Use in the Design of Output Circuits for Power Amplifiers (Dec. 1985 [T-MTT])



IEEE

Contents

Publications

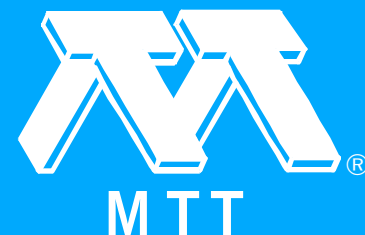
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Optimization of Third-Order Intermodulation Product and Output Power from an X-Band MESFET Amplifier Using Volterra Series Analysis
- ❑ Limitations of Microwave and Millimeter-Wave Mixers Due to Excess Noise (Dec. 1985 [T-MTT])
- ❑ Precision Dielectric Measurements of Nonpolar Polymers in the Millimeter Wavelength Range
- ❑ On the Analysis and Design of Spurline Bandstop Filters
- ❑ Analysis and Design of Four-Port and Five-Port Microstrip Disc Circuits
- ❑ Computer-Aided Design Models for Millimeter-Wave Finlines and Suspended-Substrate Microstrip Lines
- ❑ Toward a Generalized Algorithm for the Modeling of the Dispersive Properties of Integrated Circuit Structures on Anisotropic Substrates
- ❑ Intensity and Distribution of Hybrid-Mode Fields in Dielectric-Loaded Waveguides



IEEE

Contents

Publications

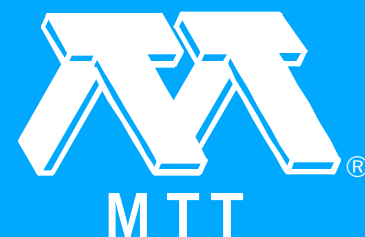
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Loss Mechanisms in Dielectric-Loaded Resonators (Dec. 1985 [T-MTT])
- ❑ Analysis of Dielectric Resonators with Tuning Screw and Supporting Structure (Dec. 1985 [T-MTT])
- ❑ A Simple Network Analog Approach for the Quasi-Static Characteristics of General Lossy, Anisotropic, Layered Structures (Dec. 1985 [T-MTT])
- ❑ Millimeter-Wave Diplexers with Printed Circuit Elements (Dec. 1985 [T-MTT])
- ❑ A Very Wide-Band Microwave MESFET Mixer Using the Distributed Mixing Principle
- ❑ Predistortion Linearize Using GaAs Dual-Gate MESFET for TWTA and SSPA Used in Satellite Transponders
- ❑ Measurement of TDC in Engine by Microwave Technique (Dec. 1985 [T-MTT])
- ❑ Broad-Band RF Match to a Millimeter-Wave SIS Quasi-Particle Mixer



IEEE

Contents

Publications

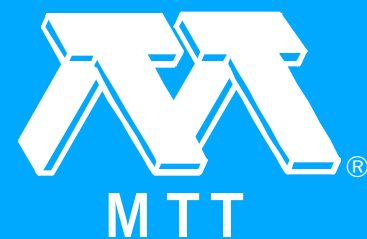
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Modeling and Measurement of Microstrip Transmission-Line Structures
- ❑ Computer-Aided Noise Analysis of Linear Multiport Networks of Arbitrary Topology
- ❑ A SPICE Model for Multiple Coupled Microstrips and Other Transmission Lines (Dec. 1985 [T-MTT])
- ❑ A Superlinearly Convergent Minimax Algorithm for Microwave Circuit Design (Dec. 1985 [T-MTT])
- ❑ A Review of the Panel Discussion on Advances in Millimeter-Wave Subsystems
- ❑ Advances in Millimeter-Wave Systems in Japan
- ❑ Integrated Millimeter-Wave Systems and Subsystems Using Finline and Related E-Plane Technologies
- ❑ Millimeter-Wave Hybrid Microstrip Subsystems
- ❑ Foreword (Dec. 1985 [T-MTT])
- ❑ A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications (Dec. 1985 [T-MTT])



Contents

Publications

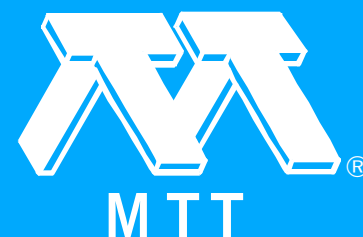
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ A 6.5--16-GHz Monolithic Power Amplifier Module
- ❑ X-Band Monolithic Series Feedback LNA (Dec. 1985 [T-MTT])
- ❑ Design and Process Sensitivity of a Two-Stage 6--18-GHz Monolithic Feedback Amplifier (Dec. 1985 [T-MTT])
- ❑ A Novel MMIC X-Band Phase Shifter
- ❑ A 2 Gb/s Throughput GaAs Digital Time Switch LSI Using LSCFL (Dec. 1985 [T-MTT])
- ❑ Airbridge Gate FET for GaAs Monolithic Circuits
- ❑ C-Band 6-Bit GaAs Monolithic Phase Shifter (Dec. 1985 [T-MTT])
- ❑ Production Technology for High-Yield, High-Performance GaAs Monolithic Amplifiers
- ❑ A 30-GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element
- ❑ Patent Abstracts (Dec. 1985 [T-MTT])



Contents

Publications

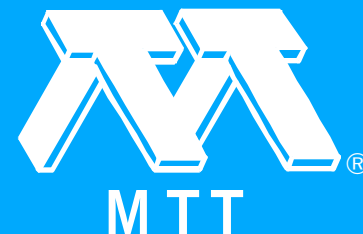
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [Index, IEEE Transactions on Microwave Theory and Techniques, Volume MTT-33, 1985](#)
- ❑ [IEEE Finding Your Way \(Advertisement\) \(Dec. 1985 \[T-MTT\]\)](#)
- ❑ [Congressional Fellowships \(Dec. 1985 \[T-MTT\]\)](#)
- ❑ [Back Cover \(Dec. 1985 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

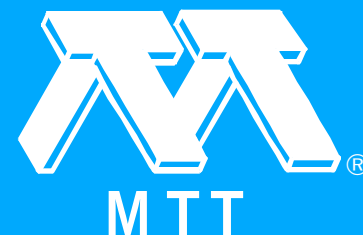
Click on title for a paper summary.



Papers by Issue

1984 [MWSYM]

- ☐ [Front Cover \(1984 \[MWSYM\]\)](#)
- ☐ [Copyright \(1984 \[MWSYM\]\)](#)
- ☐ [A Welcome from the Chairman \(1984 \[MWSYM\]\)](#)
- ☐ [Table of Contents \(1984 \[MWSYM\]\)](#)
- ☐ [MTT-S Symposium - Committees, Awards, Panels, Workshops \(1984 \[MWSYM\]\)](#)
- ☐ [Committees \(1984 \[MWSYM\]\)](#)
- ☐ [Awards \(1984 \[MWSYM\]\)](#)
- ☐ [Panel Sessions \(1984 \[MWSYM\]\)](#)
- ☐ [Workshops \(1984 \[MWSYM\]\)](#)
- ☐ [Plenary Session \(1984 \[MWSYM\]\)](#)
- ☐ [Session 1 -- Joint Session of MTT-S and MW & mmW Monolithic Symposia - Monolithic Millimeter-Wave Circuits](#)
- ☐ [Session 1 Introduction \(1984 \[MWSYM\]\)](#)
- ☐ [A 69 GHz Monolithic FET Oscillator \(1984 \[MWSYM\]\)](#)



IEEE

[Contents](#)

[Publications](#)

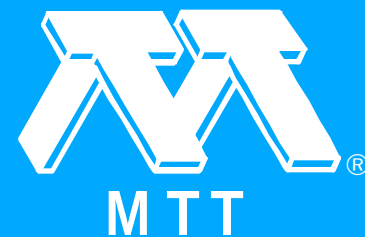
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ A W-Band Monolithic GaAs Crossbar Mixer (1984 [MWSYM])
- ❑ 94 GHz Planar GaAs Monolithic Balanced Mixer (1984 [MWSYM])
- ❑ GaAs Monolithic Frequency Doublers with Series Connected Varactor Diodes (1984 [MWSYM])
- ❑ Session 2 -- Field Theory of Guiding Structures
- ❑ Session 2 Introduction (1984 [MWSYM])
- ❑ Space Domain Decoupling of LSE and LSM Fields in Generalized Planar Guiding Structures
- ❑ Simple and Accurate Expression for the Dominant Mode Properties of Open Groove Guide
- ❑ Fourier Transformed Matrix Method of Finding Propagation Characteristics of Complex Anisotropic Layered Media (1984 [MWSYM])
- ❑ Theory and Experiment Predicting the Cutoff Frequencies for a Rectangular Stripline



Contents

Publications

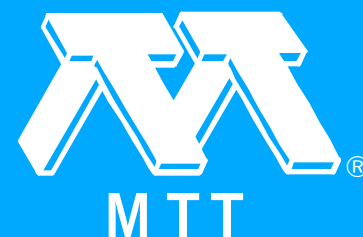
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ The Simulation of Three-Dimensional Wave Propagation by a Scalar TLM Model
- ☐ Session 3 -- Acoustic and Magnetic Devices
- ☐ Session 3 Introduction (1984 [MWSYM])
- ☐ YIG Oscillators: Is a Planar Geometry Better?
- ☐ A 94 GHz Suspended Stripline Circulator
- ☐ Recent Developments in SAW Device Applications
- ☐ Fundamental-Mode Pierce Oscillators Utilizing Bulk-Acoustic-Wave Resonators in the 250 - 300 MHz Range
- ☐ Passive Magnetostatic Wave Pulse Compression Loop
- ☐ Magnetostatic Volume Wave Delay Lines with Stepped Ground Planes
- ☐ Session 4 -- Devices and Monolithic Circuit Elements
- ☐ Session 4 Introduction (1984 [MWSYM])
- ☐ Calibration Methods for Microwave Wafer Probing (1984 [MWSYM])



IEEE

Contents

Publications

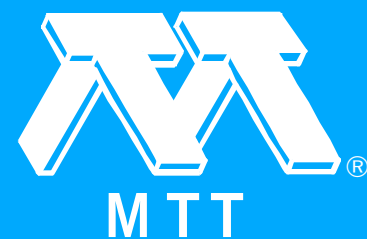
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Low Noise High Electron Mobility Transistors (1984 [MWSYM])
- ❑ High Efficiency GaAs MBE Power FETs for Ka-Band (1984 [MWSYM])
- ❑ Highly Accurate Design of Spiral Inductors for MMIC's with Small Size and High Cut-Off Frequency Characteristics (1984 [MWSYM])
- ❑ Session 5 -- Component Applications of Field Theory
- ❑ Session 5 Introduction (1984 [MWSYM])
- ❑ Coupling Between a Dielectric Image Guide and a Dielectric Resonator
- ❑ Microwave Network Analysis of a Leaky-Wave Structure in Non-Radiative Dielectric Waveguide
- ❑ Mode Propagation through a Step Discontinuity in Dielectric Planar Waveguide (1984 [MWSYM])
- ❑ Planar Circuit Analysis of Microstrip Radial Stub
- ❑ Scattering Parameters of Axial Inductive Strips in Rectangular Waveguide



IEEE

Contents

Publications

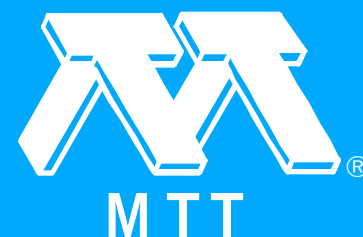
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ Session 6 -- Biomedical Aspects of Microwaves
- ☐ Session 6 Introduction (1984 [MWSYM])
- ☐ Microstrip Spiral Antenna for Local Hyperthermia
- ☐ A Slot Antenna Radiating in Muscle
- ☐ Enhancing the Efficacy of Localized Thermotherapy by Monitoring Changes in Tumor Blood Flow
- ☐ Specific Absorption Rate Distribution in a Model of Man at Various Polarizations
- ☐ A Three-Band Microwave Radiometer for Noninvasive Temperature Measurement
- ☐ Microwave and Infrared Thermograms of Hot Spots in Tissue
- ☐ Session 7 -- Open Forum Session I
- ☐ An Ultra Low Transient GaAs FET VHF Switch
- ☐ Transfer Properties of the Upper-Sideband Varactor Upconverter



IEEE

Contents

Publications

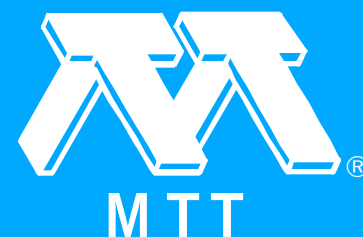
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ A Solid State, X-Band, Exciter/Local Oscillator/Down Converter Subsystem for an Airborne, Coherent Radar Fire Control System
- ❑ Distributed GaAs FET Circuit Model for Broadband and Millimeter Wave Applications
- ❑ V-Band Double-Drift Read Silicon IMPATTs
- ❑ Field Analysis of Millimeter-Wave GaAs Double-Drift IMPATT Diode in the Travelling-Wave Mode
- ❑ W-band GaAs Gunn Diode Harmonic Power Combiners
- ❑ A Wideband 60 GHz 16-Way Power Divider/Combiner Network
- ❑ A Two-Frequency Method for Impedance Measurement in Microwave Frequency-Halving Networks
- ❑ Parallel Feedback FETDRO Design Using 3-Port S-Parameters
- ❑ Optimum Design of Shielded Dielectric Rod and Ring Resonators for Obtaining the Best Mode Separation



Contents

Publications

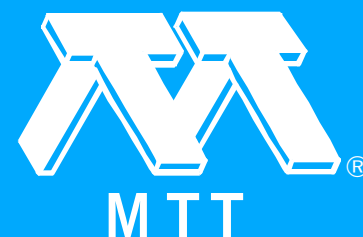
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ Inhomogeneous Open-Ended Resonators as Microwave Sensor Elements
- ☐ A Composite, Multilayered Cylindrical Dielectric Resonator
- ☐ Computed Modal Field Distributions of Isolated Dielectric Resonators
- ☐ Disc-Type Resonator Mount in Rectangular Waveguide
- ☐ 800 MHz Band Channel Dropping Filter Using TM/sub 010/ Mode Dielectric Resonator
- ☐ Dielectric Waveguide Grating Design for Bandstop and Bandpass Filter Applications
- ☐ Lossy, Hybrid Coupled Amplitude Equalizers for Narrow Band Filters
- ☐ Session 8 -- FET Amplifiers
- ☐ Session 8 Introduction (1984 [MWSYM])
- ☐ Reflective Match, Lossy Match, Feedback and Distributed Amplifiers: A Comparison of Multi-Octave Performance Characteristics



IEEE

Contents

Publications

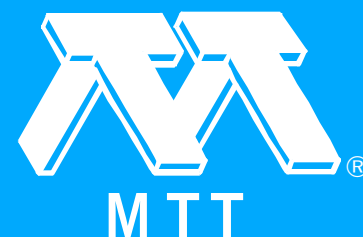
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ A 1-Watt, 8-17 GHz FET Power Amplifier
- ☐ A Solid-State 2-10 GHz 1 Watt TWT Replacement Amplifier
- ☐ Third-Order Nonlinearity of GaAs MESFET's
- ☐ A 1.5 Watt 28 GHz Band FET Amplifier
- ☐ Session 9 -- Filters
- ☐ Session 9 Introduction (1984 [MWSYM])
- ☐ Millimeter Wave Multiplexer with Printed Circuit Elements for the 88 to 100 GHz Frequency Range
- ☐ Broadband Millimeter-Wave E-Plane Bandpass Filters
- ☐ Analysis and Design of Evanescent-Mode Waveguide Dielectric Resonator Filters
- ☐ Dielectric Resonators Band Pass Filter with High Attenuation Rate
- ☐ Design of Nonradiative Dielectric Waveguide Filter
- ☐ Miniature Band Reject Filters Applications for Satellite
- ☐ Session 10 -- Systems



IEEE

Contents

Publications

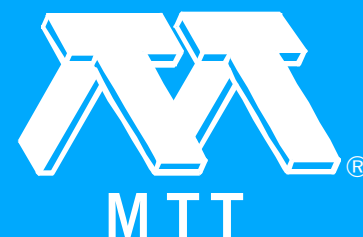
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Session 10 Introduction (1984 [MWSYM])
- ❑ 24-GHz-FM-CW-Radar for Detection of Information for Traffic Purposes
- ❑ A 26-GHz High Performance MIC Transmitter/Receiver for Digital Radio Subscriber Systems (1984 [MWSYM])
- ❑ 17/12 GHz Communication Receiver for Direct Broadcast Satellites
- ❑ A Circularly Polarized Active Antenna Array Using Miniature GaAs FET Amplifiers
- ❑ Session 11 -- Noise and Frequency Stabilization of FET Oscillators
- ❑ Session 11 Introduction (1984 [MWSYM])
- ❑ A Study of the Relation Between Device Low-Frequency Noise and Oscillator Phase Noise for GaAs MESFETs
- ❑ A Single-Resonator GaAs FET Oscillator with Noise Degeneration
- ❑ A New Method of Reducing Phase Noise in GaAs FET Oscillators



IEEE

Contents

Publications

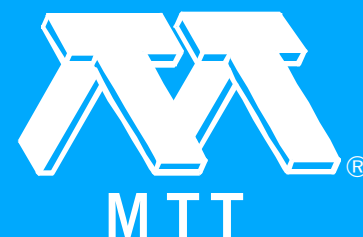
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Digital and Analog Frequency - Temperature Compensation of Dielectric Resonator Oscillators
- ❑ Session 12 -- Communications Filters
- ❑ Session 12 Introduction (1984 [MWSYM])
- ❑ Engine-Block - Dual Mode Dielectric Resonator Loaded Cavity Filter with Nonadjacent Cavity Couplings
- ❑ Narrow Bandpass Filters Using the High-Q Cylindrical TE/sub 0ml/ Resonator Modes
- ❑ Predistortion Techniques for Multicoupled Resonator Filters
- ❑ Novel Lowpass Harmonic Filters for Satellite Application
- ❑ A 12 GHz 12 Channel Contiguous Multiplexer for Satellite Applications
- ❑ A 12-Channel Contiguous Band Multiplexer for Satellite Application
- ❑ Session 13 -- Systems Topics
- ❑ Session 13 Introduction (1984 [MWSYM])
- ❑ A Planar 4.0 GHz Reactively Steered Adaptive Array



IEEE

Contents

Publications

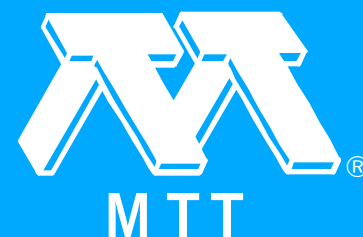
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ R.F. Spectrum of Thermal Noise and Stability of a Microwave Cavity Oscillator
- ❑ TWTA Linearize Using Dual-Gate MESFET
- ❑ Session 14 -- Open Forum Session II
- ❑ Scattering by Dielectric Obstacles Inside Guiding Structures
- ❑ A Useful Equivalence for the Input Reactance Seen by the Coaxial Line in a Broadwall Coaxial-Microstrip Launcher
- ❑ Generalized Spectral Domain Analysis of Planar Structures Having Semi-Infinite Ground Planes
- ❑ An Improved Model for Short- and Open-Circuited Series Stubs in Fin Lines
- ❑ Accurate and Simple Formulas for Dispersion in Fin-Lines
- ❑ Analysis and Synthesis of Tapered Fin-Lines
- ❑ Transmission-Matrix Representation of Fin-Line Discontinuities



IEEE

Contents

Publications

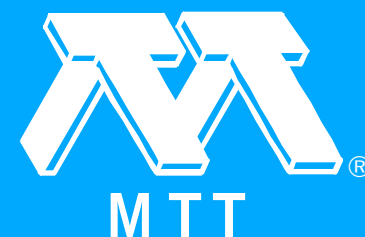
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Power Density Distribution Analysis of Ferrite Loaded Finlines for the Development of Integrated Nonreciprocal Millimeter Wave Elements
- ❑ A Computer-Controlled Integrated Microwave Measurement System in Finline Technique for Automatic Material Parameter Measurements
- ❑ The Method of Lines for the Analysis of Planar Waveguides with Magnetized Ferrite Substrate
- ❑ Magnetostatic Wave Delay Lines Using the Nonuniformly Magnetized YIG Film
- ❑ Edge-Guided Magnetoplasmons on Curved Interfaces in Submillimeter Wave Devices
- ❑ Coherent Transmitter Considerations Utilizing Injection Locked Magnetrons
- ❑ High-Harmonic Gyrotron Oscillators and Gyro-Klystron Amplifiers
- ❑ A Feasibility Study to Monitor Using Microwave Soil Moisture Content Signals



Contents

Publications

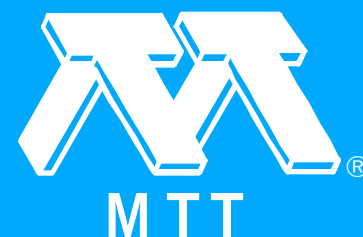
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Performance Characteristics of the Thin-Film, Etched-Circuit Rectenna
- ❑ A Stabilized Broadband Correlator for Medical Microwave Thermography
- ❑ Session 15 -- Semiconductor Control and Frequency Conversion
- ❑ Session 15 Introduction (1984 [MWSYM])
- ❑ Octave-Band High Precision Balanced Modulator
- ❑ Multi-Octave Phase Modulators
- ❑ Novel GaAs FET Phase Detector Operable to Ka Band
- ❑ A FET L-Band Phase/Amplitude Control Module
- ❑ Session 16 -- Millimeter-Wave Applications
- ❑ Session 16 Introduction (1984 [MWSYM])
- ❑ Fundamental Wave Injection Locked 2nd Harmonic Gunn Oscillators at 94 GHz
- ❑ Efficient, Broadband Circuit Performance of Millimeter-Wave IMPATT-Diode Power Amplifiers



IEEE

Contents

Publications

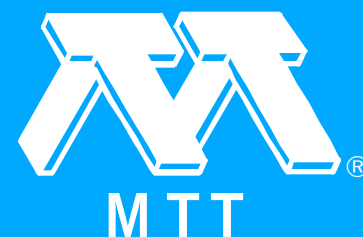
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Active Phase Shifters for the Millimeter and Microwave Bands
- ❑ High Power Broadband, 35 GHz Waveguide Switch Using a Monolithic Diode Array
- ❑ Large Signal Analysis of Nonlinear Microwave Systems
- ❑ Session 17 -- MIC Techniques
- ❑ Session 17 Introduction (1984 [MWSYM])
- ❑ Quasi-Lumped-Element 3- and 4-Port Networks for MIC and MMIC Applications
- ❑ An MMIC/MIC-to-Waveguide Transition for Single- and Dual-Polarization Systems
- ❑ Transverse Resonance Analysis of Finline Discontinuities
- ❑ Quarter Wave Transformers for Matching Transitions Between Waveguides and Fin Lines
- ❑ Synthesis of Optimum Fin-Line Tapers
- ❑ Session 18 -- FET Modeling and Novel Structures
- ❑ Session 18 Introduction (1984 [MWSYM])



Contents

Publications

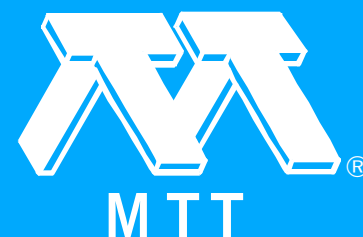
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Self-Consistent FET Models for Amplifier Design and Device Diagnostics
- ❑ Modeling of Nonlinear Distortion in GaAs MESFETs
- ❑ Analysis and Design of GaAs MESFET Mixers
- ❑ A Low Noise AlGaAs/GaAs FET with P⁺-Gate and Selectively Doped Structure
- ❑ A 6 Watt 6 GHz GaAsFET Power Module with GaAs Matching Circuits
- ❑ A C-Band 10 Watt GaAs Power FET
- ❑ Session 19 -- Millimeter-Wave Techniques
- ❑ Session 19 Introduction (1984 [MWSYM])
- ❑ 60 GHz Integrated Circuit Quadriphase Exciter and Modulator
- ❑ Millimeter Wave Silicon Device and Integrated Circuit Technology
- ❑ Monolithic Antennas for Millimeter Wave GaAs Integrated Circuits



IEEE

Contents

Publications

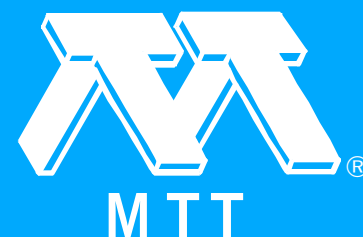
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Reduction of Propagation Losses in Coplanar Waveguide
- ❑ Nonreciprocal Effects in Semiconductor Loaded Waveguide at Millimeter Wavelengths
- ❑ W-Band Broadband Integrated Circuit Receiver
- ❑ Session 20 -- Planar Transmission Line Structures
- ❑ Session 20 Introduction (1984 [MWSYM])
- ❑ Spectral Iterative Technique for Analyzing Multiconductor Microstrip Lines
- ❑ A Spectral Domain Hybrid Field Analysis of Periodically Inhomogeneous Microstrip Lines
- ❑ Theoretical and Experimental Investigation of Asymmetric Coplanar Waveguide
- ❑ Optimized Microstrip Ring-Star 5-Ports for Broadband 6-Port Measurement Applications
- ❑ Fundamental Superstrate Effects on Printed Circuit Antenna Efficiency
- ❑ Session 21 -- IMPATT and Bipolar Oscillators



Contents

Publications

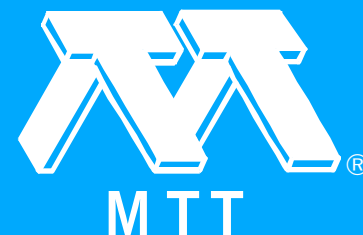
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [Session 21 Introduction \(1984 \[MWSYM\]\)](#)
- ❑ [GaAs IMPATT Diodes Pulsed at 40 GHz](#)
- ❑ [Analysis of a J-Band Pulsed Read IMPATT Oscillator](#)
- ❑ [A Stable Broadband IMPATT Amplifier](#)
- ❑ [8 GHz Low Noise Bias Tuned VCO](#)
- ❑ [Session 22 -- Dielectric Waveguides](#)
- ❑ [Session 22 Introduction \(1984 \[MWSYM\]\)](#)
- ❑ [Powder Core Dielectric Waveguides](#)
- ❑ [Directly-Connected Image Guide 3dB Coupler with very Flat Coupling](#)
- ❑ [Phase-Matched Waveguide Using the Artificial Anisotropic Structure and its Application to Mode Converter](#)
- ❑ [A Transition to Non-Radiating Dielectric Waveguide](#)
- ❑ [Session 23 -- Microwave and Millimeter-Wave Measurements](#)
- ❑ [Session 23 Introduction \(1984 \[MWSYM\]\)](#)



[Contents](#)

[Publications](#)

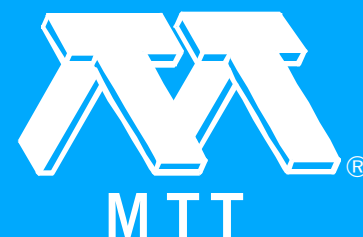
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ☐ [An Analysis of the AC Bandwidth of Transmission Line Discriminators for FM Noise Measurement](#)
- ☐ [Optimizing an Electromagnetic Field Sensor for Microwave Amplitude and Phase Detection via Fiber Optic Transmission Link](#)
- ☐ [Large Signal Pulsed Network Analyzer Operation](#)
- ☐ [Measurement of the Complex Dielectric Constant of Casting Resins at Millimeter Wavelengths Low-Loss](#)
- ☐ [Dielectric Properties of Millimeter Wave Materials](#)
- ☐ [Application of a Dielectric Resonator on Microstrip Line for a Measurement of Complex Permittivity](#)
- ☐ [Session 24 -- Optical and Submillimeter Wave Technology](#)
- ☐ [Analog Microwave Fiber Optic Communications Links](#)
- ☐ [A New Method for the Modal Analysis Having Symmetrically Distributed of Optical Fibers Multiple Cores](#)
- ☐ [2.24 Gbit/s Direct Modulation of Injection Laser by Monolithic Silicon Multiplexer](#)



IEEE

[Contents](#)

[Publications](#)

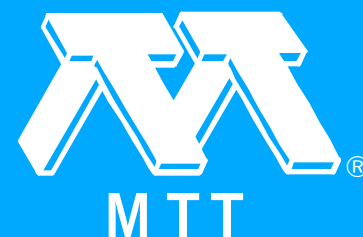
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ☐ Direct DC to RF Conversion by Picosecond Optoelectronic Switching
- ☐ Polarization-Sensitive Imaging Arrays
- ☐ Session 25 -- Millimeter-Wave Mixers
- ☐ Session 25 Introduction (1984 [MWSYM])
- ☐ A Comparison of the Measured and Theoretical Performance of a 140-220 GHz Schottky Diode Mixer
- ☐ Noise Measurements and Noise Mechanisms in Microwave Mixer Diodes
- ☐ A D-Band Millimeter-Wave Crossbar Mixer
- ☐ Low-Noise, Fixed Tuned, Broadband Mixer for 200-270 GHz
- ☐ Session 26 -- Six-Port Measurement Techniques
- ☐ Session 26 Introduction (1984 [MWSYM])
- ☐ A Dual Six-Port Automatic Network Analyzer and its Performance Tests



Contents

Publications

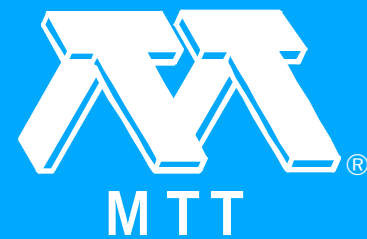
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ Evaluation of a 94 GHz Diode-Based Dual Six-Port Network Analyzer
- ☐ A New Real-Time Six-Port A N A Method
- ☐ A Calibration Method for a Six-Port Reflectometer Which the Effect of Power Measurement Errors Minimizes
- ☐ Theoretical Comparison of Six-Port Reflectometer Junction Designs
- ☐ MTT-S International Symposia Future Locations (1984 [MWSYM])
- ☐ Symposium Schedule (1984 [MWSYM])
- ☐ Golden Gate Ballroom - Hyatt Regency (1984 [MWSYM])
- ☐ Main Floor, San Francisco Civic Auditorium (1984 [MWSYM])
- ☐ Exhibition List (1984 [MWSYM])
- ☐ Exhibition Guide (1984 [MWSYM])
- ☐ Index of Authors (1984 [MWSYM])



Contents

Publications

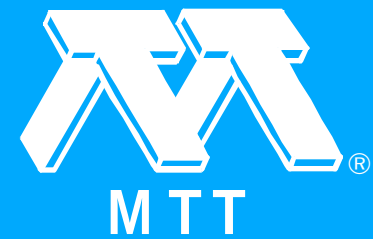
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [Schedule of Additional Activities and Meetings \(1984 \[MWSYM\]\)](#)
- ❑ [Back Cover \(1984 \[MWSYM\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

Click on title for a paper summary.



Papers by Issue



IEEE

Contents

Publications

Issues

1985 [MWSYM]

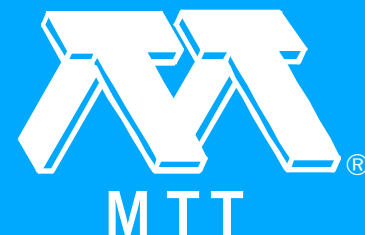
- ☐ [Front Cover \(1985 \[MWSYM\]\)](#)
- ☐ [Copyright \(1985 \[MWSYM\]\)](#)
- ☐ [A Welcome from the Chairman \(1985 \[MWSYM\]\)](#)
- ☐ [Table of Contents \(1985 \[MWSYM\]\)](#)
- ☐ [1985 Symposium Committees, Awards, Panel Sessions, and Workshops \(1985 \[MWSYM\]\)](#)
- ☐ [Committees \(1985 \[MWSYM\]\)](#)
- ☐ [Awards \(1985 \[MWSYM\]\)](#)
- ☐ [New Fellows in IEEE/MTT-S \(1985 \[MWSYM\]\)](#)
- ☐ [Panel Sessions \(1985 \[MWSYM\]\)](#)
- ☐ [Workshops \(1985 \[MWSYM\]\)](#)
- ☐ [1985 IEEE Microwave and Millimeter Wave Monolithic Circuits Symposium \(Announcement\) \(1985 \[MWSYM\]\)](#)
- ☐ [Technical Program Contents \(1985 \[MWSYM\]\)](#)
- ☐ [Session A -- Plenary Session](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Session B -- Monolithic Receiver Circuits
- ❑ X-band Monolithic Series Feedback LNA (1985 [MWSYM])
- ❑ 0.5-2.6GHz Si-Monolithic Wideband Amplifier IC (1985 [MWSYM])
- ❑ A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications (1985 [MWSYM])
- ❑ Air Bridge Gate FET for GaAs Monolithic Circuits (1985 [MWSYM])
- ❑ Session C -- Biomedical Aspects of Microwaves
- ❑ Microwave Radiometric Detection of Thermal Asymmetry of Varicocele
- ❑ Inversion of Microwave Thermographic Data by the Singular Function Method
- ❑ Exact Image Theory for Field Calculation in Layered Biological Medium
- ❑ Coplanar Waveguide Short Gap Resonator for Medical Applications



Contents

Publications

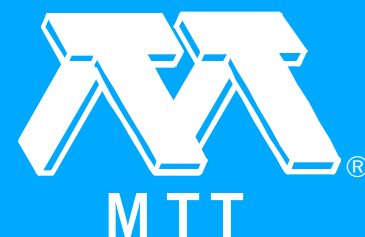
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Direct Contact Applicator with Convergent Effect of EM Field for Microwave Hyperthermia
- ❑ A Microwave Apparatus for Producing Uniform Hyperthermic Temperatures Over Large Surfaces
- ❑ Session D -- Communication Systems
- ❑ A Novel Technique to Realize SMSK Conversion and Matched Filters at Microwave Frequencies
- ❑ Temperature Controlled Predistortion Circuits for 64 QAM Microwave Power Amplifiers
- ❑ Up/Down Converter for SCPC Applications
- ❑ MIC Assembly for 12-GHz Direct Broadcast Satellite Receiver
- ❑ Session E -- Monolithic Millimeter-Wave Circuits
- ❑ A W-Band Monolithic Balanced Mixer (1985 [MWSYM])
- ❑ A 30 GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element (1985 [MWSYM])



Contents

Publications

Issues

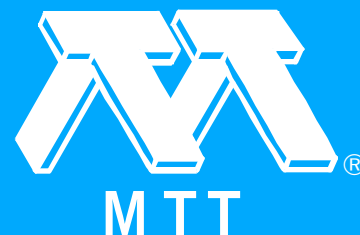
Click on title for a paper summary.



Papers by Issue

- ☐ Dual Function Mixer Circuit for Millimeter Wave Transceiver Applications (1985 [MWSYM])
- ☐ High Efficiency Millimeter Wave Monolithic IMPATT Oscillators (1985 [MWSYM])
- ☐ Session F -- Guided Waves
- ☐ Wave Interaction in Doubly Periodic Structures
- ☐ Formulation of the Singular Integral Equation Technique for General Planar Transmission Lines
- ☐ Development of a Coupler in Finline Technique
- ☐ The Influence of Metallization Thickness and Mounting Grooves on the Characteristics of Finline
- ☐ Effects of Side-Wall Grooves on Transmission Characteristics of Suspended Strip Lines (1985 [MWSYM])
- ☐ Session G -- Integrated Microwave Systems
- ☐ Integrated Ka-Band Front End with Monolithic Mixer
- ☐ A Low Cost, Accurate, Target Detecting Device for Altimetry and Fuzing

Click on title for a paper summary.



Contents

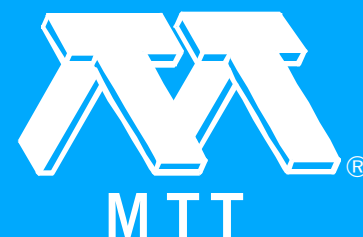
Publications

Issues



Papers by Issue

- ❑ Miniature Millimeter-Wave Integrated Circuit Wideband Downconverters
- ❑ Session H -- Open Forum I
- ❑ Characterisation of Large-Signal Bipolar Transistors in L-Band
- ❑ A New Approach for the Design of Microwave and Filters Using Dielectric Oscillators Resonators
- ❑ Gaussian Beam Imaging with Cylindrical Optics
- ❑ Planar Integrated Microwave Components for Terrestrial and Satellite Application
- ❑ Optoelectronic Techniques for Microwave and Millimeter-Wave Applications
- ❑ A New Class of Optimized Finline and E-Plane Metal Insert Filters with Improved Characteristics
- ❑ Microwave Characterization of Liquid Films
- ❑ Investigation and Evaluation of Low Loss Interconnects on Soft Substrates Clad to Aluminum



Contents

Publications

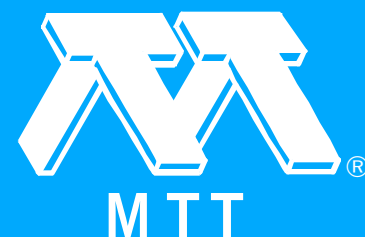
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ GaAs MESFET Optimization and New Device Applications Based on Wave Property Studies
- ❑ Microwave Heating System Using Lens Applicator for Localized Hyperthermia
- ❑ Sensitivity Analysis of a 15.0 GHz Monopulse Radar Receiver Using a Logarithmic Amplifier Detector Scheme
- ❑ The Relationship of Magnetotransconductance Mobility Profiles and RF Performance of GaAs FETs
- ❑ Performance of Microwave FM Signal Frequency Division Circuits
- ❑ Optically Controlled Microwave Devices and Circuits
- ❑ Multiconductor Planar Transmission-Line Structures for High-Directivity Coupler Applications
- ❑ A Dual-Gate FET Constant Phase Variable Power Amplifier
- ❑ A Study of W Band Subharmonically Pump Mixer
- ❑ Session I -- Acoustics and Ferrites



IEEE

Contents

Publications

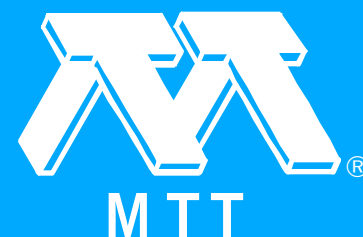
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ A High Performance Hexagonal Ferrite Tunable Bandpass Filter for the 40-60 GHz Region
- ❑ 140 and 220 GHz Ferrite Components
- ❑ Millimetric Non-Reciprocal Coupled-Slot Fin-Line Components
- ❑ UHF Film Resonator Evaluation and Resonator-Controlled Oscillator and Filter Design Using Computer-Aided Design Techniques
- ❑ Stable Microwave Source Using High Overtone Bulk Resonators
- ❑ SAW Resonator Filters: Applications and Capabilities
- ❑ A 16 Tap Hybrid Programmable Transversal Filter Using Monolithic GaAs Dual-Gate FET Array
- ❑ Session J -- FET Oscillators
- ❑ A Novel GaAs FET Oscillator with Low Phase Noise
- ❑ An Approach to Realizing Multi-Octave Performance in GaAs-FET YIG-Tuned Oscillators



Contents

Publications

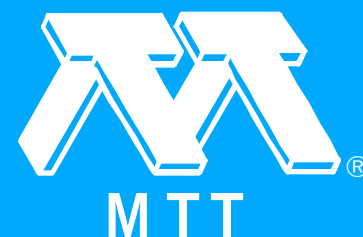
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Miniature FET Oscillator Stabilized by a Dual Mode Dielectric Resonator Loaded Cavity
- ❑ Push-Push Dielectric Resonator Oscillator
- ❑ Session K -- Microwave Filter Networks
- ❑ Distributed Microwave Active Filters with GaAs FETs
- ❑ Dielectric Waveguide Band-Pass Filters with Broad Stop Bands
- ❑ Influence of Conductor Shields on the Q-Factors of a $Te/sub 0/$ Dielectric Resonator
- ❑ A Bandpass Filter Using YIG Film Grown by LPE
- ❑ 800 MHz Band Dielectric Channel Dropping Filter Using $TM/sub 110/$ Triple Mode Resonance
- ❑ Session L -- Optical and Submillimeter Wavelength Technology
- ❑ Optics for Microwave Applications



Contents

Publications

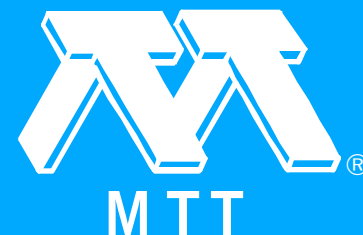
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Acoustooptic Interaction of Acoustic Surface Waves with Guided Optical Waves in Planar Tantalum-Pentoxide Waveguides
- ❑ Analog Signals Transmission Over Optical Fiber Systems
- ❑ A New Approach to Dispersion Analysis of Graded Index Optical Fibers
- ❑ A Very Low-Noise, Fixed-Tuned Mixer for 240-270 GHz
- ❑ Theoretical Efficiency for Triplers Using Real Varister Diodes at Submillimeter Wavelengths
- ❑ Session M -- FET Amplifiers
- ❑ A 30 GHz Low Noise FET Amplifier
- ❑ A 1 Watt 28 GHz Band Amplifier Using Clustered FETs
- ❑ Wide-Band Limiting Amplifiers with Low Second Harmonic Distortion, Utilizing GaAs MMIC Limiters
- ❑ High-Power and High-Efficiency Ion-Implanted Power GaAs FETs for C and X Bands



IEEE

Contents

Publications

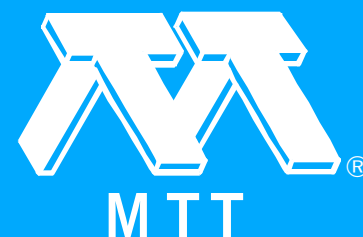
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ High-Voltage FET Amplifiers for Satellite and Phased-Array Applications
- ❑ Session N -- Filters and Multiplexers
- ❑ Dielectric Resonator Output Multiplexer for C-Band Satellite Applications
- ❑ A Ku-Band Contiguous Multiplexer Employing Low-Loss, Odd-Order, Mixed Dual-Triple Mode Cavity Filters
- ❑ Design and Performance of a W-Band Broadband Finline Diplexer with Over 20 GHz Bandwidth
- ❑ Practical Aspects and Limitations of Dual Mode Dielectric Resonator Filters
- ❑ Two-Path Cutoff Waveguide Dielectric Resonator Filters (1985 [MWSYM])
- ❑ Session O -- Millimeter-Wave Component Technology I
- ❑ A High Efficiency Frequency Doubler for 100 GHz
- ❑ GaAs Gunn Oscillators Reach the 140 GHz Range



Contents

Publications

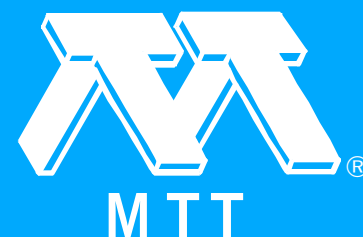
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ W-Band (75 to 110 GHz) Microstrip Components (1985 [MWSYM])
- ❑ Wideband Electronically Tunable GaAs Gunn VCO's at W-Band (75-110GHz)
- ❑ An 18-40 GHz Double Balanced Microstrip Mixer
- ❑ Session P -- Solid-State Sources and Amplifiers
- ❑ A 0.5 μm Silicon Bipolar Transistor for Low Phase Noise Oscillator Applications Up to 20 GHz
- ❑ 500 MHz, 100 W X-Band Solid State Amplifier
- ❑ EHF Solid State Amplifier
- ❑ Gain Saturation in Circulator-Coupled Reflection Amplifiers
- ❑ Session Q -- Computer Modeling and Design of Nonlinear Networks
- ❑ A New Frequency Domain Approach to the Analysis of Nonlinear Microwave Circuits
- ❑ A Nonlinear GaAs FET Model for Use in the Design of Output Circuits for Power Amplifiers (1985 [MWSYM])



Contents

Publications

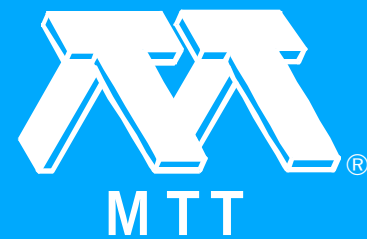
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Power Characterisation of a MESFET Amplifier Using Small Signal Measurements and Volterra Series
- ❑ Circuit Design to Reduce 3rd Order Intermodulation Distortion in FET Amplifiers
- ❑ A General CAD Tool for Large-Signal GaAs MESFET Circuit Design
- ❑ Session R -- Millimeter-Wave Component Technology II
- ❑ Contiguous-Domain Transferred-Electron Oscillators
- ❑ GaAs Monolithic Transferred-Electron Devices for Millimeter Wave Applications
- ❑ Limitations of Microwave and Millimeter-Wave Mixers Due to Excess Noise (1985 [MWSYM])
- ❑ Comparative Study of Mode Matching Formulations for Microstrip Discontinuity Problems (1985 [MWSYM])
- ❑ Dielectric Measurements of Common Polymers at Millimeter Wavelength
- ❑ Session S -- Open Forum II



IEEE

Contents

Publications

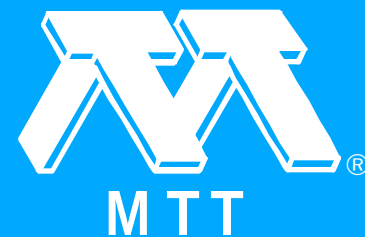
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Analysis and Design of Spurline Bandstop Filters
- ❑ Analysis and Design of Five Port Circular Disc Structures for Six-Port Analyzers
- ❑ CAD Models for Millimeter-Wave Suspended Substrate Microstrip Lines and Fin-Lines
- ❑ A Generalized Algorithm for the Modeling of the Dispersive Characteristics of Microstrip, Inverted Microstrip, Stripline, Slotline, Finline, and Coplanar Waveguide Circuits on Anisotropic Substrates
- ❑ Field Distribution of Hybrid Modes in Dielectric Loaded Waveguides
- ❑ Loss Mechanisms in Dielectric Loaded Resonators (1985 [MWSYM])
- ❑ Self Equalized, Equiripple Microwave Filter
- ❑ The Use of Higher Resonant Modes in Measuring the Dielectric Constant of Dielectric Resonators



Contents

Publications

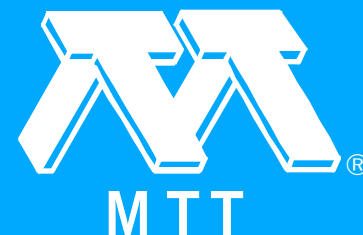
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ A High Performance - Wide Band - Diplexing - Tracking - Depolarization Correcting Satellite Communication Antenna Feed
- ❑ MICROS 3 - A CAD/CAM Program for Fast Realization of Microstrip Masks
- ❑ Analysis of Dielectric Resonators with Tuning Screw and Supporting Structure (1985 [MWSYM])
- ❑ Complete Determination of Circulator Eigenvalues With-Out Transmission Phase Measurement
- ❑ Finline Taper Design Made Easy
- ❑ Equivalent Circuit of Broadside-Coupled Microstrip Open Ends
- ❑ Analysis and Synthesis of Guides with Closely Spaced Discontinuities
- ❑ Stokes Vector Representation of the Six-Port Network Analyzer: Calibration and Measurement
- ❑ Short Millimeter Wave Region High Accuracy Power Meter with Self-Calibration Function



Contents

Publications

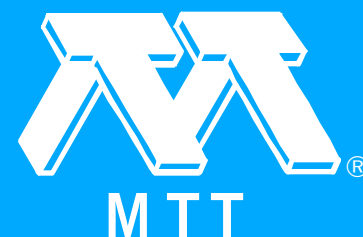
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ A Simple Network Analog Approach for the Quasi-Static Characteristics of General Lossy, Anisotropic, Layered Structures (1985 [MWSYM])
- ❑ TM/sub 0 gamma delta/ Mode of Cylindrical Dielectric Resonators Applications to Microwave Filters
- ❑ Collinearly Excited Edge Coupled Resonators
- ❑ Session T -- Solid-State Device Topics
- ❑ 20 GHz GaAs IMPATT Diode Development for Solid State Transmitter
- ❑ Controlled Bias Preheating for Variable Duty Factor IMPATT Transmitter
- ❑ High Speed Varactor Tuned Notch Filter
- ❑ Dynamic Diode Mixer Damage Measurements
- ❑ Session U -- Low Noise HEMT Amplifiers
- ❑ X-Band Noise Parameters of HEMT Devices at 300K and 12.5K



IEEE

Contents

Publications

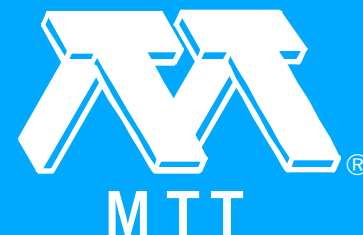
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ Low Noise Amplifiers Using Two Dimensional Electron Gas FETs
- ☐ Broadband HEMT and GaAs FET Amplifiers for 18 - 26.5 GHz
- ☐ A 20 GHz Peltier-Cooled Low Noise HEMT Amplifier
- ☐ 36.0 - 40.0 GHz HEMT Low Noise Amplifier
- ☐ Session V -- Continuous and Discontinuous Microstrip Structures
- ☐ A Perturbation Theory for Microstrip Propagation
- ☐ Surface Wave Losses at Discontinuities in Millimeter Wave Integrated Transmission Lines
- ☐ Millimeter-Wave Diplexers with Printed Circuit Elements (1985 [MWSYM])
- ☐ Microstrip Discontinuity Modelling for Millimetric Integrated Circuits
- ☐ Convergence of Numerical Solutions of Open-Ended Waveguide by Modal Analysis and Hybrid Modal-Spectral Techniques (1985 [MWSYM])



IEEE

Contents

Publications

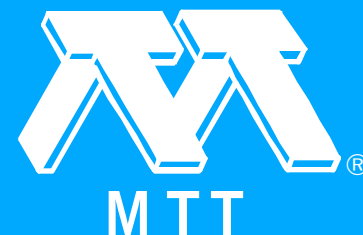
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ Session W -- Network Analyzer Techniques
- ☐ Pulse Network Analyzer
- ☐ Vector Method of Characterizing Nonlinearity in Microwave Power Devices
- ☐ Calibrating a Six-Port Reflectometer Using Three Known Loads
- ☐ Waveguide Star Junction Used in Ka Band Dual Six Port Measurements
- ☐ Session X -- FET Applications
- ☐ Miniature Ceramic Circuit Components for Ku Band Receivers
- ☐ A 4.5 to 18 GHz Phase Shifter
- ☐ A Practical Microwave Travelling-Wave MESFET Gate Mixer
- ☐ Broadband and Broad Dynamic Range GaAs Dual-Gate MESFET Linearize for TWTA and SSPA Used in Satellite Transponder



Contents

Publications

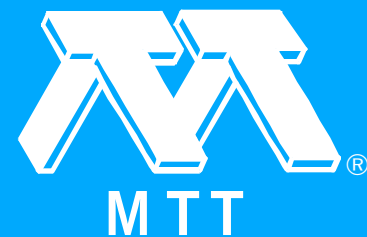
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ 30 dB of AGC from an FET
- ❑ Session Y -- Waveguiding Structures
- ❑ Leakage from a Gap in NRD Guide
- ❑ Microwave Network Representation of Discontinuity in Open Dielectric Waveguides and its Applications to Periodic Structures
- ❑ Scattering of Surface Waves by Nonuniform Waveguides
- ❑ Finite Element Analysis Applied to Gyroelectrically Loaded Waveguiding Structures
- ❑ On the Question of the Dyadic Operation of Dyadic Green's Functions at the Source Region
- ❑ Session Z -- Microwave Measurements
- ❑ An Improved Method of Mixer Noise Figure Measurement As Applied to Beam Lead Schottky Diodes at 94 GHz.
- ❑ Quasi-Optical Slot Ring Mixer Noise Figure Measurements
- ❑ Dynamic Measurements of Complex Permittivity and Temperature During Microwave Heating



IEEE

Contents

Publications

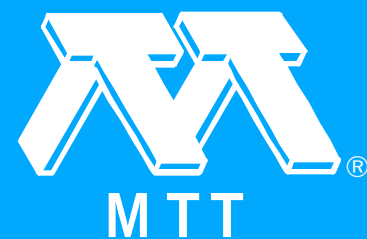
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Measurement of TDC in Engine by Microwave Technique (1985 [MWSYM])
- ❑ A Novel Cavity Resonator Measurement Method for Leaky Waveguides
- ❑ Session AA -- Solid-State Device Applications (Non-FET)
- ❑ Linear Analog Hyperabrupt Varactor Diode Phase Shifters
- ❑ A Reflective Diode Linearize for Spacecraft Applications
- ❑ An Experimental Linearized Power Upconverter for SSB Signals
- ❑ A Simple Integrated Matching Element for SIS Quasiparticle Mixers
- ❑ Session BB -- Microwave Integrated Circuit Techniques
- ❑ An Experimental Investigation of Microstrip Properties on Soft Substrates from 2 to 40 GHz
- ❑ Modelling and Measurement of Microstrip Transmission Line Structures
- ❑ A New Slotline-Microstrip Frequency Halver



Contents

Publications

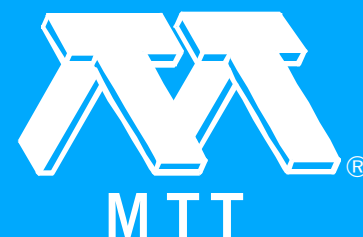
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ Microstrip Mixer Design with Image Cancellation and Low Conversion Loss
- ❑ Small Size VCO Module for 900 MHz Band Using Coupled Microstrip-Coplanar Lines
- ❑ Frequency Agile Circular Microstrip Antennas
- ❑ Session CC -- Computer-Aided Design Techniques for Linear Circuits
- ❑ A CAD Solution to the Generalized Problem of Noise Figure Calculation
- ❑ A SPICE Model for Multiple Coupled Microstrips and Other Transmission Lines (1985 [MWSYM])
- ❑ MIDAS a New Microwave/RF CAD Program
- ❑ A Novel CAD Tool and Concept Compatible with the Requirements of Multilayer GaAs MMIC Technology
- ❑ Addendum (1985 [MWSYM])
- ❑ The Design and Performance of a Double Balanced Mixer Using FETs



Contents

Publications

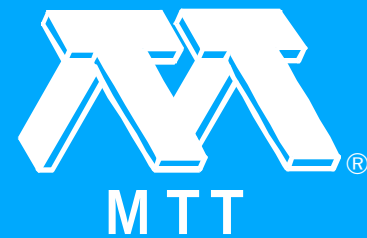
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ [A Superlinearly Convergent Minimax Algorithm for Microwave Circuit Design \(1985 \[MWSYM\]\)](#)
- ❑ [A Broadband Homodyne Network Analyser with Binary Phase Modulation](#)
- ❑ [Index of Authors \(1985 \[MWSYM\]\)](#)
- ❑ [Exhibition Guide \(1985 \[MWSYM\]\)](#)
- ❑ [Back Cover \(1985 \[MWSYM\]\)](#)



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

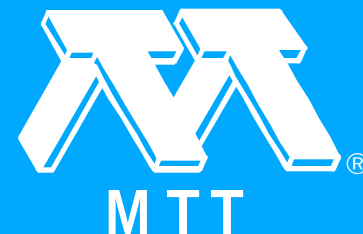
Click on title for a paper summary.



Papers by Issue

1985 [MCS]

- ☐ [Front Cover \(1985 \[MCS\]\)](#)
- ☐ [Copyright \(1985 \[MCS\]\)](#)
- ☐ [Message from the General Chairman \(1985 \[MCS\]\)](#)
- ☐ [Committees \(1985 \[MCS\]\)](#)
- ☐ [Message from the Technical Program Chairman \(1985 \[MCS\]\)](#)
- ☐ [Committee Photographs \(1985 \[MCS\]\)](#)
- ☐ [Table of Contents \(1985 \[MCS\]\)](#)
- ☐ [Index of Authors \(1985 \[MCS\]\)](#)
- ☐ [Monolithic GaAs Dual-Gate FET Variable Power Amplifier Module](#)
- ☐ [30 GHz Multi-Bit Monolithic Phase Shifters](#)
- ☐ [C-Band 6-Bit GaAs Monolithic Phase Shifter \(1985 \[MCS\]\)](#)
- ☐ [A Novel MMIC, X-Band, Phase Shifter](#)



IEEE

[Contents](#)

[Publications](#)

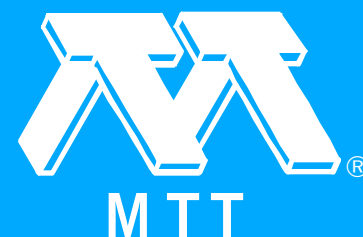
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ Nonlinear Slow-Wave Propagation on Periodic Schottky Coplanar Lines
- ❑ A 3-Bit GaAs Analog-to-Digital Converter
- ❑ A 2 Gb/s Throughput GaAs Digital Time Switch LSI Using LSCFL (1985 [MCS])
- ❑ A 2-W Ku-Band Monolithic GaAs FET Amplifier
- ❑ A Ka-Band GaAs Power MMIC
- ❑ High Power Distributed Amplifier Using MBE Synthesized Material
- ❑ A Miniaturized 6.5 - 16 GHz Monolithic Power Amplifier Module
- ❑ Design and Process Sensitivity of a Two Stage 6-18 GHz Monolithic Feedback Amplifier (1985 [MCS])
- ❑ Production Technology Development for High Yield, High Performance X-Band Monolithic Power and Low Noise Amplifiers
- ❑ Power Saturation Characteristics of GaAs/AlGaAs High Electron Mobility Transistors



Contents

Publications

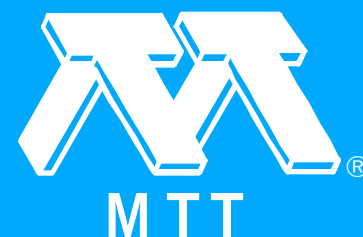
Issues

Click on title for a paper summary.



Papers by Issue

- ❑ X-Band Monolithic Series Feedback LNA (1985 [MCS])
- ❑ 0.5-2.6GHz Si-Monolithic Wideband Amplifier IC (1985 [MCS])
- ❑ A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications (1985 [MCS])
- ❑ Air Bridge Gate FET for GaAs Monolithic Circuits (1985 [MCS])
- ❑ A W-Band Monolithic Balanced Mixer (1985 [MCS])
- ❑ A 30 GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element (1985 [MCS])
- ❑ Dual Function Mixer Circuit for Millimeter Wave Transceiver Applications (1985 [MCS])
- ❑ High Efficiency Millimeter Wave Monolithic IMPATT Oscillators (1985 [MCS])
- ❑ Back Cover (1985 [MCS])



Contents

Publications

Issues

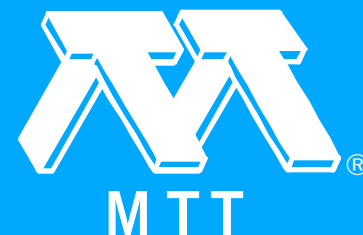
Click on title for a paper summary.



Papers by Issue

1986 [MCS]

- ☐ [Front Cover \(1986 \[MCS\]\)](#)
- ☐ [Copyright \(1986 \[MCS\]\)](#)
- ☐ [Message from the General Chairman \(1986 \[MCS\]\)](#)
- ☐ [Committees \(1986 \[MCS\]\)](#)
- ☐ [Message from the Technical Program Chairman \(1986 \[MCS\]\)](#)
- ☐ [Committee Photographs \(1986 \[MCS\]\)](#)
- ☐ [Table of Contents \(1986 \[MCS\]\)](#)
- ☐ [Microwave/Millimeter Wave Monolithic Integrated Circuits \(MIMIC\) Program \(1986 \[MCS\]\)](#)
- ☐ [High Performance Monolithic Power Amplifier Using a Unique Ion Implantation Process \(1986 \[MCS\]\)](#)
- ☐ [A Low Cost, 3-7 GHz, 1/2 Watt MMIC GaAs Amplifier](#)
- ☐ [A Power Distributed Amplifier Using Constant-R Networks](#)



IEEE

[Contents](#)

[Publications](#)

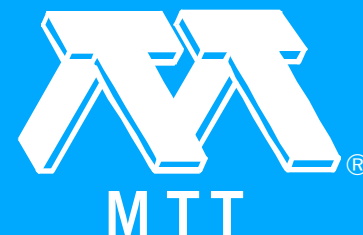
[Issues](#)

Click on title for a paper summary.



Papers by Issue

- ❑ A Stable 2-26.5 GHz Two-Stage Dual-Gate Distributed MMIC Amplifier
- ❑ A High Gain, Monolithic Distributed Amplifier Using Cascode Active Elements (1986 [MCS])
- ❑ A High Performance 2-18.5 GHz Distributed Amplifier, Theory and Experiment (1986 [MCS])
- ❑ Optical Technology for Microwave Applications
- ❑ A High Speed GaAs Monolithic Transimpedance Amplifier
- ❑ Monolithic Optoelectronic Receiver for Gbit Operation
- ❑ A 30 GHz Monolithic Receiver
- ❑ 30 GHz Monolithic Balanced Mixers Using an Ion-Implanted FET-Compatible 3-Inch GaAs Wafer Process Technology
- ❑ A W-Band Monolithic GaAs PIN Diode Switch
- ❑ High Volume, Low Cost, MMIC Receiver Front End
- ❑ Cost-Effective High Performance Monolithic X-Band Low Noise Amplifiers (1986 [MCS])



Contents

Publications

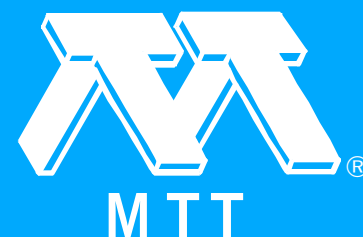
Issues

Click on title for a paper summary.



Papers by Issue

- ☐ Fabrication of Low Power, High-Speed GaAs LSI On-Board Baseband Switching Matrix
- ☐ GaAs Phase-Coherent Microwave Multiple-Signal Generation Using All-Pass Networks
- ☐ A 2 to 8 GHz Leveling Loop Using a GaAs MMIC Active Splitter and Attenuator
- ☐ GaAs Ultra High Frequency Dividers with Advanced SAINT FETs (1986 [MCS])
- ☐ A Closed-Form Expression for Representing the Distributed Nature of the Spiral Inductor
- ☐ Silicon High Resistivity Substrate Millimeter-Wave Technology (1986 [MCS])
- ☐ Low Noise Microwave HIFET Using MOCVD
- ☐ Planar MMIC Hybrid Circuit and Frequency Converter
- ☐ Index of Authors (1986 [MCS])
- ☐ Back Cover (1986 [MCS])



IEEE

Contents

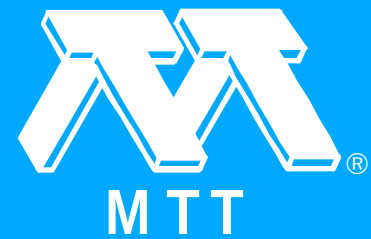
Publications

Issues

Click on title for a paper summary.



Paper Index



IEEE

Contents

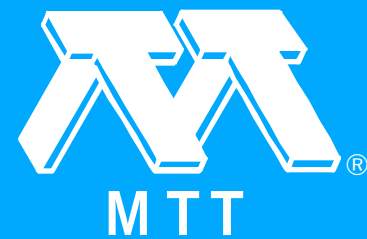
Publications

Issues

A B C D E F G H I
J K L M N O P Q R
S T U V W X Y Z
0 1 2 3 4
5 6 7 8 9

Colored letters and/or numbers are active links to the index.

Paper Index



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

0

- ☐ [0.5-2.6GHz Si-Monolithic Wideband Amplifier IC \(1985 \[MCS\]\)](#)
- ☐ [0.5-2.6GHz Si-Monolithic Wideband Amplifier IC \(1985 \[MWSYM\]\)](#)

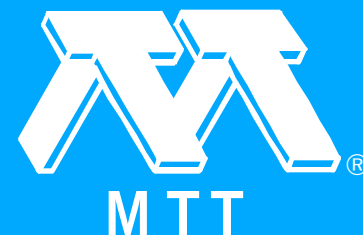
1

- ☐ [1.5-GHz GaAs Surface Acoustic Wave Delay Lines \(Short Papers\)](#)
- ☐ [12-GHz-Band GaAs Dual-Gate MESFET Monolithic Mixers](#)
- ☐ [140 and 220 GHz Ferrite Components](#)
- ☐ [140-GHz Finline Components \(Short Papers\)](#)
- ☐ [17/12 GHz Communication Receiver for Direct Broadcast Satellites](#)
- ☐ [1984 IEEE MTT-S International Microwave Symposium Keynote Address \(Dec. 1984 \[T-MTT\]\)](#)
- ☐ [1984 MTT-S International Microwave Symposium \(Dec. 1984 \[T-MTT\]\)](#)

Click on title for a paper summary.



Paper Index



Contents

Publications

Issues

- ❑ 1985 IEEE Microwave and Millimeter Wave Monolithic Circuits Symposium (Announcement) (1985 [MWSYM])
- ❑ 1985 Symposium Committees, Awards, Panel Sessions, and Workshops (1985 [MWSYM])

2

- ❑ 2--20-GHz GaAs Traveling-Wave Amplifier
- ❑ 2--20-GHz GaAs Traveling-Wave Power Amplifier (Mar. 1984 [T-MTT])
- ❑ 2.24 Gbit/s Direct Modulation of Injection Laser by Monolithic Silicon Multiplexer
- ❑ 20 GHz GaAs IMPATT Diode Development for Solid State Transmitter
- ❑ 24-GHz-FM-CW-Radar for Detection of Information for Traffic Purposes

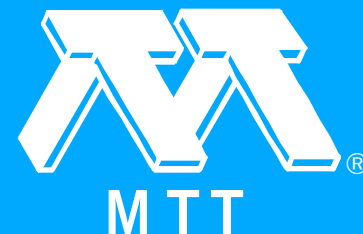
3

- ❑ 30 dB of AGC from an FET
- ❑ 30 GHz Monolithic Balanced Mixers Using an Ion-Implanted FET-Compatible 3-Inch GaAs Wafer Process Technology

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

- ❑ 30 GHz Multi-Bit Monolithic Phase Shifters
- ❑ 36.0 - 40.0 GHz HEMT Low Noise Amplifier

5

- ❑ 50 Years of Radio Astronomy
- ❑ 500 MHz, 100 W X-Band Solid State Amplifier

6

- ❑ 60 GHz Integrated Circuit Quadriphase Exciter and Modulator
- ❑ 60-GHz Integrated-Circuit High Data Rate Quadriphase Shift Keying Exciter and Modulator (Short Papers)

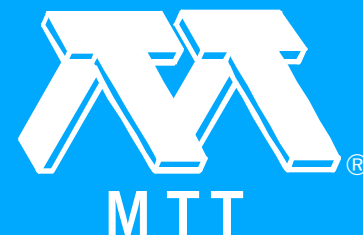
8

- ❑ 8 GHz Low Noise Bias Tuned VCO
- ❑ 800 MHz Band Channel Dropping Filter Using TM/sub 010/ Mode Dielectric Resonator
- ❑ 800 MHz Band Dielectric Channel Dropping Filter Using TM/sub 110/ Triple Mode Resonance

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

❑ 800-MHz High-Performance SAW Filter Using New Resonant Configuration

❑ 85--115-GHz Receivers for Radio Astronomy

9

❑ 94 GHz Planar GaAs Monolithic Balanced Mixer (1984 [MWSYM])

❑ 94-GHz 4-Port E-Plane Junction Circulator (Short Paper)

A

❑ A 0.5 μm Silicon Bipolar Transistor for Low Phase Noise Oscillator Applications Up to 20 GHz

❑ A 1 Watt 28 GHz Band Amplifier Using Clustered FETs

❑ A 1-Watt, 8-17 GHz FET Power Amplifier

❑ A 1.5 Watt 28 GHz Band FET Amplifier

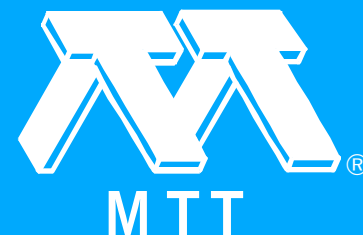
❑ A 12 GHz 12 Channel Contiguous Multiplexer for Satellite Applications

❑ A 12-Channel Contiguous Band Multiplexer for Satellite Application

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

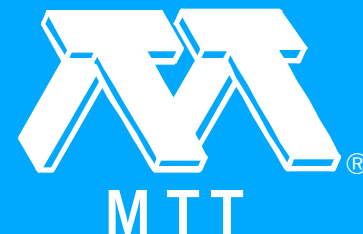
Issues

- ❑ A 125--260-GHz Gyrotron
- ❑ A 16 Tap Hybrid Programmable Transversal Filter Using Monolithic GaAs Dual-Gate FET Array
- ❑ A 2 Gb/s Throughput GaAs Digital Time Switch LSI Using LSCFL (1985 [MCS])
- ❑ A 2 Gb/s Throughput GaAs Digital Time Switch LSI Using LSCFL (Dec. 1985 [T-MTT])
- ❑ A 2 to 8 GHz Leveling Loop Using a GaAs MMIC Active Splitter and Attenuator
- ❑ A 2--18-GHz Monolithic Distributed Amplifier Using Dual-Gate GaAs FET's
- ❑ A 2-W Ku-Band Monolithic GaAs FET Amplifier
- ❑ A 20 GHz Peltier-Cooled Low Noise HEMT Amplifier
- ❑ A 20--40-GHz Push--Push Dielectric Resonator Oscillator
- ❑ A 22--24-GHz Cryogenically Cooled GaAs FET Amplifier
- ❑ A 26-GHz High Performance MIC Transmitter/Receiver for Digital Radio Subscriber Systems (1984 [MWSYM])
- ❑ A 26-GHz High-Performance MIC Transmitter/Receiver for Digital Radio Subscriber Systems (Dec. 1984 [T-MTT])

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

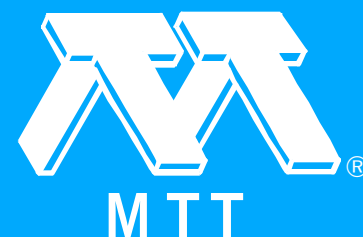
- ❑ A 3-Bit GaAs Analog-to-Digital Converter
- ❑ A 30 GHz Low Noise FET Amplifier
- ❑ A 30 GHz Monolithic Receiver
- ❑ A 30 GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element (1985 [MCS])
- ❑ A 30 GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element (1985 [MWSYM])
- ❑ A 30-GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element
- ❑ A 4.5 to 18 GHz Phase Shifter
- ❑ A 6 Watt 6 GHz GaAsFET Power Module with GaAs Matching Circuits
- ❑ A 6-GHz 80-W GaAs FET Amplifier with a TM-Mode Cavity Power Combiner
- ❑ A 6.5--16-GHz Monolithic Power Amplifier Module
- ❑ A 69 GHz Monolithic FET Oscillator (1984 [MWSYM])
- ❑ A 94 GHz Suspended Stripline Circulator
- ❑ A Bandpass Filter Using YIG Film Grown by LPE

Click on title for a paper summary.



Paper Index

- ❑ A Broad-Band Directional Coupler for Both Dielectric and Image Guides (Short Papers)
- ❑ A Broad-Band, Ultra-Low-Noise Schottky Diode Receiver from 80 to 115 GHz Diode
- ❑ A Broadband Homodyne Network Analyser with Binary Phase Modulation
- ❑ A C-Band 10 Watt GaAs Power FET
- ❑ A CAD Solution to the Generalized Problem of Noise Figure Calculation
- ❑ A Calibration Method for a Six-Port Reflectometer Which the Effect of Power Measurement Errors Minimizes
- ❑ A Circularly Polarized Active Antenna Array Using Miniature GaAs FET Amplifiers
- ❑ A Closed-Form Expression for Representing the Distributed Nature of the Spiral Inductor
- ❑ A Comparison of IMPATT Oscillator Power and Frequency Above 100 GHz with Results Derived from Theoretical Models (Short Papers)



Contents

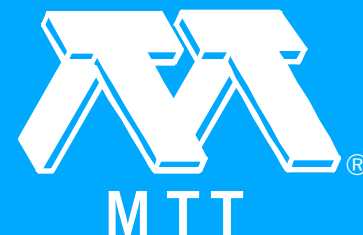
Publications

Issues

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

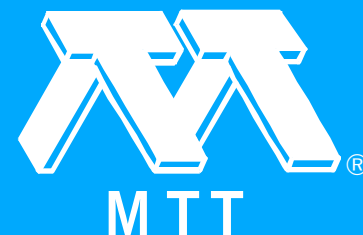
Issues

- ❑ A Comparison of the Measured and Theoretical Performance of a 140-220 GHz Schottky Diode Mixer
- ❑ A Complete GaAs MESFET Computer Model for SPICE (Short Papers)
- ❑ A Composite, Multilayered Cylindrical Dielectric Resonator
- ❑ A Computer-Controlled Integrated Microwave Measurement System in Finline Technique for Automatic Material Parameter Measurements
- ❑ A Continuous Comparison at 97 GHz Radiometer
- ❑ A Continuous Comparison Radiometer at 97 GHz (Corrections)
- ❑ A Continuously Tunable 65--115-GHz Gunn Oscillator
- ❑ A Conversation Between Harold Barlow and Alec Cullen, on November 24, 1983
- ❑ A D-Band Millimeter-Wave Crossbar Mixer
- ❑ A Design Method of Bandpass Filters Using Dielectric-Filled Coaxial Resonators (Short Papers)
- ❑ A Dual Six-Port Automatic Network Analyzer and its Performance (Short Papers)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

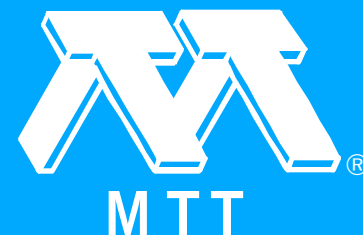
Issues

- ❑ A Dual Six-Port Automatic Network Analyzer and its Performance Tests
- ❑ A Dual Six-Port Network Analyzer Using Diode Detectors
- ❑ A Dual-Gate FET Constant Phase Variable Power Amplifier
- ❑ A Feasibility Study to Monitor Using Microwave Soil Moisture Content Signals
- ❑ A FET L-Band Phase/Amplitude Control Module
- ❑ A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications (1985 [MCS])
- ❑ A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications (1985 [MWSYM])
- ❑ A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications (Dec. 1985 [T-MTT])
- ❑ A GaAs FET Model for Large-Signal Applications
- ❑ A General CAD Tool for Large-Signal GaAs MESFET Circuit Design

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

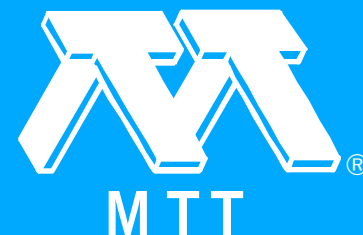
Issues

- ❑ A Generalized Algorithm for the Modeling of the Dispersive Characteristics of Microstrip, Inverted Microstrip, Stripline, Slotline, Finline, and Coplanar Waveguide Circuits on Anisotropic Substrates
- ❑ A Generalized Formulation of Electromagnetically Coupled Striplines
- ❑ A Half Century of Radar
- ❑ A High Efficiency Frequency Doubler for 100 GHz
- ❑ A High Gain, Monolithic Distributed Amplifier Using Cascode Active Elements (1986 [MCS])
- ❑ A High Performance - Wide Band - Diplexing - Tracking - Depolarization Correcting Satellite Communication Antenna Feed
- ❑ A High Performance 2-18.5 GHz Distributed Amplifier, Theory and Experiment (1986 [MCS])
- ❑ A High Performance Hexagonal Ferrite Tunable Bandpass Filter for the 40-60 GHz Region
- ❑ A High Speed GaAs Monolithic Transimpedance Amplifier

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

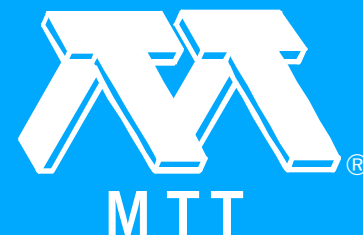
[Issues](#)

- ❑ [A High-Power Automatic Network Analyzer for Measuring the RF Power Absorbed by Biological Samples in a TEM Cell](#)
- ❑ [A History of Microwave Filter Research, Design, and Development](#)
- ❑ [A History of Microwave Heating Applications](#)
- ❑ [A K-Band GaAs FET Amplifier with 8.2-W Output Power](#)
- ❑ [A Ka-Band GaAs Power MMIC](#)
- ❑ [A Ku-Band Contiguous Multiplexer Employing Low-Loss, Odd-Order, Mixed Dual-Triple Mode Cavity Filters](#)
- ❑ [A Local Field Study of a Water-Immersed Microwave Antenna Array for Medical Imagery and Therapy](#)
- ❑ [A Low Cost, 3-7 GHz, 1/2 Watt MMIC GaAs Amplifier](#)
- ❑ [A Low Cost, Accurate, Target Detecting Device for Altimetry and Fuzing](#)
- ❑ [A Low Noise AiGaAs/GaAs FET with P/sup +/-Gate and Selectively Doped Structure](#)
- ❑ [A Low-Noise GaAs Monolithic Broad-Band Amplifier Using a Drain Current Saving Technique \(Short Papers\)](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

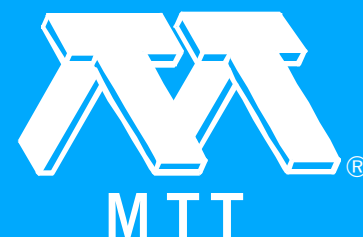
Issues

- ❑ A Method for Dielectric Loss Measurements by a Microwave Cavity in Fixed Resonance Condition
- ❑ A Method for Evaluating and the Evaluation of the Influence of the Reverse Transfer Gain on the Transducer Power Gain of Some Microwave Transistors (Short Papers)
- ❑ A Method of Avoiding the Edge Current Divergence in Perturbation Loss Calculations (Short Papers)
- ❑ A Microwave Apparatus for Producing Uniform Hyperthermic Temperatures Over Large Surfaces
- ❑ A Miniaturized 6.5 - 16 GHz Monolithic Power Amplifier Module
- ❑ A Modified Mode-Matching Technique and its Application to a Class of Quasi-Planar Transmission Lines
- ❑ A Monolithic Direct-Coupled GaAs Amplifier with 12-GHz Bandwidth
- ❑ A Multifrequency Water-Filled Waveguide Applicator: Thermal Dosimetry in Vivo (Short Papers)
- ❑ A New Approach for the Design of Microwave and Filters Using Dielectric Oscillators Resonators

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

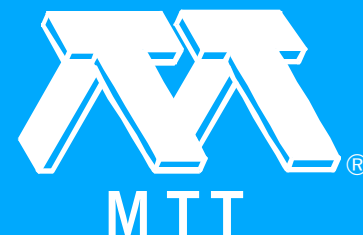
Issues

- ❑ A New Approach to Dispersion Analysis of Graded Index Optical Fibers
- ❑ A New Class of Optimized Finline and E-Plane Metal Insert Filters with Improved Characteristics
- ❑ A New Cylindrical Electron Gun for Low-Power Tunable Gyrotrons with High Magnetic Compression Ratios (Short Papers)
- ❑ A New Four-Port Automatic Network Analyzer: Part I--Description and Performance
- ❑ A New Four-Port Automatic Network Analyzer: Part II--Theory
- ❑ A New Frequency Domain Approach to the Analysis of Nonlinear Microwave Circuits
- ❑ A New Method for Calculating TE and TM Cutoff Frequencies of Uniform Waveguides with Lunar or Eccentric Annular Cross Section
- ❑ A New Method for Calculating TE and TM Cutoff Frequencies of Uniform Waveguides with Lunar or Eccentric Annular Cross Section (Comments)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

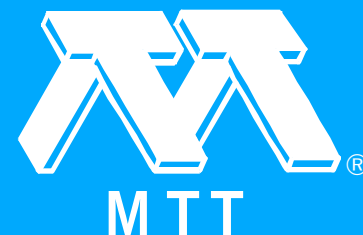
Issues

- ❑ [A New Method for Six-Port Swept Frequency Automatic Network Analysis \(Short Papers\)](#)
- ❑ [A New Method for the Modal Analysis Having Symmetrically Distributed of Optical Fibers Multiple Cores](#)
- ❑ [A New Method of Reducing Phase Noise in GaAs FET Oscillators](#)
- ❑ [A New Microstrip Dispersion Model \(Short Papers\)](#)
- ❑ [A New Real-Time Six-Port A N A Method](#)
- ❑ [A New Recurrence Method for Determining the Green's Function of Planar Structures with Arbitrary Anisotropic Layers \(Short Papers\)](#)
- ❑ [A New Slotline-Microstrip Frequency Halver](#)
- ❑ [A New Transmission Line of Round Conductor and Parallel Plane with Symmetrically Placed Slit \(Short Papers\)](#)
- ❑ [A Nonlinear Analysis of the Effects of Transient Electromagnetic Fields on Excitable Membranes](#)
- ❑ [A Nonlinear GaAs FET Model for Use in the Design of Output Circuits for Power Amplifiers \(1985 \[MWSYM\]\)](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

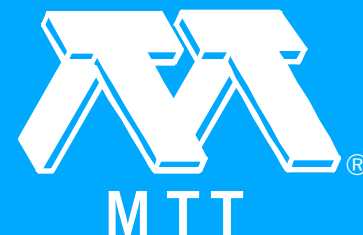
Issues

- ❑ A Nonlinear GaAs FET Model for Use in the Design of Output Circuits for Power Amplifiers (Dec. 1985 [T-MTT])
- ❑ A Novel CAD Tool and Concept Compatible with the Requirements of Multilayer GaAs MMIC Technology
- ❑ A Novel Cavity Resonator Measurement Method for Leaky Waveguides
- ❑ A Novel GaAs FET Oscillator with Low Phase Noise
- ❑ A Novel K-Band Balanced FET Up-Converter
- ❑ A Novel Method for the Analysis of Microwave Two-Port Active Mixers (Short Papers)
- ❑ A Novel MMIC X-Band Phase Shifter
- ❑ A Novel MMIC, X-Band, Phase Shifter
- ❑ A Novel Quasi-Optical Frequency Multiplier Design for Millimeter and Submillimeter Wavelengths
- ❑ A Novel Quasi-Optical Frequency Multiplier Design for Millimeter and Submillimeter Wavelengths (Corrections)
- ❑ A Novel Rectangular Waveguide with Double T-Septums (Short Papers)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

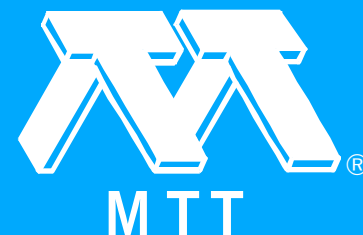
Issues

- ❑ [A Novel Technique to Realize SMSK Conversion and Matched Filters at Microwave Frequencies](#)
- ❑ [A Packaged 20-GHz 1-W GaAs MESFET with a Novel Via-Hole Plated Heat Sink Structure](#)
- ❑ [A Perturbation Theory for Microstrip Propagation](#)
- ❑ [A Planar 4.0 GHz Reactively Steered Adaptive Array](#)
- ❑ [A Planar Quasi-Optical Subharmonically Pumped Mixer Characterized by Isotropic Conversion Loss](#)
- ❑ [A Planar Quasi-Optical Subharmonically Pumped Mixer Characterized by Isotropic Conversion Loss \(Corrections\)](#)
- ❑ [A Power Distributed Amplifier Using Constant-R Networks](#)
- ❑ [A Practical Microwave Travelling-Wave MESFET Gate Mixer](#)
- ❑ [A Quasi-Optical Method for Measuring the Complex Permittivity of Materials](#)
- ❑ [A Quasi-Optical Multiplying Slot Array](#)
- ❑ [A Reflective Diode Linearize for Spacecraft Applications](#)

Click on title for a paper summary.



Paper Index



[Contents](#)

[Publications](#)

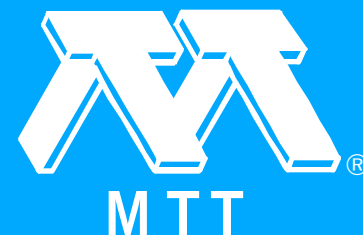
[Issues](#)

- ❑ [A Review of Numerical Models for Predicting the Energy Deposition and Resultant Thermal Response of Humans Exposed to Electromagnetic Fields](#)
- ❑ [A Review of the Panel Discussion on Advances in Millimeter-Wave Subsystems](#)
- ❑ [A Rigorous Solution for Dispersive Microstrip](#)
- ❑ [A Rigorous Technique for Measuring the Scattering Matrix of a Multiport Device with a Two-Port Network Analyzer \(Comments\) \(Mar. 1985 \[T-MTT\]\)](#)
- ❑ [A Short History of Microwave Acoustics](#)
- ❑ [A Short History of Microwave Acoustics \(Corrections\)](#)
- ❑ [A Simple Integrated Matching Element for SIS Quasiparticle Mixers](#)
- ❑ [A Simple Network Analog Approach for the Quasi-Static Characteristics of General Lossy, Anisotropic, Layered Structures \(1985 \[MWSYM\]\)](#)
- ❑ [A Simple Network Analog Approach for the Quasi-Static Characteristics of General Lossy, Anisotropic, Layered Structures \(Dec. 1985 \[T-MTT\]\)](#)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

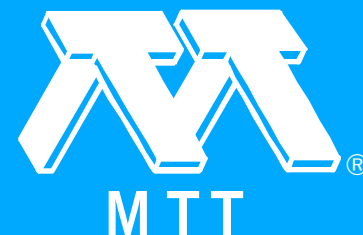
[Issues](#)

- ❑ [A Simplified Microwave Model of the GaAs Dual-Gate MESFET](#)
- ❑ [A Single-Resonator GaAs FET Oscillator with Noise Degeneration](#)
- ❑ [A Slot Antenna Radiating in Muscle](#)
- ❑ [A Solid State, X-Band, Exciter/Local Oscillator/Down Converter Subsystem for an Airborne, Coherent Radar Fire Control System](#)
- ❑ [A Solid-State 2-10 GHz 1 Watt TWT Replacement Amplifier](#)
- ❑ [A Spectral Domain Hybrid Field Analysis of Periodically Inhomogeneous Microstrip Lines](#)
- ❑ [A SPICE Model for Multiple Coupled Microstrips and Other Transmission Lines \(1985 \[MWSYM\]\)](#)
- ❑ [A SPICE Model for Multiple Coupled Microstrips and Other Transmission Lines \(Dec. 1985 \[T-MTT\]\)](#)
- ❑ [A Stabilized Broadband Correlator for Medical Microwave Thermography](#)
- ❑ [A Stable 2-26.5 GHz Two-Stage Dual-Gate Distributed MMIC Amplifier](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

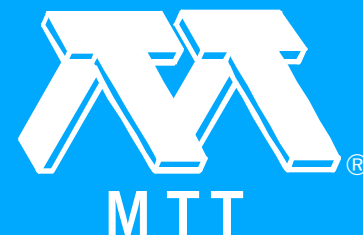
Issues

- ❑ A Stable Broadband IMPATT Amplifier
- ❑ A Study of the Relation Between Device Low-Frequency Noise and Oscillator Phase Noise for GaAs MESFETs
- ❑ A Study of W Band Subharmonically Pump Mixer
- ❑ A Study of W-Band Subharmonically Pumped Mixer
- ❑ A Superlinearly Convergent Minimax Algorithm for Microwave Circuit Design (1985 [MWSYM])
- ❑ A Superlinearly Convergent Minimax Algorithm for Microwave Circuit Design (Dec. 1985 [T-MTT])
- ❑ A Surface Integral Equations Method for Homogeneous Optical Fibers and Coupled Image Lines of Arbitrary Cross Sections
- ❑ A Technique for Extending the Dynamic Range of the Dual Six-Port Network Analyzer
- ❑ A Technique for the Design of Microwave Transistor Oscillators (Short Papers)
- ❑ A Technique to Identify Electromagnetic Modes in Oversize Waveguides (Short Papers)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

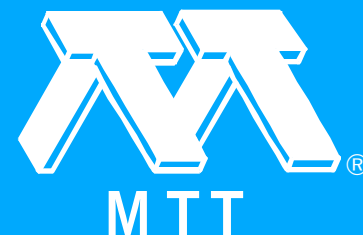
Issues

- ❑ [A Three-Band Microwave Radiometer for Noninvasive Temperature Measurement](#)
- ❑ [A Transition from Rectangular to Nonradiating Dielectric Waveguide \(Short Papers\)](#)
- ❑ [A Transition to Non-Radiating Dielectric Waveguide](#)
- ❑ [A True Elliptic-Function Filter Using Triple-Mode Degenerate Cavities](#)
- ❑ [A Two-Frequency Method for Impedance Measurement in Microwave Frequency-Halving Networks](#)
- ❑ [A Useful Equivalence for the Input Reactance Seen by the Coaxial Line in a Broadwall Coaxial-Microstrip Launcher](#)
- ❑ [A Variational Analysis of Dielectric Waveguides by the Conformal Mapping Technique](#)
- ❑ [A Very Low-Noise Single-Sideband Receiver for 200-260 GHz](#)
- ❑ [A Very Low-Noise, Fixed-Tuned Mixer for 240-270 GHz](#)
- ❑ [A Very Wide-Band Microwave MESFET Mixer Using the Distributed Mixing Principle](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

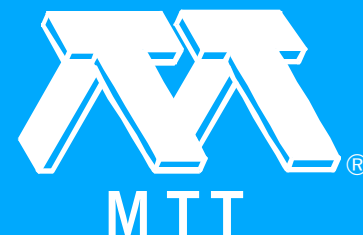
Issues

- ☐ A Vlasov Description of the Gridded Gap-Electron Flow Interaction
- ☐ A W-Band Monolithic Balanced Mixer (1985 [MCS])
- ☐ A W-Band Monolithic Balanced Mixer (1985 [MWSYM])
- ☐ A W-Band Monolithic GaAs Crossbar Mixer (1984 [MWSYM])
- ☐ A W-Band Monolithic GaAs PIN Diode Switch
- ☐ A Welcome from the Chairman (1984 [MWSYM])
- ☐ A Welcome from the Chairman (1985 [MWSYM])
- ☐ A Wideband 60 GHz 16-Way Power Divider/Combiner Network
- ☐ Accurate Analysis Equations and Synthesis Technique for Unilateral Finline
- ☐ Accurate and Simple Formulas for Dispersion in Fin-Lines
- ☐ Accurate Approximations for a Function Appearing in the Analysis of Microstrip (Short Papers)
- ☐ Accurate Hybrid-Mode Finline Configurations Including Analysis of Various Multilayered Dielectrics, Finite Metallization Thickness, and Substrate Holding Grooves

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

- ❑ [Accurate Six-Port Operation with Uncalibrated Nonlinear Diodes Digital \(Short Papers\)](#)
- ❑ [Accurate Wide-Range Design Equations for the Frequency-Dependent Characteristic of Parallel Coupled Microstrip Lines](#)
- ❑ [Accurate Wide-Range Design Equations for the Frequency-Dependent Characteristics of Parallel Coupled Microstrip Lines \(Corrections\)](#)
- ❑ [Acoustooptic Interaction of Acoustic Surface Waves with Guided Optical Waves in Planar Tantalum-Pentoxide Waveguides](#)
- ❑ [Active Matching with Common-Gate MESFET's](#)
- ❑ [Active Phase Shifters for the Millimeter and Microwave Bands](#)
- ❑ [Active Stabilization of Crystal Oscillator FM Noise at UHF Using a Dielectric Resonator \(Short Papers\)](#)
- ❑ [Addendum \(1985 \[MWSYM\]\)](#)
- ❑ [Adjustment of In-Phase Mode in Circulators Using Turnstile Junctions \(Short Papers\)](#)

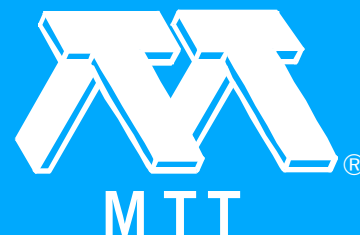
Click on title for a paper summary.



Paper Index

- ❑ [Advances in Millimeter-Wave Systems in Japan](#)
- ❑ [Air Bridge Gate FET for GaAs Monolithic Circuits \(1985 \[MCS\]\)](#)
- ❑ [Air Bridge Gate FET for GaAs Monolithic Circuits \(1985 \[MWSYM\]\)](#)
- ❑ [Airbridge Gate FET for GaAs Monolithic Circuits](#)
- ❑ [Amplification by Interdigital Excitation of Space-Charge Waves in Semiconductors](#)
- ❑ [An 18-40 GHz Double Balanced Microstrip Mixer](#)
- ❑ [An Alternative Procedure for Implementing the Desegmentation Method](#)
- ❑ [An Analysis of a Hybrid-Mode in a Twisted Rectangular Waveguide](#)
- ❑ [An Analysis of a Width-Modulated Microstrip Periodic Structure \(Short Papers\)](#)
- ❑ [An Analysis of an Electronically Tunable n-GaAs Distributed Oscillator](#)
- ❑ [An Analysis of the AC Bandwidth of Transmission Line Discriminators for FM Noise Measurement](#)

Click on title for a paper summary.



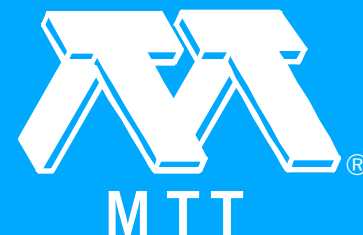
[Contents](#)

[Publications](#)

[Issues](#)



Paper Index



IEEE

Contents

Publications

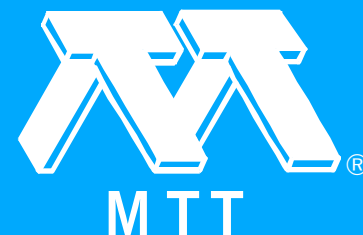
Issues

- ❑ An Analytical Method for the Capacitance of the Rectangular Inhomogeneous Coaxial Line Having Anisotropic Dielectrics (Short Papers)
- ❑ An Approach to Realizing Multi-Octave Performance in GaAs-FET YIG-Tuned Oscillators
- ❑ An Efficient 200--290-GHz Frequency Tripler Incorporating a Novel Stripline Structure
- ❑ An Empirical Design Technique for Microwave Oscillators (Short Papers)
- ❑ An Evanescent Mode Waveguide Bandpass Filter at Q Band (Short Papers)
- ❑ An Evanescent Mode Waveguide Bandpass Filter at Q-Band (Comments)
- ❑ An Experimental Investigation of Microstrip Properties on Soft Substrates from 2 to 40 GHz
- ❑ An Experimental Linearized Power Upconverter for SSB Signals
- ❑ An Explicit Six-Port Calibration Method Using Five Standards (Short Papers)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

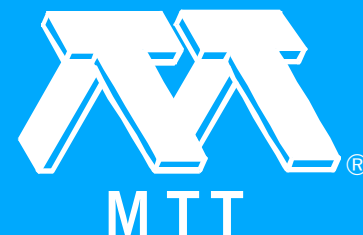
- ❑ [An Exposure System for Variable Electromagnetic-Field Orientation Electrophysiological Studies](#)
- ❑ [An Historical View of the Evolution of Low-Noise Concepts and Techniques](#)
- ❑ [An Improved Method of Mixer Noise Figure Measurement As Applied to Beam Lead Schottky Diodes at 94 GHz.](#)
- ❑ [An Improved Model for Short- and Open-Circuited Series Stubs in Fin Lines](#)
- ❑ [An Investigation of Striplines and Fin Lines with Periodic Stubs](#)
- ❑ [An Iterative Moment Method for Analyzing the Electromagnetic Field Distribution Inside Inhomogeneous Lossy Dielectric Objects \(Short Papers\)](#)
- ❑ [An MMIC/MIC-to-Waveguide Transition for Single- and Dual-Polarization Systems](#)
- ❑ [An Ultra Low Transient GaAs FET VHF Switch](#)
- ❑ [Analog Microwave Fiber Optic Communications Links](#)
- ❑ [Analog Signals Transmission Over Optical Fiber Systems](#)

Click on title for a paper summary.



Paper Index

- ❑ [Analysis and Design of a Single-Resonator GaAs FET Oscillator with Noise Degeneration](#)
- ❑ [Analysis and Design of Branch-Line Hybrids with Coupled Lines](#)
- ❑ [Analysis and Design of Evanescent-Mode Waveguide Dielectric Resonator Filters](#)
- ❑ [Analysis and Design of Five Port Circular Disc Structures for Six-Port Analyzers](#)
- ❑ [Analysis and Design of Four-Port and Five-Port Microstrip Disc Circuits](#)
- ❑ [Analysis and Design of GaAs MESFET Mixers](#)
- ❑ [Analysis and Design of Spurline Bandstop Filters](#)
- ❑ [Analysis and Synthesis of Guides with Closely Spaced Discontinuities](#)
- ❑ [Analysis and Synthesis of Tapered Fin-Lines](#)
- ❑ [Analysis of a J-Band Pulsed Read IMPATT Oscillator](#)
- ❑ [Analysis of an Arbitrarily-Shaped Planar Circuit a Time-Domain Approach](#)



[Contents](#)

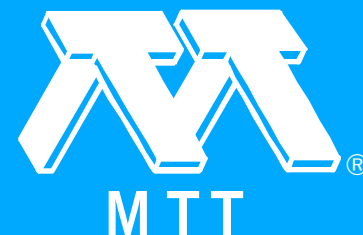
[Publications](#)

[Issues](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

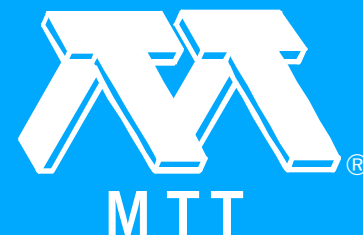
Issues

- ❑ Analysis of Arbitrarily Oriented Microstrip Transmission Lines in Arbitrarily Shaped Dielectric Media Over a Finite Ground Plane
- ❑ Analysis of Asymmetric Coupled Striplines (Short Papers)
- ❑ Analysis of Crosstalk in Very High-Speed LSI/VLSI's Using a Coupled Multiconductor MIS Microstrip Line Model
- ❑ Analysis of Dielectric Resonators with Tuning Screw and Supporting Structure (1985 [MWSYM])
- ❑ Analysis of Dielectric Resonators with Tuning Screw and Supporting Structure (Dec. 1985 [T-MTT])
- ❑ Analysis of Finite Conductivity Cylindrical Conductors Excited by Axially-Independent TM Electromagnetic Field
- ❑ Analysis of Finline with Finite Metallization Thickness (Short Papers)
- ❑ Analysis of High-Speed GaAs Source-Coupled FET Logic Circuits
- ❑ Analysis of Hybrid Field Problems by the Method of Lines with Nonequidistant Discretization

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

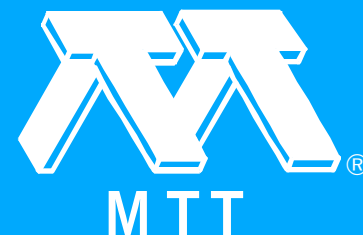
Issues

- ❑ Analysis of Interconnection Delay on Very High-Speed LSI/VLSI Chips Using an MIS Microstrip Line Model
- ❑ Analysis of Low-Loss Broadside-Coupled Dielectric Image Guide Using the Mode-Matching Technique (Short Papers)
- ❑ Analysis of Microstrip Step Discontinuity by the Modified Residue Calculus Technique
- ❑ Analysis of Multilayer Interconnection Lines for a High-Speed Digital Integrated Circuit
- ❑ Analysis of Noise Upconversion in Microwave FET Oscillators
- ❑ Analysis of Slotted, Dielectrically Loaded, Ridged Waveguide
- ❑ Analysis of the Transmission Characteristics of Inhomogeneous Grounded Finlines (Short Papers)
- ❑ Analysis of Wave Propagation in Anisotropic Film Waveguides with Bent Optical Axes
- ❑ Analytical and Experimental Investigations on Several Resonant Modes in Open Dielectric Resonators
- ❑ Analyzing Lossy Radial-Line Stubs (Short Papers)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

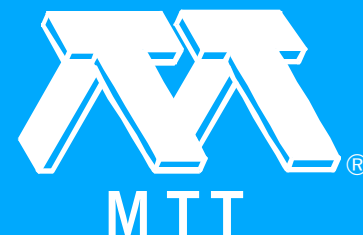
Issues

- ❑ Aperture Synthesis Thermography -- A New Approach to Passive Microwave Temperature Measurements in the Body
- ❑ Application of a Dielectric Resonator on Microstrip Line for a Measurement of Complex Permittivity
- ❑ Application of Boundary-Element Method to Electromagnetic Field Problems (Comments)
- ❑ Application of Boundary-Element Method to Electromagnetic Field Problems (Short Papers)
- ❑ Application of Davidenko's Method to the Solution of Dispersion Relations in Lossy Waveguiding Systems
- ❑ Approach for Evaluating Effects of Wall Losses on Quarter-Wave Short-Circuit Impedance Standards
- ❑ Approximate Scalar Finite-Element Analysis of Anisotropic Optical Waveguides with Off-Diagonal Elements in a Permittivity Tensor
- ❑ Approximation Techniques for Planar Periodic Structures
- ❑ Asian Abstracts (Nov. 1984 [T-MTT])
- ❑ Asian Abstracts (Nov. 1985 [T-MTT])

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

- ☐ Attenuation Constants of UHF Radio Waves in Arched Tunnels (Short Papers)
- ☐ Average SAR and SAR Distributions in Man Exposed to 450-MHz Radiofrequency Radiation
- ☐ Awards (1984 [MWSYM])
- ☐ Awards (1985 [MWSYM])
- ☐ Awards (Dec. 1984 [T-MTT])
- ☐ Awards (Dec. 1985 [T-MTT])

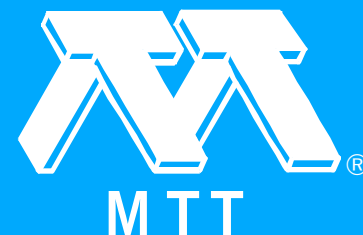
B

- ☐ Back Cover (1984 [MWSYM])
- ☐ Back Cover (1985 [MCS])
- ☐ Back Cover (1985 [MWSYM])
- ☐ Back Cover (1986 [MCS])
- ☐ Back Cover (Apr. 1984 [T-MTT])
- ☐ Back Cover (Apr. 1985 [T-MTT])
- ☐ Back Cover (Aug. 1984 [T-MTT])
- ☐ Back Cover (Aug. 1985 [T-MTT])

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

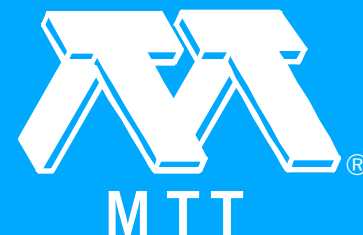
Issues

- ☐ Back Cover (Dec. 1984 [T-MTT])
- ☐ Back Cover (Dec. 1985 [T-MTT])
- ☐ Back Cover (Feb. 1984 [T-MTT])
- ☐ Back Cover (Feb. 1985 [T-MTT])
- ☐ Back Cover (Jan. 1984 [T-MTT])
- ☐ Back Cover (Jan. 1985 [T-MTT])
- ☐ Back Cover (Jul. 1984 [T-MTT])
- ☐ Back Cover (Jul. 1985 [T-MTT])
- ☐ Back Cover (Jun. 1984 [T-MTT])
- ☐ Back Cover (Jun. 1985 [T-MTT])
- ☐ Back Cover (Mar. 1984 [T-MTT])
- ☐ Back Cover (Mar. 1985 [T-MTT])
- ☐ Back Cover (May 1984 [T-MTT])
- ☐ Back Cover (May 1985 [T-MTT])
- ☐ Back Cover (Nov. 1984 [T-MTT])
- ☐ Back Cover (Nov. 1985 [T-MTT])
- ☐ Back Cover (Oct. 1984 [T-MTT])
- ☐ Back Cover (Oct. 1985 [T-MTT])

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

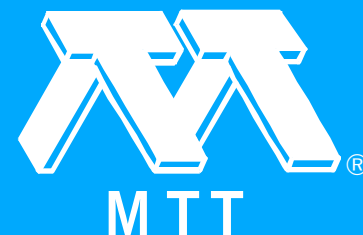
Issues

- ❑ [Back Cover \(Sep. 1985 \[T-MTT\]\)](#)
- ❑ [Bandstop Filter Design Using a Dielectric Waveguide Grating](#)
- ❑ [Biological Tissues Characterization at Microwave Frequencies \(Short Papers\)](#)
- ❑ [Boundary Element Method Approach Magnetostatic Wave Problems](#)
- ❑ [Bragg Interaction of Electromagnetic Waves in a Ferrite Slab Periodically Loaded with Metal Strips](#)
- ❑ [Broad-Band Millimeter-Wave E-Plane Bandpass Filters \(Short Papers\)](#)
- ❑ [Broad-Band Permittivity Measurements Using the Semi-Automatic Network Analyzer \(Short Papers\)](#)
- ❑ [Broad-Band RF Match to a Millimeter-Wave SIS Quasi-Particle Mixer](#)
- ❑ [Broadband HEMT and GaAs FET Amplifiers for 18 - 26.5 GHz](#)
- ❑ [Broadband Millimeter-Wave E-Plane Bandpass Filters](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

- ❑ Broadband and Broad Dynamic Range GaAs Dual-Gate MESFET Linearize for TWTA and SSPA Used in Satellite Transponder
- ❑ Broadside-Coupled Slot-Line Field Components (Short Papers)

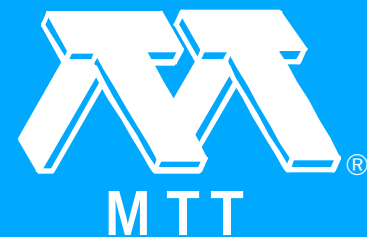
C

- ❑ C-Band 6-Bit GaAs Monolithic Phase Shifter (1985 [MCS])
- ❑ C-Band 6-Bit GaAs Monolithic Phase Shifter (Dec. 1985 [T-MTT])
- ❑ CAD Models for Millimeter-Wave Suspended Substrate Microstrip Lines and Fin-Lines
- ❑ Calculation of High-Resolution SAR Distributions in Biological Bodies Using the FFT Algorithm and Conjugate Gradient Method (Short Papers)
- ❑ Calculation of TM/sub 0n/ Dispersion Relations in a Corrugated Cylindrical Waveguide
- ❑ Calibrating a Six-Port Reflectometer Using Three Known Loads

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

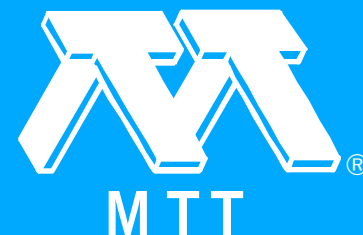
Issues

- ❑ Calibration Methods for Microwave Wafer Probing (1984 [MWSYM])
- ❑ Call for Papers - New and Future Applications of Microwave Systems (Call for Papers) (Sep. 1985 [T-MTT])
- ❑ Call for Papers - Numerical Methods for Microwave and Millimeter Wave Characterizations and Designs (Aug. 1984 [T-MTT])
- ❑ Call for Papers - Phased Arrays for Hyperthermia Treatment of Cancer (May 1985 [T-MTT])
- ❑ Capacitively Coupled Traveling-Wave Power Amplifier (Dec. 1984 [T-MTT])
- ❑ Cell Membrane Nonlinear Response to an Applied Electromagnetic Field
- ❑ Changes in Liposomes Permeability Induced by Gramicidin D After Microwave Irradiation (Short Papers)
- ❑ Characterisation of Large-Signal Bipolar Transistors in L-Band
- ❑ Characteristic Impedance Design Considerations for a High-Speed Superconducting Packaging System (Short Papers)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

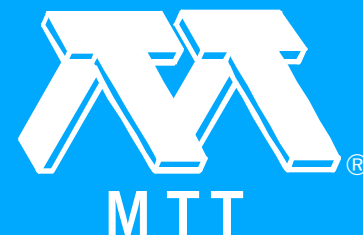
Issues

- ❑ Characteristic Impedance of Rectangular Coaxial Transmission Lines (Correction)
- ❑ Characteristic Impedance of the Slab Line with an Anisotropic Dielectric (Short Papers)
- ❑ Characteristic Modes for Aperture Problems
- ❑ Characteristics of Metal-Insulator-Semiconductor Coplanar Waveguides for Monolithic Microwave Circuits
- ❑ Characteristics of Some Asymmetrical Coupled Transmission Lines (Short Papers)
- ❑ Characteristics of Transmission Lines with a Single Wire for a Multiwire Circuit Board
- ❑ Characterization of a Dual-Mode Horn for Submillimeter Wavelengths (Short Papers)
- ❑ Characterization of GaAs FET's in Terms of Noise, Gain, and Scattering Parameters through a Noise Parameter Test Set
- ❑ Circuit Analysis and Design of Radial Pretuned Modules Used for Millimeter-Wave Oscillators
- ❑ Circuit Design of the Loaded-Line Phase Shifter

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

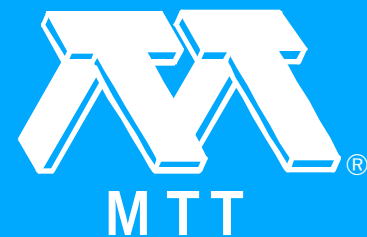
[Issues](#)

- ❑ [Circuit Design to Reduce 3rd Order Intermodulation Distortion in FET Amplifiers](#)
- ❑ [Coaxial E-Field Probe for High-Power Microwave Measurement \(Short Papers\)](#)
- ❑ [Coaxial Transmission Lines, Related Two-Conductor Transmission Lines, Connectors, and Components: A U.S. Historical Perspective](#)
- ❑ [Coaxial Transmission Lines, Related Two-Conductor Transmission Lines, Connectors, and Components: A U.S. Historical Perspective \(Corrections\)](#)
- ❑ [Coherent Transmitter Considerations Utilizing Injection Locked Magnetrons](#)
- ❑ [Collinearly Excited Edge Coupled Resonators](#)
- ❑ [Committee Photographs \(1985 \[MCS\]\)](#)
- ❑ [Committee Photographs \(1986 \[MCS\]\)](#)
- ❑ [Committees \(1984 \[MWSYM\]\)](#)
- ❑ [Committees \(1985 \[MCS\]\)](#)
- ❑ [Committees \(1985 \[MWSYM\]\)](#)
- ❑ [Committees \(1986 \[MCS\]\)](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

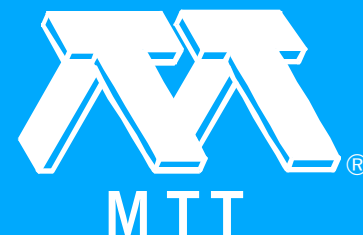
Issues

- ❑ Comparative Study of Mode Matching Formulations for Microstrip Discontinuity Problems (1985 [MWSYM])
- ❑ Comparative Study of Mode-Matching Formulations for Microstrip Discontinuity Problems (Oct. 1985 [T-MTT])
- ❑ Complete Determination of Circulator Eigenvalues With-Out Transmission Phase Measurement
- ❑ Complex Permittivity Instrumentation for High-Loss Liquids at Microwave Frequencies (Short Papers)
- ❑ Complex Propagation Constants of Bent Hollow Waveguides with Arbitrary Cross Section
- ❑ Composite Coupler Design
- ❑ Computation of Inductance of Simple Vias Between Two Striplines Above a Ground Plane (Short Papers)
- ❑ Computation of the Parallel-Plate Capacitor with Symmetrically Placed Unequal Plates
- ❑ Computations of Frequencies and Intrinsic Q Factors of TE/sub 0nm/ Modes of Dielectric Resonators (Short Papers)
- ❑ Computed Modal Field Distributions for Isolated Dielectric Resonators

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

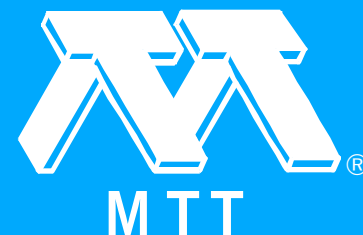
Issues

- ☐ Computed Modal Field Distributions of Isolated Dielectric Resonators
- ☐ Computer Analysis of Dielectric Waveguides: A Finite-Difference Method
- ☐ Computer Calculation of Large-Signal GaAs FET Amplifier Characteristics
- ☐ Computer-Aided Design Models for Millimeter-Wave Finlines and Suspended-Substrate Microstrip Lines
- ☐ Computer-Aided Error Correction of Large-Signal Load-Pull Measurements
- ☐ Computer-Aided Noise Analysis of Linear Multiport Networks of Arbitrary Topology
- ☐ Computer-Aided Synthesis of Lumped Lossy Matching Networks for Monolithic Microwave Integrated Circuits (MMIC's)
- ☐ Computer-Aided Testing of Mixers Between 90 and 350 GHz

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

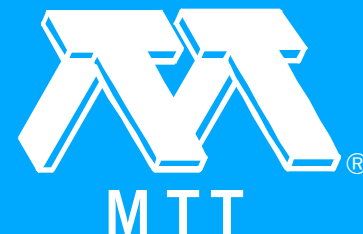
[Issues](#)

- ❑ [Computer-Optimized Multisection Transformers Between Rectangular Waveguides of Adjacent Frequency Bands \(Short Papers\)](#)
- ❑ [Congressional Fellowships \(Announcement\) \(Sep. 1985 \[T-MTT\]\)](#)
- ❑ [Congressional Fellowships \(Dec. 1985 \[T-MTT\]\)](#)
- ❑ [Conservation Laws for Distributed Four-Ports \(Short Papers\)](#)
- ❑ [Constant-Frequency Synthesis of Lossy Microwave Two-Ports \(Short Papers\)](#)
- ❑ [Contiguous-Domain Transferred-Electron Oscillators](#)
- ❑ [Controlled Bias Preheating for Variable Duty Factor IMPATT Transmitter](#)
- ❑ [Convergence of Local and Average Values in Three-Dimensional Moment-Method Solutions \(Short Papers\)](#)
- ❑ [Convergence of Numerical Solutions of Open-Ended Waveguide by Modal Analysis and Hybrid Modal-Spectral Techniques \(1985 \[MWSYM\]\)](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

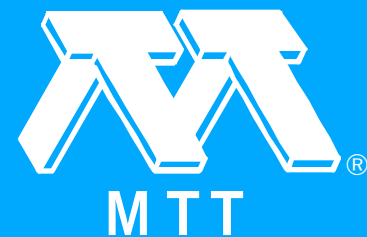
Issues

- ☐ Coplanar Waveguide Short Gap Resonator for Medical Applications
- ☐ Coplanar Waveguide Short-Gap Resonator for Medical Applications
- ☐ Copyright (1984 [MWSYM])
- ☐ Copyright (1985 [MCS])
- ☐ Copyright (1985 [MWSYM])
- ☐ Copyright (1986 [MCS])
- ☐ Copyright Form (Jan. 1985 [T-MTT])
- ☐ Correction Due to a Finite Permittivity for a Ring Resonator in Free Space
- ☐ Cost-Effective High Performance Monolithic X-Band Low Noise Amplifiers (1986 [MCS])
- ☐ Coupled Microstrips on Double Anisotropic Layers (Short Papers)
- ☐ Coupled-Mode Theory of Two Nonparallel Dielectric Waveguides
- ☐ Coupling Between a Dielectric Image Guide and a Dielectric Resonator

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

- ❑ Coupling of Degenerate Modes on Curved Dielectric Slab Sections and Application to Directional Couplers (Corrections)
- ❑ Coupling Parameters Between a Dielectric Resonator and a Microstripline
- ❑ Cross-Coupled Coaxial-Line/Rectangular-Waveguide Junction (Short Papers)
- ❑ Cutoff Frequency of a Homogeneous Optical Fiber with Arbitrary Cross Section
- ❑ Cyclotron Maser and Peniotron-Like Instabilities in a Whispering Gallery Mode Gyrotron

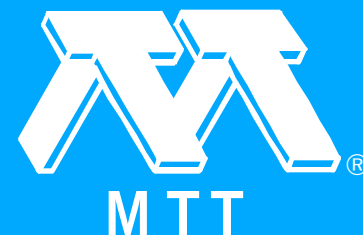
D

- ❑ Definition of Nonlinear Reflection Coefficient of a Microwave Device Using Describing Function Formalism (Short Papers)
- ❑ Design and Performance of a W-Band Broadband Finline Diplexer with Over 20 GHz Bandwidth
- ❑ Design and Performance of Monolithic GaAs Direct-Coupled Preamplifiers and Main Amplifiers

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

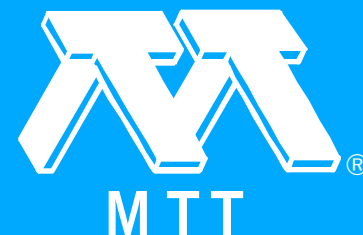
Issues

- ❑ Design and Process Sensitivity of a Two Stage 6-18 GHz Monolithic Feedback Amplifier (1985 [MCS])
- ❑ Design and Process Sensitivity of a Two-Stage 6--18-GHz Monolithic Feedback Amplifier (Dec. 1985 [T-MTT])
- ❑ Design Consideration for Frequency-Stabilized MIC IMPATT Oscillators in the 26-GHz Band
- ❑ Design Curves for -3-dB Branchline Couplers (Short Paper)
- ❑ Design of Broad-Band Power GaAs FET Amplifiers
- ❑ Design of Microwave Oscillators and Filters Using Transmission-Mode Dielectric Resonators Coupled to Microstrip Lines
- ❑ Design of Multisection Impedance-Matched Dielectric-Slab Filled Waveguide Phase Shifters
- ❑ Design of Nonradiative Dielectric Waveguide Filter
- ❑ Design of Nonradiative Dielectric Waveguide Filters (Corrections)
- ❑ Design of Nonradiative Dielectric Waveguide Filters (Short Papers)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

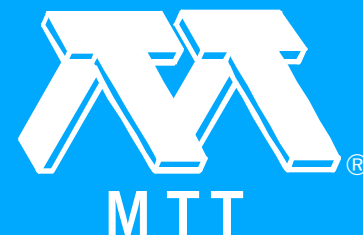
[Issues](#)

- ☐ Design of Waveguide Circulators with Chebyshev Characteristics Using Partial-Height Ferrite Resonators
- ☐ Design of Waveguide E-Plane Filters with All-Metal Inserts
- ☐ Determination of Green's Function Matrix for Multiconductor and Anisotropic Multidielectric Planar Transmission Lines: A Variational Approach
- ☐ Determination of the Admittance of a General Waveguide-Coaxial Line Junction (Short Papers)
- ☐ Determination of the Characteristic Impedance by a Step Current Density Approximation (Short Papers)
- ☐ Development and Testing of a 2450-MHz Lens Applicator for Localized Microwave Hyperthermia (Short Papers)
- ☐ Development of a Coupler in Finline Technique
- ☐ Dielectric Measurements of Common Polymers at Millimeter Wavelength
- ☐ Dielectric Measurements of Millimeter-Wave Materials
- ☐ Dielectric Properties of Millimeter Wave Materials
- ☐ Dielectric Resonator Output Multiplexer for C-Band Satellite Applications

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

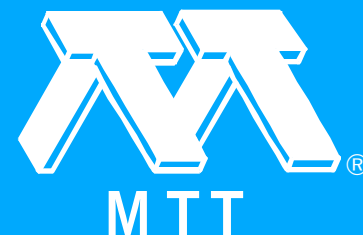
Issues

- ☐ Dielectric Resonators Band Pass Filter with High Attenuation Rate
- ☐ Dielectric Waveguide Band-Pass Filters with Broad Stop Bands
- ☐ Dielectric Waveguide Corner and Power Divider with a Metallic Reflector (Short Papers)
- ☐ Dielectric Waveguide Grating Design for Bandstop and Bandpass Filter Applications
- ☐ Digital and Analog Frequency - Temperature Compensation of Dielectric Resonator Oscillators
- ☐ Direct Contact Applicator with Convergent Effect of EM Field for Microwave Hyperthermia
- ☐ Direct DC to RF Conversion by Picosecond Optoelectronic Switching
- ☐ Direct Method of Obtaining Capacitance from Finite-Element Matrices (Clarification)
- ☐ Directly Connected Image Guide 3-dB Couplers with Very Flat Couplings

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

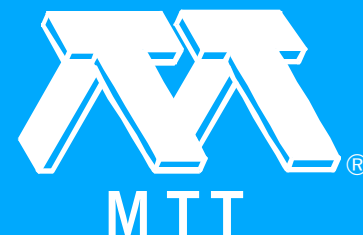
Issues

- ❑ Directly-Connected Image Guide 3dB Coupler with very Flat Coupling
- ❑ Disc-Type Resonator Mount in Rectangular Waveguide
- ❑ Dispersion Characteristics for Wide Slotlines on Low-Permittivity Substrates (Short Papers)
- ❑ Dispersion Characteristics of Twisted Rectangular Waveguides
- ❑ Distributed GaAs FET Circuit Model for Broadband and Millimeter Wave Applications
- ❑ Distributed Microwave Active Filters with GaAs FETs
- ❑ Double Dielectric-Slab-Filled Waveguide Phase Shifter
- ❑ Double-Plane Steps in Rectangular Waveguides and Their Application for Transformers, Irises, and Filters (Comments)
- ❑ Dual Function Mixer Circuit for Millimeter Wave Transceiver Applications (1985 [MCS])
- ❑ Dual Function Mixer Circuit for Millimeter Wave Transceiver Applications (1985 [MWSYM])
- ❑ Dual-Gate MESFET Mixers

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

- ☐ Dynamic Behavior of Pulsed-IMPATT Oscillators (Short Papers)
- ☐ Dynamic Diode Mixer Damage Measurements
- ☐ Dynamic Measurements of Complex Permittivity and Temperature During Microwave Heating
- ☐ Dynamic Three-Dimensional TLM Analysis of Microstriplines on Anisotropic Substrate

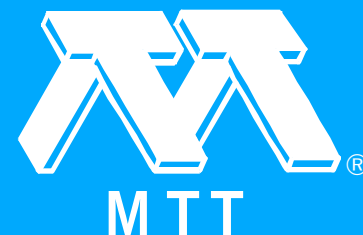
E

- ☐ E-Plane Integrated Circuit Filters with Improved Stopband Attenuation (Comments)
- ☐ E-Plane Integrated Circuit Filters with Improved Stopband Attenuation (Short Papers)
- ☐ E-Plane Integrated Parallel-Strip Screen Waveguide Filters (Short Papers)
- ☐ Edge-Guided Magnetoplasmons on Curved Interfaces in Submillimeter Wave Devices
- ☐ Edge-Guided Magnetostatic Mode in a Ridged-Type Waveguide (Short Papers)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

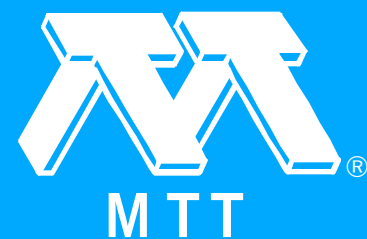
[Issues](#)

- ❑ [Editor's Overview \(Dec. 1984 \[T-MTT\]\)](#)
- ❑ [Editor's Overview \(Dec. 1985 \[T-MTT\]\)](#)
- ❑ [Editorial \(Apr. 1985 \[T-MTT\]\)](#)
- ❑ [Editorial \(Aug. 1984 \[T-MTT\]\)](#)
- ❑ [Editorial \(Jan. 1985 \[T-MTT\]\)](#)
- ❑ [Editorial \(Sep. 1985 \[T-MTT\]\)](#)
- ❑ [Effect of Doping Profile Variation on GaAs Hybrid and Double-Read IMPATT Diode Performance at 60 and 94 GHz](#)
- ❑ [Effect of Inner Conductor Offset in a Coplanar Waveguide \(Short Papers\)](#)
- ❑ [Effect of Separation from Ground on Human Whole-Body RF Absorption Rates](#)
- ❑ [Effects of 2450-MHz Microwave Energy on the Blood-Brain Barrier: An Overview and Critique of Past and Present Research](#)
- ❑ [Effects of Doping Profile on GaAs, Double-Drift IMPATT Diodes at 33 and 44 GHz Using the Energy-Momentum Transport Model](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

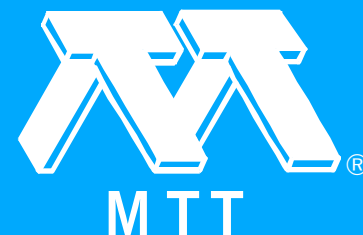
Issues

- ❑ Effects of Side-Wall Grooves on Transmission Characteristics of Suspended Strip Lines (1985 [MWSYM])
- ❑ Effects of Side-Wall Grooves on Transmission Characteristics of Suspended Striplines (Dec. 1985 [T-MTT])
- ❑ Efficient, Broadband Circuit Performance of Millimeter-Wave IMPATT-Diode Power Amplifiers
- ❑ Efficient, Linear Amplification of Varying-Envelope Signals Using FET's with Parabolic Transfer Characteristics
- ❑ EHF Solid State Amplifier
- ❑ Electromagnetic Waves in Toroidal Vessels of Arbitrary Cross Section Filled with Radially Inhomogeneous Dielectric Medium
- ❑ EM Local Heating with HF Electric Fields
- ❑ EM Local Heating with HF Electric Fields (Comments)
- ❑ Engine-Block - Dual Mode Dielectric Resonator Loaded Cavity Filter with Nonadjacent Cavity Couplings
- ❑ Enhancing the Efficacy of Localized Thermotherapy by Monitoring Changes in Tumor Blood Flow

Click on title for a paper summary.



Paper Index



[Contents](#)

[Publications](#)

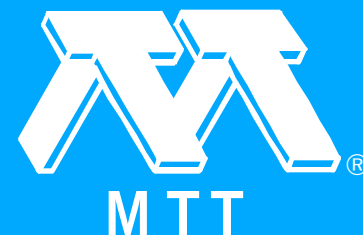
[Issues](#)

- ☐ Equivalent Circuit of Broadside-Coupled Microstrip Open Ends
- ☐ Equivalent Circuits of Junctions of Slab-Loaded Rectangular Waveguides
- ☐ Evaluation of a 94 GHz Diode-Based Dual Six-Port Network Analyzer
- ☐ Even- and Odd-Mode Impedances of Coupled Elliptic Arc Strips (Short Papers)
- ☐ Exact Image Theory for Field Calculation in Layered Biological Medium
- ☐ Exact Wave Resistance of Coaxial Regular Polygonal Conductors (Short Papers)
- ☐ Exhibition Guide (1984 [MWSYM])
- ☐ Exhibition Guide (1985 [MWSYM])
- ☐ Exhibition List (1984 [MWSYM])
- ☐ Experimental Study of Dielectric Waveguide Y-Junctions for Millimeter-Wave Integrated Circuits
- ☐ Experimental Study of the W-Band Dielectric-Guide Y-Branch Interferometer

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

- ❑ Exposure of Human Mononuclear Leukocytes to Microwave Energy Pulse-Modulated at 16 or 60 Hz
- ❑ Extension of Levy's Large-Aperture Design Formulas to the Design of Circular Irises in Coupled-Resonator Waveguide Filters (Short Papers)

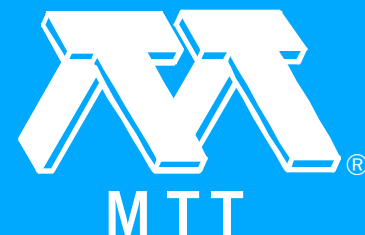
F

- ❑ Fabrication of Low Power, High-Speed GaAs LSI On-Board Baseband Switching Matrix
- ❑ Fast Microwave Detectors Based on the Interaction of Holes with Phonons
- ❑ Fast-Fourier-Transform Method for Calculation of SAR Distributions in Finely Discretized Inhomogeneous Models of Biological Bodies
- ❑ Fast-Fourier-Transform Method for Calculation of SAR Distributions in Finely Discretized Inhomogeneous Models of Biological Bodies (Comments)
- ❑ Field Analysis of a Millimeter-Wave GaAs Double-Drift IMPATT Diode in the Traveling-Wave Mode

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

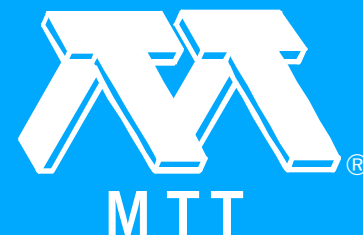
Issues

- ❑ Field Analysis of Millimeter-Wave GaAs Double-Drift IMPATT Diode in the Travelling-Wave Mode
- ❑ Field Distribution of Hybrid Modes in Dielectric Loaded Waveguides
- ❑ Field Distribution of Two Conducting Posts in a Waveguide
- ❑ Field in Single-Mode Helically-Wound Optical Fibers
- ❑ Field Patterns and Resonant Frequencies of High-Order Modes in an Open Resonator (Short Papers)
- ❑ Field Theory Design of Rectangular Waveguide Broad-Wall Metal-Insert Slot Couplers for Millimeter-Wave Applications
- ❑ Finite Element Analysis Applied to Gyroelectrically Loaded Waveguiding Structures
- ❑ Finite-Element Analysis of Dielectric Waveguides with Curved Boundaries
- ❑ Finite-Element Analysis of Dielectric-Loaded Waveguides
- ❑ Finite-Element Analysis of Optical and Microwave Waveguide Problems
- ❑ Finite-Element Formulation in Terms of the Electric-Field Vector for Electromagnetic Waveguide Problems

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

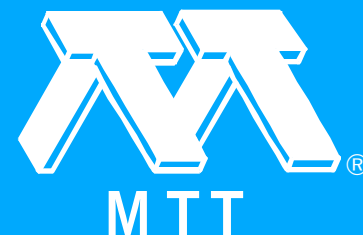
Issues

- ☐ Finline and Metal Insert Filters with Improved Passband Separation and Increased Stopband Attenuation
- ☐ Finline Taper Design Made Easy
- ☐ Focused Electromagnetic Heating of Muscle Tissue (Short Papers)
- ☐ Focused Heating in Cylindrical Targets: Part I (Short Papers)
- ☐ Foreword (Dec. 1984 [T-MTT])
- ☐ Foreword (Dec. 1985 [T-MTT])
- ☐ Foreword (Mar. 1984 [T-MTT])
- ☐ Foreword (Oct. 1985 [T-MTT])
- ☐ Formulation of the Singular Integral Equation Technique for General Planar Transmission Lines
- ☐ Formulation of the Singular Integral Equation Technique for Planar Transmission Lines
- ☐ Fourier Transformed Matrix Method of Finding Propagation Characteristics of Complex Anisotropic Layered Media (1984 [MWSYM])

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

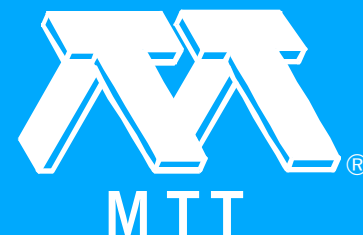
Issues

- ❑ Fourier Transformed Matrix Method of Finding Propagation Characteristics of Complex Anisotropic Layered Media (Dec. 1984 [T-MTT])
- ❑ Frequency Agile Circular Microstrip Antennas
- ❑ Frequency-Dependent Characteristics of Microstrip Discontinuities in Millimeter-Wave Integrated Circuits
- ❑ From the Inventor and the Pilot Russell and Sigurd Varian
- ❑ Front Cover (1984 [MWSYM])
- ❑ Front Cover (1985 [MCS])
- ❑ Front Cover (1985 [MWSYM])
- ❑ Front Cover (1986 [MCS])
- ❑ Front Cover (Apr. 1984 [T-MTT])
- ❑ Front Cover (Apr. 1985 [T-MTT])
- ❑ Front Cover (Aug. 1984 [T-MTT])
- ❑ Front Cover (Aug. 1985 [T-MTT])
- ❑ Front Cover (Dec. 1984 [T-MTT])
- ❑ Front Cover (Dec. 1985 [T-MTT])
- ❑ Front Cover (Feb. 1984 [T-MTT])

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

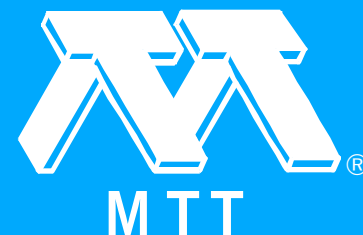
Issues

- ☐ Front Cover (Feb. 1985 [T-MTT])
- ☐ Front Cover (Jan. 1984 [T-MTT])
- ☐ Front Cover (Jan. 1985 [T-MTT])
- ☐ Front Cover (Jul. 1984 [T-MTT])
- ☐ Front Cover (Jul. 1985 [T-MTT])
- ☐ Front Cover (Jun. 1984 [T-MTT])
- ☐ Front Cover (Jun. 1985 [T-MTT])
- ☐ Front Cover (Mar. 1984 [T-MTT])
- ☐ Front Cover (Mar. 1985 [T-MTT])
- ☐ Front Cover (May 1984 [T-MTT])
- ☐ Front Cover (May 1985 [T-MTT])
- ☐ Front Cover (Nov. 1984 [T-MTT])
- ☐ Front Cover (Nov. 1985 [T-MTT])
- ☐ Front Cover (Oct. 1984 [T-MTT])
- ☐ Front Cover (Oct. 1985 [T-MTT])
- ☐ Front Cover (Sep. 1984 [T-MTT])
- ☐ Front Cover (Sep. 1985 [T-MTT])

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

- ❑ Full-Wave Analysis of Microstrip Open-End and Gap Discontinuities
- ❑ Functional Approach to Microwave Postproduction Tuning
- ❑ Fundamental Superstrate Effects on Printed Circuit Antenna Efficiency
- ❑ Fundamental Wave Injection Locked 2nd Harmonic Gunn Oscillators at 94 GHz
- ❑ Fundamental-Mode Pierce Oscillators Utilizing Bulk-Acoustic-Wave Resonators in the 250 - 300 MHz Range
- ❑ Fundamental-Mode Pierce Oscillators Utilizing Bulk-Acoustic-Wave Resonators in the 250--300-MHz Range (Short Papers)

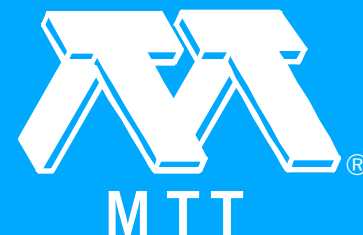
G

- ❑ GaAs Dual-Gate FET for Operation up to K-Band
- ❑ GaAs Gunn Oscillators Reach the 140 GHz Range
- ❑ GaAs IC Symposium (Announcement) (Aug. 1985 [T-MTT])
- ❑ GaAs IMPATT Diodes Pulsed at 40 GHz

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

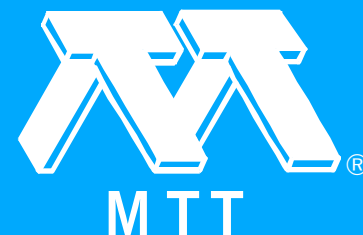
Issues

- ❑ GaAs MESFET Optimization and New Device Applications Based on Wave Property Studies
- ❑ GaAs Monolithic Frequency Doublers with Series Connected Varactor Diodes (1984 [MWSYM])
- ❑ GaAs Monolithic Low-Power Amplifiers with RC Parallel Feedback (Short Papers)
- ❑ GaAs Monolithic Transferred-Electron Devices for Millimeter Wave Applications
- ❑ GaAs Phase-Coherent Microwave Multiple-Signal Generation Using All-Pass Networks
- ❑ GaAs Ultra High Frequency Dividers with Advanced SAINT FETs (1986 [MCS])
- ❑ Gain Saturation in Circulator-Coupled Reflection Amplifiers
- ❑ Gaussian Beam Imaging with Cylindrical Optics
- ❑ General Stability Analysis of Periodic Steady-State Regimes in Nonlinear Microwave Circuits
- ❑ Generalized Spectral Domain Analysis of Planar Structures Having Semi-Infinite Ground Planes

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

- ❑ Generation of High-Frequency Radiation by Quasi-Optical Gyrotron at Harmonics of the Cyclotron Frequency (Short Papers)
- ❑ Golden Gate Ballroom - Hyatt Regency (1984 [MWSYM])
- ❑ Graph Transformations of Nonuniform Coupled Transmission Line Networks and Their Application (Short Papers)
- ❑ Graphic Design of Matching and Interstage Lossy Networks for Microwave Transistor Amplifier

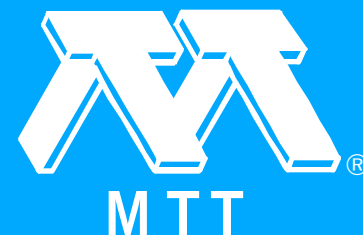
H

- ❑ Heating Pattern in a Multi-Layered Material Exposed to Microwaves (Short Papers)
- ❑ High Efficiency GaAs MBE Power FETs for Ka-Band (1984 [MWSYM])
- ❑ High Efficiency Millimeter Wave Monolithic IMPATT Oscillators (1985 [MCS])
- ❑ High Efficiency Millimeter Wave Monolithic IMPATT Oscillators (1985 [MWSYM])

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

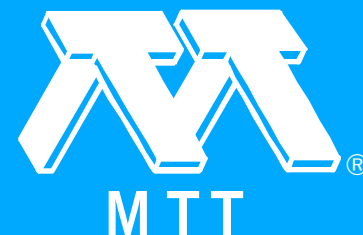
Issues

- ❑ High Performance Monolithic Power Amplifier Using a Unique Ion Implantation Process (1986 [MCS])
- ❑ High Power Broadband, 35 GHz Waveguide Switch Using a Monolithic Diode Array
- ❑ High Power Distributed Amplifier Using MBE Synthesized Material
- ❑ High Speed Varactor Tuned Notch Filter
- ❑ High Volume, Low Cost, MMIC Receiver Front End
- ❑ High-Harmonic Gyrotron Oscillators and Gyro-Klystron Amplifiers
- ❑ High-Order Mode Cutoff In Rectangular Striplines (Short Papers)
- ❑ High-Output, Single- and Dual-Diode, Millimeter-Wave Frequency Doublers
- ❑ High-Power and High-Efficiency Ion-Implanted Power GaAs FETs for C and X Bands
- ❑ High-Temperature Microwave Characterization of Dielectric Rods

Click on title for a paper summary.



Paper Index



[Contents](#)

[Publications](#)

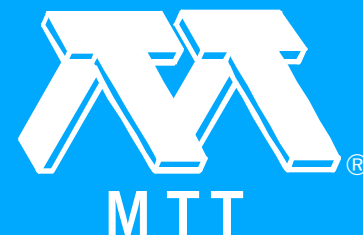
[Issues](#)

- ☐ [High-Temperature Microwave Characterization of Dielectric Rods \(Corrections\)](#)
- ☐ [High-Voltage FET Amplifiers for Satellite and Phased-Array Applications](#)
- ☐ [Higher Order Mode Cutoff in Polygonal Transmission Lines \(Short Papers\)](#)
- ☐ [Highly Accurate Design of Spiral Inductors for MMIC's with Small Size and High Cut-Off Frequency Characteristics \(1984 \[MWSYM\]\)](#)
- ☐ [Highly Stable Dielectric Resonator FET Oscillators \(Short Papers\)](#)
- ☐ [Historical Perspectives on Microwave Field Theory](#)
- ☐ [History of Biological Effects and Medical Applications of Microwave Energy](#)
- ☐ [History of Microwave Passive Components with Particular Attention to Directional Couplers](#)
- ☐ [History of Millimeter and Submillimeter Waves](#)
- ☐ [History of the Administrative Committee of the Microwave Theory and Techniques Society](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

- ☐ Homodyne and Heterodyne Studies of GaAs and InP Millimeter-Wave Gunn Mixers (Short Papers)
- ☐ Human Body Impedance for Electromagnetic Hazard Analysis in the VLF to MF Band
- ☐ Hybrid-Mode Analysis of Arbitrarily Shaped Planar Microwave Structures by the Method of Lines
- ☐ Hybrid-Mode Analysis of Coupled Microstrip-Slot Resonators
- ☐ Hyperbolic Secant Coupling in Overmoded Waveguide
- ☐ Hyperthermia and Inhomogeneous Tissue Effects Using an Annular Phased Array

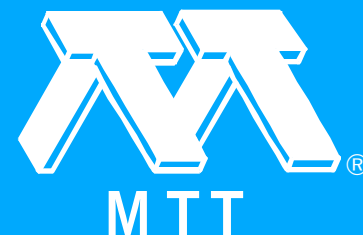
I

-
- ☐ IEEE Annual Combined Index (Advertisement) (Apr. 1985 [T-MTT])
 - ☐ IEEE Annual Combined Index (Advertisement) (Mar. 1984 [T-MTT])
 - ☐ IEEE Annual Combined Index (Advertisement) (May 1985 [T-MTT])

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

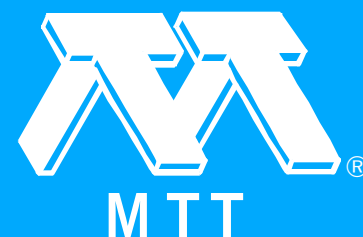
Issues

- ☐ IEEE Annual Combined Index (Advertisement) (Nov. 1984 [T-MTT])
- ☐ IEEE Conference Records (Advertisement) (Oct. 1984 [T-MTT])
- ☐ IEEE Copyright Form (Jan. 1984 [T-MTT])
- ☐ IEEE Finding Your Way (Advertisement) (Dec. 1985 [T-MTT])
- ☐ IEEE on Microfilm (Advertisement) (Feb. 1985 [T-MTT])
- ☐ IEEE on Microfilm (Advertisement) (Jan. 1985 [T-MTT])
- ☐ IEEE on Microfilm (Advertisement) (Jul. 1985 [T-MTT])
- ☐ IEEE on Microfilm (Advertisement) (Nov. 1984 [T-MTT])
- ☐ IEEE Open Order Plan (Advertisement) (Mar. 1984 [T-MTT])
- ☐ IEEE Press Books (Advertisement) (Jul. 1985 [T-MTT])
- ☐ IEEE Standard Dictionary (Advertisement) (Nov. 1984 [T-MTT])
- ☐ Imaging Polarimeter Arrays for Near-Millimeter Waves

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

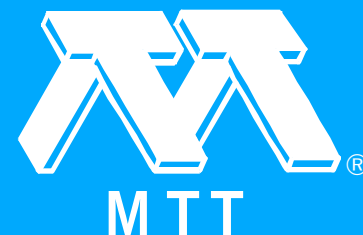
Issues

- ❑ Impedance Calculation of Three Narrow Resonant Strips on the Transverse Plane of a Rectangular Waveguide (Short Papers)
- ❑ Impedance Measurement in Frequency-Halving Networks Using a Two-Frequency Synthetic Loading Technique
- ❑ Impedance of an Elliptic Conductor Arbitrarily Located Between Ground Planes Filled with Two Dielectric Media (Short Papers)
- ❑ Impedance Transformation and Matching for Lumped Complex Load with Nonuniform Transmission Line
- ❑ Improved Finite-Element Formulation in Terms of the Magnetic Field Vector for Dielectric Waveguides
- ❑ Incremental Frequency Rule for Computing the Q-Factor of a Shielded TE/sub omp/ Dielectric Resonator (Short Papers)
- ❑ Index of Authors (1984 [MWSYM])
- ❑ Index of Authors (1985 [MCS])
- ❑ Index of Authors (1985 [MWSYM])
- ❑ Index of Authors (1986 [MCS])

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

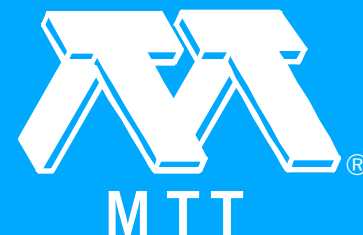
Issues

- ❑ Index, IEEE Transactions on Microwave Theory and Techniques, Volume MTT-32, 1984
- ❑ Index, IEEE Transactions on Microwave Theory and Techniques, Volume MTT-33, 1985
- ❑ Inductive Posts and Diaphragms of Arbitrary Shape and Number in a Rectangular Waveguide
- ❑ Influence of Conductor Shields on the Q-Factors of a TE₀/Dielectric Resonator
- ❑ Influence of Conductor Shields on the Q-Factors of a Te₀/Dielectric Resonator
- ❑ Information for Authors (Aug. 1984 [T-MTT])
- ❑ Inhomogeneous Open-Ended Resonators as Microwave Sensor Elements
- ❑ Injection Laser Modulation at 2 Gbit/s by Monolithic Silicon Multiplexer (Short Papers)
- ❑ Integral Formulation for Analysis of Integrated Dielectric Waveguides
- ❑ Integral Transforms Useful for the Accelerated Summation of Periodic, Free-Space Green's Functions (Short Papers)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

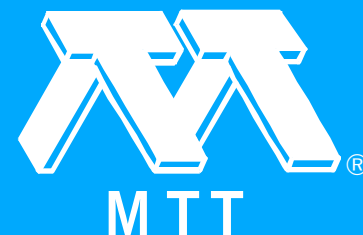
[Issues](#)

- ❑ [Integrated Ka-Band Front End with Monolithic Mixer](#)
- ❑ [Integrated Millimeter-Wave Systems and Subsystems Using Finline and Related E-Plane Technologies](#)
- ❑ [Integrated Tunable Cavity Gunn Oscillator for 60-GHz Operation in Image Line Waveguide](#)
- ❑ [Integrated-Circuit Structures on Anisotropic Substrates](#)
- ❑ [Integration Method of Measuring Q of the Microwave Resonators \(Further Comments\)](#)
- ❑ [Intensity and Distribution of Hybrid-Mode Fields in Dielectric-Loaded Waveguides](#)
- ❑ [Interaction of the Near-Zone Fields of a Slot on a Conducting Sphere with a Spherical Model of Man](#)
- ❑ [Interaction of the Near-Zone Fields of a Slot on a Conducting Sphere with a Spherical Model of Man \(Corrections\)](#)
- ❑ [Introduction \(Sep. 1984 \[T-MTT\]\)](#)
- ❑ [Inversion of Microwave Thermographic Data by the Singular Function Method](#)

Click on title for a paper summary.



Paper Index



[Contents](#)

[Publications](#)

[Issues](#)

- ☐ Investigation and Evaluation of Low Loss Interconnects on Soft Substrates Clad to Aluminum

K

- ☐ Ka-Band FET Oscillator (Short Papers)

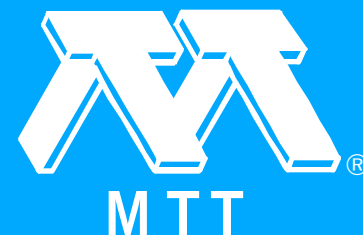
L

- ☐ Large Signal Analysis of Nonlinear Microwave Systems
- ☐ Large Signal Pulsed Network Analyzer Operation
- ☐ Large-Signal Equivalent-Circuit Model of a GaAs Dual-Gate MESFET Mixer (Short Papers)
- ☐ Large-Signal Microwave Performance Prediction of Dual-Gate GaAs MESFET Using an Efficient and Accurate Model (Short Papers)
- ☐ Leakage from a Gap in NRD Guide
- ☐ Limitations of Imaging with First-Order Diffraction Tomography
- ☐ Limitations of Microwave and Millimeter-Wave Mixers Due to Excess Noise (1985 [MWSYM])

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

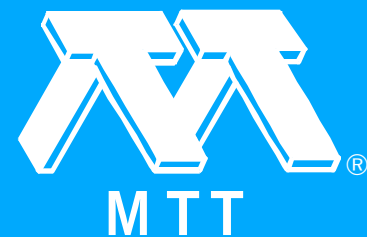
Issues

- ❑ Limitations of Microwave and Millimeter-Wave Mixers Due to Excess Noise (Dec. 1985 [T-MTT])
- ❑ Limitations of the Cubical Block Model of Man in Calculating SAR Distributions
- ❑ Limitations of the Cubical Block Model of Man in Calculating SAR Distributions (Comments)
- ❑ Limitations on the Size of Miniature Electric-Field Probes
- ❑ Linear Analog Hyperabrupt Varactor Diode Phase Shifters
- ❑ Linearity Limits of the Varactor-Controlled Osc-Mod Circuits
- ❑ Locking Behavior of a Microwave Multiple-Device Ladder Oscillator
- ❑ Longitudinal and Transverse Current Distributions on Microstriplines and Their Closed-Form Expression
- ❑ Loop-Gap Resonator: A Lumped Mode Microwave Resonant Structure (Correction)
- ❑ Loss Measurements of Nonradiative Dielectric Waveguide (Special Papers)
- ❑ Loss Mechanisms in Dielectric Loaded Resonators (1985 [MWSYM])

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

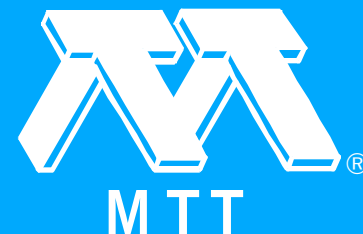
Issues

- ❑ Loss Mechanisms in Dielectric-Loaded Resonators (Dec. 1985 [T-MTT])
- ❑ Losses on Multiconductor Transmission Lines in Multilayered Dielectric Media
- ❑ Lossy Inductive-Post Obstacles in Lossy Waveguide
- ❑ Lossy, Hybrid Coupled Amplitude Equalizers for Narrow Band Filters
- ❑ Low Noise Amplifiers Using Two Dimensional Electron Gas FETs
- ❑ Low Noise High Electron Mobility Transistors (1984 [MWSYM])
- ❑ Low Noise Microwave HIFET Using MOCVD
- ❑ Low-Noise, Fixed Tuned, Broadband Mixer for 200-270 GHz
- ❑ Lumped Capacitance, Open-Circuit End Effects, and Edge-Capacitance of Microstrip-Like Transmission Lines for Microwave and Millimeter-Wave Applications

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

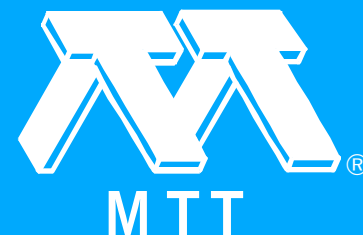
M

- ❑ [Magnetostatic Forward Volume Wave Propagation--Finite Width \(Short Papers\)](#)
- ❑ [Magnetostatic Surface-Wave Propagation in Ferrite Thin Films with Arbitrary Variations of the Magnetization Through the Film Thickness](#)
- ❑ [Magnetostatic Volume Modes of Ferrite Thin Films with Magnetization Inhomogeneities through the Film Thickness](#)
- ❑ [Magnetostatic Volume Wave Delay Lines with Stepped Ground Planes](#)
- ❑ [Magnetostatic Wave Delay Lines Using the Nonuniformly Magnetized YIG Film](#)
- ❑ [Main Floor, San Francisco Civic Auditorium \(1984 \[MWSYM\]\)](#)
- ❑ [Mathematical Expression of the Loading Characteristics of Microwave Oscillators and Injection-Locking Characteristics \(Short Papers\)](#)
- ❑ [Measurement of TDC in Engine by Microwave Technique \(1985 \[MWSYM\]\)](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

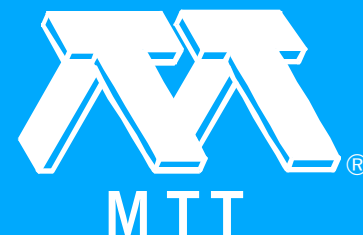
Issues

- ❑ Measurement of TDC in Engine by Microwave Technique (Dec. 1985 [T-MTT])
- ❑ Measurement of the Complex Dielectric Constant of Casting Resins at Millimeter Wavelengths Low-Loss
- ❑ Measurements of Microwave Conductivity and Dielectric Constant by the Cavity Perturbation Method and Their Errors
- ❑ Measurements of the Photo-Induced Complex Permittivity of Si, Ge, and Te at 9 GHz
- ❑ Membership Application (Apr. 1985 [T-MTT])
- ❑ Membership Application (Feb. 1984 [T-MTT])
- ❑ Membership Application (Feb. 1985 [T-MTT])
- ❑ Membership Application (Jan. 1984 [T-MTT])
- ❑ Membership Application (Jan. 1985 [T-MTT])
- ❑ Membership Application (Jul. 1985 [T-MTT])
- ❑ Membership Application (Jun. 1984 [T-MTT])
- ❑ Membership Application (Mar. 1984 [T-MTT])
- ❑ Membership Application (Mar. 1985 [T-MTT])

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

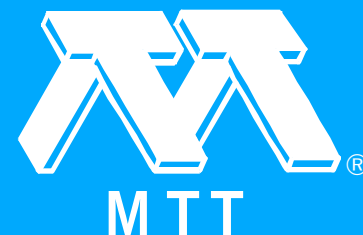
Issues

- ☐ Membership Application (May 1984 [T-MTT])
- ☐ Membership Application (May 1985 [T-MTT])
- ☐ MESFET Distributed Amplifier Design Guidelines
- ☐ Message from the General Chairman (1985 [MCS])
- ☐ Message from the General Chairman (1986 [MCS])
- ☐ Message from the Technical Program Chairman (1985 [MCS])
- ☐ Message from the Technical Program Chairman (1986 [MCS])
- ☐ Method of Moments as Applied to Electromagnetic Problems
- ☐ MIC Assembly for 12-GHz Direct Broadcast Satellite Receiver
- ☐ MICROS 3 - A CAD/CAM Program for Fast Realization of Microstrip Masks
- ☐ Microstrip Discontinuity Modelling for Millimetric Integrated Circuits
- ☐ Microstrip Mixer Design with Image Cancellation and Low Conversion Loss

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

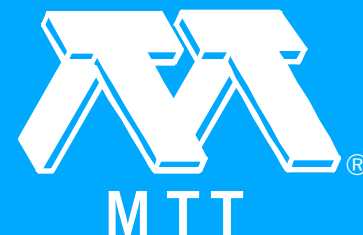
Issues

- ☐ Microstrip Spiral Antenna for Local Hyperthermia
- ☐ Microstrip Transmission Line with Finite-Width Dielectric and Ground Plane (Short Papers)
- ☐ Microwave Active Filters Based on Transversal and Recursive Principles
- ☐ Microwave and Infrared Thermograms of Hot Spots in Tissue
- ☐ Microwave Automatic Impedance Measuring Schemes Using Three Fixed Probes (Correction)
- ☐ Microwave Characterization of Liquid Films
- ☐ Microwave Communications--An Historical Perspective
- ☐ Microwave Diffraction Tomography for Biomedical Applications (Comments)
- ☐ Microwave Diffraction Tomography for Biomedical Applications (Further Comments)
- ☐ Microwave Ferrite Devices: The First Ten Years
- ☐ Microwave Heating System Using Lens Applicator for Localized Hyperthermia

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

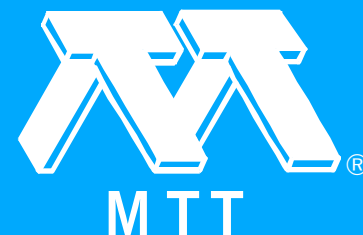
Issues

- ❑ Microwave Helix Waveguide Absorption Cell for Passive Frequency Standard (Short Papers)
- ❑ Microwave Hyperthermic Distributions in a Layered Living Body with Nonlinear Thermoregulatory Properties (Short Papers)
- ❑ Microwave Instrumentation: An Historical Perspective
- ❑ Microwave Integrated Circuits--An Historical Perspective
- ❑ Microwave Measurement of Dielectric Properties of Low-Loss Materials by the Dielectric Rod Resonator Method
- ❑ Microwave Modeling of Rectangular Tunnels
- ❑ Microwave Network Analysis of a Leaky-Wave Structure in Non-Radiative Dielectric Waveguide
- ❑ Microwave Network Representation of Discontinuity in Open Dielectric Waveguides and its Applications to Periodic Structures
- ❑ Microwave Point Contact Diode Responsivity Improvement through Surface Effects in Vacuum (Short Papers)
- ❑ Microwave Printed Circuits - The Early Years

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

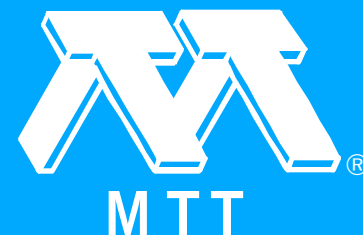
Issues

- ☐ Microwave Radiometric Detection of Thermal Asymmetry of Varicocele
- ☐ Microwave Thermoelastic Tissue Imaging--System Design
- ☐ Microwave-Induced Post-Exposure Hyperthermia: Involvement of Endogenous Opioids and Serotonin
- ☐ Microwave-Induced Thermoacoustic Effect in Dielectrics and its Coupling to External Medium--A Thermodynamical Formulation
- ☐ Microwave/Millimeter Wave Monolithic Integrated Circuits (MIMIC) Program (1986 [MCS])
- ☐ MIDAS a New Microwave/RF CAD Program
- ☐ Millimeter Wave Multiplexer with Printed Circuit Elements for the 88 to 100 GHz Frequency Range
- ☐ Millimeter Wave Silicon Device and Integrated Circuit Technology
- ☐ Millimeter-Wave Diplexers with Printed Circuit Elements (1985 [MWSYM])
- ☐ Millimeter-Wave Diplexers with Printed Circuit Elements (Dec. 1985 [T-MTT])

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

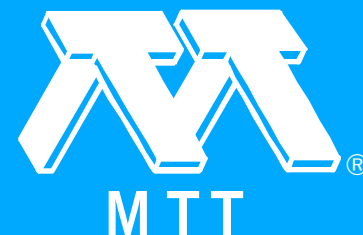
Issues

- ☐ Millimeter-Wave Hybrid Microstrip Subsystems
- ☐ Millimeter-Wave, Shot-Noise Limited, Fixed-Tuned Mixer
- ☐ Millimetric Non-Reciprocal Coupled-Slot Fin-Line Components
- ☐ Miniature Band Reject Filters Applications for Satellite
- ☐ Miniature Ceramic Circuit Components for Ku Band Receivers
- ☐ Miniature FET Oscillator Stabilized by a Dual Mode Dielectric Resonator Loaded Cavity
- ☐ Miniature Millimeter-Wave Integrated Circuit Wideband Downconverters
- ☐ Mode Coupling by a Longitudinal Slot for a Class of Planar Waveguiding Structures: Part I--Theory
- ☐ Mode Coupling by a Longitudinal Slot for a Class of Planar Waveguiding Structures: Part II--Applications
- ☐ Mode Propagation through a Step Discontinuity in Dielectric Planar Waveguide (1984 [MWSYM])
- ☐ Modeling and Measurement of Microstrip Transmission-Line Structures

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

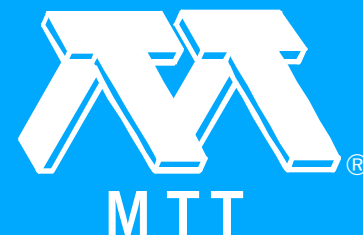
Issues

- ☐ Modeling of Nonlinear Distortion in GaAs MESFETs
- ☐ Modelling and Measurement of Microstrip Transmission Line Structures
- ☐ Modes in Anisotropic Rectangular Waveguides: An Accurate and Simple Perturbation Approach (Short Papers)
- ☐ Monolithic Antennas for Millimeter Wave GaAs Integrated Circuits
- ☐ Monolithic GaAs Dual-Gate FET Variable Power Amplifier Module
- ☐ Monolithic Microwave Integrated Circuits: An Historical Perspective
- ☐ Monolithic Optoelectronic Receiver for Gbit Operation
- ☐ MTT-S International Symposia Future Locations (1984 [MWSYM])
- ☐ MTT-S Symposium - Committees, Awards, Panels, Workshops (1984 [MWSYM])
- ☐ Multi-Octave Performance of Single-Ended Microwave Solid-State Amplifiers
- ☐ Multi-Octave Phase Modulators

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

- ❑ Multiconductor Planar Transmission-Line Structures for High-Directivity Coupler Applications
- ❑ Multiconductor Transmission Lines In Multilayered Dielectric Media
- ❑ Multimode Oscillation and Mode Competition in High-Frequency Gyrotrons
- ❑ Multiple-Post Inductive Obstacles in Rectangular Waveguide

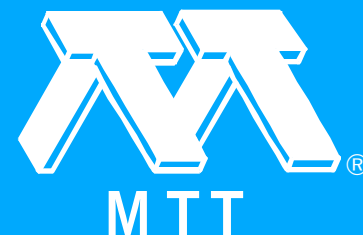
N

- ❑ Narrow Bandpass Filters Using the High-Q Cylindrical TE/sub 0ml/ Resonator Modes
- ❑ New Analysis of Semiconductor Isolators: The Modified Spectral Domain Analysis (Short Papers)
- ❑ New Fellows in IEEE/MTT-S (1985 [MWSYM])
- ❑ New MIC Power Dividers Using Coupled Microstrip-Slot Lines: Two-Sided MIC Power Dividers
- ❑ New Narrow-Band Dual-Mode Bandstop Waveguide Filters (Comments)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

- ☐ [New Narrow-Band Dual-Mode Bandstop Waveguide Filters \(Corrections\)](#)
- ☐ [New Phase-Lock Loop Circuit Providing Very Fast Acquisition Time](#)
- ☐ [Noise Due to Pulse-to-Pulse Incoherence in Injection-Locked Pulsed-Microwave Oscillators. Part II-Effects of Phase-Locking Dynamics](#)
- ☐ [Noise Measurements and Noise Mechanisms in Microwave Mixer Diodes](#)
- ☐ [Nonlinear Slow-Wave Propagation on Periodic Schottky Coplanar Lines](#)
- ☐ [Nonradiative Dielectric Waveguide T-Junctions for Millimeter-Wave Applications \(Short Papers\)](#)
- ☐ [Nonreciprocal Effects in Semiconductor Loaded Waveguide at Millimeter Wavelengths](#)
- ☐ [Normal-Mode Parameters of Microstrip Coupled Lines of Unequal Width \(Short Papers\)](#)
- ☐ [Novel GaAs FET Phase Detector Operable to Ka Band](#)
- ☐ [Novel Lowpass Harmonic Filters for Satellite Application](#)

Click on title for a paper summary.

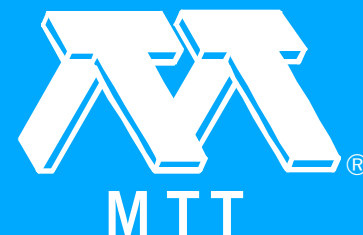


Paper Index

- ❑ [Numerical Study of the Current Distribution on a Post in a Rectangular Waveguide \(Short Papers\)](#)

O

- ❑ [Octave-Band High Precision Balanced Modulator](#)
- ❑ [On Temperature Characteristics for a GaAs Monolithic Broad-Band Amplifier Having Resistive Loads \(Short Papers\)](#)
- ❑ [On the Analysis and Design of Spurline Bandstop Filters](#)
- ❑ [On the Analysis and Design of Three Coupled Microstrip Lines \(Short Papers\)](#)
- ❑ [On the Definition of Parameters in Ferrite-Electromagnetic Wave Interactions \(Comments\)](#)
- ❑ [On the Graceful Degradation Performance of Multiple-Device Oscillators \(Short Papers\)](#)
- ❑ [On the Graphical Representation of Electric Field Lines in Waveguide](#)
- ❑ [On the Higher Order Modes of Elliptical Optical Fibers](#)



[Contents](#)

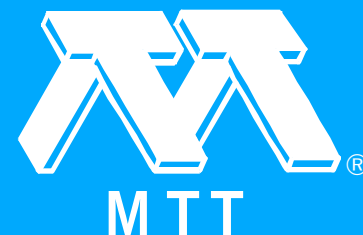
[Publications](#)

[Issues](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

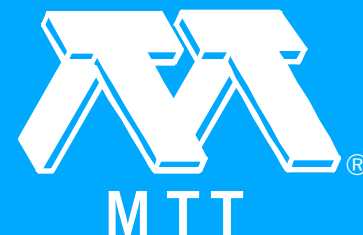
Issues

- ❑ [On the Narrow-Band Microwave Filter Design Using a Dielectric Rod](#)
- ❑ [On the Nonthermal Microwave Response of Drosophila Melanogaster \(Short Papers\)](#)
- ❑ [On the Question of the Dyadic Operation of Dyadic Green's Functions at the Source Region](#)
- ❑ [On the Resolution of Dicke-Type Radiometers](#)
- ❑ [On the Solution of a Microstripline with Two Dielectrics](#)
- ❑ [On the Variational Reaction Theory for Dielectric Waveguides](#)
- ❑ [One-Root Intervals of Dispersion Relations for a Resonator with Dielectric Sample \(Short Papers\)](#)
- ❑ [Optical Effects on the Static and Dynamic Characteristics of a GaAs MESFET \(Short Papers\)](#)
- ❑ [Optical Fiber Delay-Line Signal Processing](#)
- ❑ [Optical Fiber Delay-Line Signal Processing \(Corrections\)](#)
- ❑ [Optical Injection Locking of BARITT Oscillators \(Comments\)](#)
- ❑ [Optical Technology for Microwave Applications](#)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

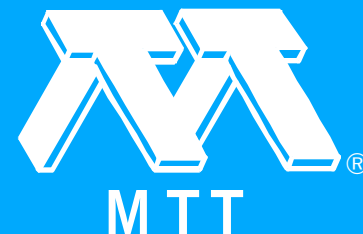
[Issues](#)

- ☐ [Optically Controlled Microwave Devices and Circuits](#)
- ☐ [Optics for Microwave Applications](#)
- ☐ [Optimization of Third-Order Intermodulation Product and Output Power from an X-Band MESFET Amplifier Using Volterra Series Analysis](#)
- ☐ [Optimized Microstrip Ring-Star 5-Ports for Broadband 6-Port Measurement Applications](#)
- ☐ [Optimizing an Electromagnetic Field Sensor for Microwave Amplitude and Phase Detection via Fiber Optic Transmission Link](#)
- ☐ [Optimum Design of a Potentially Dispersion-Free Helical Slow-Wave Circuit of a Broad-Band TWT \(Short Papers\)](#)
- ☐ [Optimum Design of Shielded Dielectric Rod and Ring Resonators for Obtaining the Best Mode Separation](#)
- ☐ [Optimum Noise Measure Terminations for Microwave Transistor Amplifiers \(Short Papers\)](#)
- ☐ [Optoelectronic Techniques for Microwave and Millimeter-Wave Applications](#)
- ☐ [Origins of High-Power Diode Switching](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

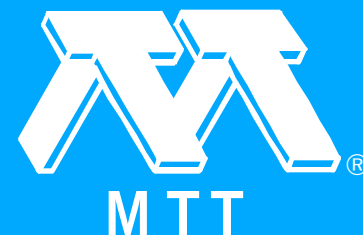
P

- ☐ [Panel Sessions \(1984 \[MWSYM\]\)](#)
- ☐ [Panel Sessions \(1985 \[MWSYM\]\)](#)
- ☐ [Parallel Feedback FETDRO Design Using 3-Port S-Parameters](#)
- ☐ [Passive Magnetostatic Wave Pulse Compression Loop](#)
- ☐ [Patent Abstracts \(Apr. 1984 \[T-MTT\]\)](#)
- ☐ [Patent Abstracts \(Apr. 1985 \[T-MTT\]\)](#)
- ☐ [Patent Abstracts \(Aug. 1984 \[T-MTT\]\)](#)
- ☐ [Patent Abstracts \(Aug. 1985 \[T-MTT\]\)](#)
- ☐ [Patent Abstracts \(Dec. 1984 \[T-MTT\]\)](#)
- ☐ [Patent Abstracts \(Dec. 1985 \[T-MTT\]\)](#)
- ☐ [Patent Abstracts \(Feb. 1984 \[T-MTT\]\)](#)
- ☐ [Patent Abstracts \(Feb. 1985 \[T-MTT\]\)](#)
- ☐ [Patent Abstracts \(Jan. 1984 \[T-MTT\]\)](#)
- ☐ [Patent Abstracts \(Jan. 1985 \[T-MTT\]\)](#)
- ☐ [Patent Abstracts \(Jul. 1984 \[T-MTT\]\)](#)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

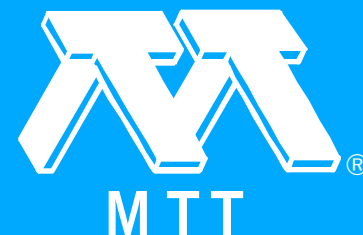
[Issues](#)

- ☐ Patent Abstracts (Jul. 1985 [T-MTT])
- ☐ Patent Abstracts (Jun. 1984 [T-MTT])
- ☐ Patent Abstracts (Jun. 1985 [T-MTT])
- ☐ Patent Abstracts (Mar. 1984 [T-MTT])
- ☐ Patent Abstracts (Mar. 1985 [T-MTT])
- ☐ Patent Abstracts (May 1984 ([T-MTT])
- ☐ Patent Abstracts (May 1985 [T-MTT])
- ☐ Patent Abstracts (Nov. 1984 [T-MTT])
- ☐ Patent Abstracts (Nov. 1985 [T-MTT])
- ☐ Patent Abstracts (Oct. 1984 [T-MTT])
- ☐ Patent Abstracts (Oct. 1985 [T-MTT])
- ☐ Patent Abstracts (Sep. 1984 [T-MTT])
- ☐ Patent Abstracts (Sep. 1985 [T-MTT])
- ☐ Penalty Function Improvement of Waveguide Solution by Finite Elements
- ☐ Performance Characteristics of the Thin-Film, Etched-Circuit Rectenna

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

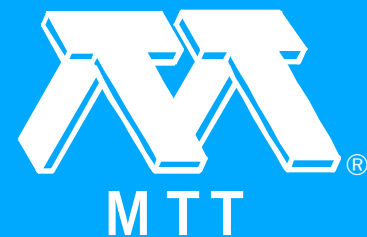
Issues

- ❑ Performance of Microwave FM Signal Frequency Division Circuits
- ❑ Perturbation Analysis and Design Equations for Open- and Closed-Ring Microstrip Resonators
- ❑ Phase Shifts in Single- and Dual-Gate GaAs MESFET's for 2-4-GHz Quadrature Phase Shifters
- ❑ Phase-Matched Waveguide Using the Artificial Anisotropic Structure and its Application to a Mode Converter (Short Papers)
- ❑ Phase-Matched Waveguide Using the Artificial Anisotropic Structure and its Application to Mode Converter
- ❑ Phased-Dipole Applicators for Torso Heating in Electromagnetic Hyperthermia (Short Papers)
- ❑ Planar Circuit Analysis of Microstrip Radial Stub
- ❑ Planar Circuit Analysis of Microstrip Radial Stub (Short Papers)
- ❑ Planar Circuits, Waveguide Models, and Segmentation Method

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

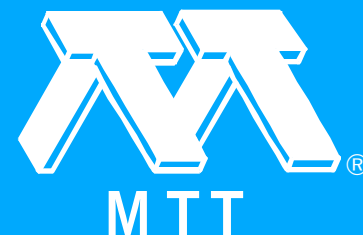
Issues

- ❑ Planar Integrated Microwave Components for Terrestrial and Satellite Application
- ❑ Planar Millimeter-Wave Diode Mixer (Short Papers)
- ❑ Planar MMIC Hybrid Circuit and Frequency Converter
- ❑ Plasma-Dielectric Sandwich Structure Used as a Tunable Bandpass Microwave Filter (Short Papers)
- ❑ Plenary Session (1984 [MWSYM])
- ❑ Plot of Modal Field Distribution in Rectangular and Circular Waveguides (Short Papers)
- ❑ Polarization-Sensitive Imaging Arrays
- ❑ Polygonal Coaxial Line with Round Center Conductor (Short Papers)
- ❑ Polynomial Approximations for the Electric Polarizabilities of Some Small Apertures
- ❑ Powder Core Dielectric Waveguides
- ❑ Power Characterisation of a MESFET Amplifier Using Small Signal Measurements and Volterra Series

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

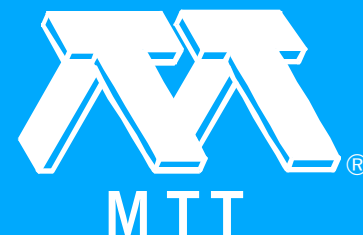
Issues

- ❑ Power Density Distribution Analysis of Ferrite Loaded Finlines for the Development of Integrated Nonreciprocal Millimeter Wave Elements
- ❑ Power Increase of Pulsed Millimeter-Wave IMPATT Diodes (Short Papers)
- ❑ Power Saturation Characteristics of GaAs/AlGaAs High Electron Mobility Transistors
- ❑ Power-Handling Capabilities of Circular Dielectric Waveguide at Millimeter Wavelengths
- ❑ Practical Aspects and Limitations of Dual Mode Dielectric Resonator Filters
- ❑ Precision Dielectric Measurements of Nonpolar Polymers in the Millimeter Wavelength Range
- ❑ Predistortion Linearize Using GaAs Dual-Gate MESFET for TWTA and SSPA Used in Satellite Transponders
- ❑ Predistortion Techniques for Multicoupled Resonator Filters
- ❑ Predistortion Techniques for Multicoupled Resonator Filters (Short Papers)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

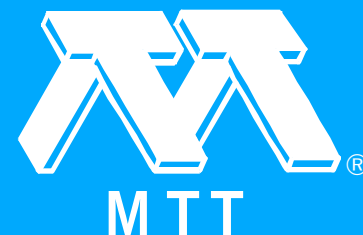
[Issues](#)

- ☐ [Probe Mutual Impedance in a Rectangular Waveguide \(Short Papers\)](#)
- ☐ [Probing Electromagnetic Fields in Lossy Spheres and Cylinders](#)
- ☐ [Production Technology Development for High Yield, High Performance X-Band Monolithic Power and Low Noise Amplifiers](#)
- ☐ [Production Technology for High-Yield, High-Performance GaAs Monolithic Amplifiers](#)
- ☐ [Propagation Characteristics of a Microstrip Line Printed on a General Anisotropic Substrate](#)
- ☐ [Propagation in Broadside-Coupled Suspended-Substrate Stripline in E-Plane](#)
- ☐ [Propagation of Quasi-Static Modes in Anisotropic Transmission Lines: Application to MIC Lines](#)
- ☐ [Propagation on a Sheath Helix in a Coaxially Layered Lossy Dielectric Medium \(Short Papers\)](#)
- ☐ [Properties of the Symmetrical Five-Port Circuit and Its Broad-Band Design](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

- ☐ Pulse Network Analyzer
- ☐ Push-Push Dielectric Resonator Oscillator

Q

- ☐ Q-Factor Measurement with Network Analyzer
- ☐ Quarter Wave Transformers for Matching Transitions Between Waveguides and Fin Lines
- ☐ Quarter-Wave Matching of Waveguide-to-Finline Transitions (Short Papers)
- ☐ Quasi-Lumped-Element 3- and 4-Port Networks for MIC and MMIC Applications
- ☐ Quasi-Optical Method for Measuring the Complex Permittivity of Materials (Corrections)
- ☐ Quasi-Optical Slot Ring Mixer Noise Figure Measurements
- ☐ Quasi-Static Characteristics of Asymmetrical and Coupled Coplanar-Type Transmission Lines

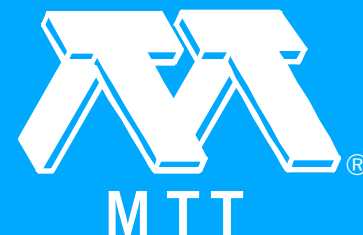
R

- ☐ R.F. Spectrum of Thermal Noise and Stability of a Microwave Cavity Oscillator

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

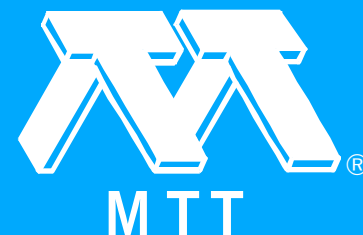
[Issues](#)

- ❑ Radar-Echo Location of Conducting Spheres in Waveguide (Short Papers)
- ❑ Radial-Line/Coaxial-Line Stepped Junction (Short Papers)
- ❑ Radiometric Technique for Measuring Changes in Lung Water (Short Papers)
- ❑ Recent Developments in SAW Device Applications
- ❑ Rectangular Bars Coupled Through a Finite-Thickness Slot
- ❑ Reduction of Propagation Losses in Coplanar Waveguide
- ❑ Reflection Charts Relating to Impedance Matching
- ❑ Reflection Coefficient of a Conducting Sphere on the Broad Wall of a Rectangular Waveguide
- ❑ Reflective Match, Lossy Match, Feedback and Distributed Amplifiers: A Comparison of Multi-Octave Performance Characteristics
- ❑ Regenerative Frequency Division with a GaAs FET
- ❑ Responses of Electric-Field Probes Near a Cylindrical Model of the Human Body
- ❑ Review of Numerical Methods for the Analysis of Arbitrarily-Shaped Microwave and Optical Dielectric Waveguides

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

- ❑ RF Spectrum of Thermal Noise and Frequency Stability of a Microwave Cavity-Oscillator
- ❑ Rigorous Hybrid-Mode Analysis of the Transition from Rectangular Waveguide to Shielded Dielectric Image Guide

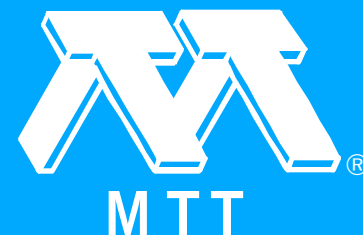
S

- ❑ S- and X-Band GaAs FET Mixers with Thin-Film Lumped Elements (Short Papers)
- ❑ SAW Resonator Filters: Applications and Capabilities
- ❑ Scalar Variational Analysis of Single-Mode Waveguides with Rectangular Cross Section (Short Papers)
- ❑ Scattering Analysis of a Millimeter-Wave Scalar Network Analyzer
- ❑ Scattering at a Junction of Two Waveguides with Different Surface Impedances
- ❑ Scattering at a Junction of Two Waveguides with Different Surface Impedances (Comments)
- ❑ Scattering at an N-Furcated Parallel-Plate Waveguide Junction (Short Papers)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

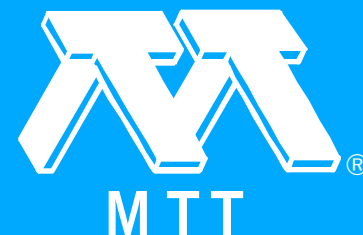
Issues

- ❑ Scattering by Dielectric Obstacles Inside Guiding Structures
- ❑ Scattering Coefficients of an Inductive Strip in a Finline: Theory and Experiment
- ❑ Scattering of Guided Modes Caused by an Arbitrarily Shaped Broken End in a Dielectric Slab Waveguide (Correction)
- ❑ Scattering of Surface Waves by Nonuniform Waveguides
- ❑ Scattering of Surface Waves on Transverse Discontinuities in Symmetrical Three-Layer Dielectric Waveguides
- ❑ Scattering Parameters of Axial Inductive Strips in Rectangular Waveguide
- ❑ Schedule of Additional Activities and Meetings (1984 [MWSYM])
- ❑ Self Equalized, Equiripple Microwave Filter
- ❑ Self-Consistent FET Models for Amplifier Design and Device Diagnostics
- ❑ Self-Consistent GaAs FET Models for Amplifier Design and Device Diagnostics

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

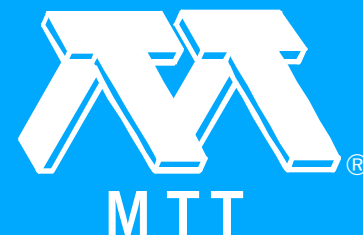
Issues

- ❑ Semiconductor Antenna: A New Device in Millimeter- and Submillimeter-Wave Integrated Circuits (Short Papers)
- ❑ Sensitivity Analysis of a 15.0 GHz Monopulse Radar Receiver Using a Logarithmic Amplifier Detector Scheme
- ❑ Session 1 -- Joint Session of MTT-S and MW & mmW Monolithic Symposia - Monolithic Millimeter-Wave Circuits
- ❑ Session 1 Introduction (1984 [MWSYM])
- ❑ Session 10 -- Systems
- ❑ Session 10 Introduction (1984 [MWSYM])
- ❑ Session 11 -- Noise and Frequency Stabilization of FET Oscillators
- ❑ Session 11 Introduction (1984 [MWSYM])
- ❑ Session 12 -- Communications Filters
- ❑ Session 12 Introduction (1984 [MWSYM])
- ❑ Session 13 -- Systems Topics
- ❑ Session 13 Introduction (1984 [MWSYM])
- ❑ Session 14 -- Open Forum Session II

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

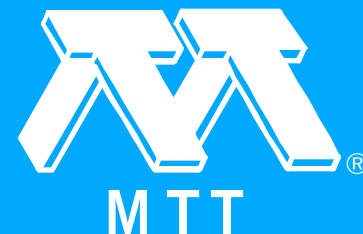
[Issues](#)

- ☐ [Session 15 -- Semiconductor Control and Frequency Conversion](#)
- ☐ [Session 15 Introduction \(1984 \[MWSYM\]\)](#)
- ☐ [Session 16 -- Millimeter-Wave Applications](#)
- ☐ [Session 16 Introduction \(1984 \[MWSYM\]\)](#)
- ☐ [Session 17 -- MIC Techniques](#)
- ☐ [Session 17 Introduction \(1984 \[MWSYM\]\)](#)
- ☐ [Session 18 -- FET Modeling and Novel Structures](#)
- ☐ [Session 18 Introduction \(1984 \[MWSYM\]\)](#)
- ☐ [Session 19 -- Millimeter-Wave Techniques](#)
- ☐ [Session 19 Introduction \(1984 \[MWSYM\]\)](#)
- ☐ [Session 2 -- Field Theory of Guiding Structures](#)
- ☐ [Session 2 Introduction \(1984 \[MWSYM\]\)](#)
- ☐ [Session 20 -- Planar Transmission Line Structures](#)
- ☐ [Session 20 Introduction \(1984 \[MWSYM\]\)](#)
- ☐ [Session 21 -- IMPATT and Bipolar Oscillators](#)
- ☐ [Session 21 Introduction \(1984 \[MWSYM\]\)](#)
- ☐ [Session 22 -- Dielectric Waveguides](#)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

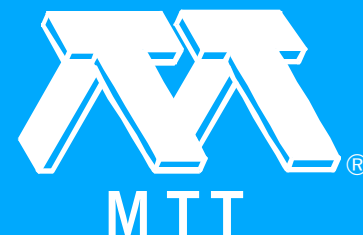
[Issues](#)

- ❑ [Session 22 Introduction \(1984 \[MWSYM\]\)](#)
- ❑ [Session 23 -- Microwave and Millimeter-Wave Measurements](#)
- ❑ [Session 23 Introduction \(1984 \[MWSYM\]\)](#)
- ❑ [Session 24 -- Optical and Submillimeter Wave Technology](#)
- ❑ [Session 25 -- Millimeter-Wave Mixers](#)
- ❑ [Session 25 Introduction \(1984 \[MWSYM\]\)](#)
- ❑ [Session 26 -- Six-Port Measurement Techniques](#)
- ❑ [Session 26 Introduction \(1984 \[MWSYM\]\)](#)
- ❑ [Session 3 -- Acoustic and Magnetic Devices](#)
- ❑ [Session 3 Introduction \(1984 \[MWSYM\]\)](#)
- ❑ [Session 4 -- Devices and Monolithic Circuit Elements](#)
- ❑ [Session 4 Introduction \(1984 \[MWSYM\]\)](#)
- ❑ [Session 5 -- Component Applications of Field Theory](#)
- ❑ [Session 5 Introduction \(1984 \[MWSYM\]\)](#)
- ❑ [Session 6 -- Biomedical Aspects of Microwaves](#)
- ❑ [Session 6 Introduction \(1984 \[MWSYM\]\)](#)
- ❑ [Session 7 -- Open Forum Session I](#)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

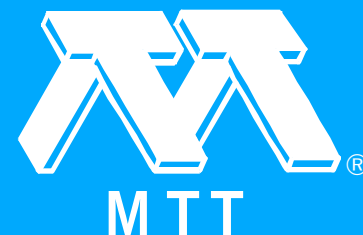
[Issues](#)

- ☐ [Session 8 -- FET Amplifiers](#)
- ☐ [Session 8 Introduction \(1984 \[MWSYM\]\)](#)
- ☐ [Session 9 -- Filters](#)
- ☐ [Session 9 Introduction \(1984 \[MWSYM\]\)](#)
- ☐ [Session A -- Plenary Session](#)
- ☐ [Session AA -- Solid-State Device Applications \(Non-FET\)](#)
- ☐ [Session B -- Monolithic Receiver Circuits](#)
- ☐ [Session BB -- Microwave Integrated Circuit Techniques](#)
- ☐ [Session C -- Biomedical Aspects of Microwaves](#)
- ☐ [Session CC -- Computer-Aided Design Techniques for Linear Circuits](#)
- ☐ [Session D -- Communication Systems](#)
- ☐ [Session E -- Monolithic Millimeter-Wave Circuits](#)
- ☐ [Session F -- Guided Waves](#)
- ☐ [Session G -- Integrated Microwave Systems](#)
- ☐ [Session H -- Open Forum I](#)
- ☐ [Session I -- Acoustics and Ferrites](#)
- ☐ [Session J -- FET Oscillators](#)

Click on title for a paper summary.



Paper Index



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

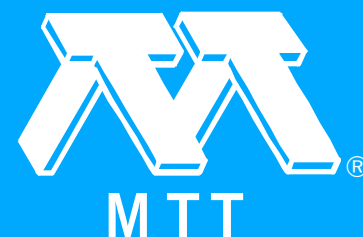
- ☐ [Session K -- Microwave Filter Networks](#)
- ☐ [Session L -- Optical and Submillimeter Wavelength Technology](#)
- ☐ [Session M -- FET Amplifiers](#)
- ☐ [Session N -- Filters and Multiplexers](#)
- ☐ [Session O -- Millimeter-Wave Component Technology I](#)
- ☐ [Session P -- Solid-State Sources and Amplifiers](#)
- ☐ [Session Q -- Computer Modeling and Design of Nonlinear Networks](#)
- ☐ [Session R -- Millimeter-Wave Component Technology II](#)
- ☐ [Session S -- Open Forum II](#)
- ☐ [Session T -- Solid-State Device Topics](#)
- ☐ [Session U -- Low Noise HEMT Amplifiers](#)
- ☐ [Session V -- Continuous and Discontinuous Microstrip Structures](#)
- ☐ [Session W -- Network Analyzer Techniques](#)
- ☐ [Session X -- FET Applications](#)
- ☐ [Session Y -- Waveguiding Structures](#)

Click on title for a paper summary.



Paper Index

- ❑ [Session Z -- Microwave Measurements](#)
- ❑ [Short Millimeter Low Local Wavelength Mixer with Oscillator Power](#)
- ❑ [Short Millimeter Wave Region High Accuracy Power Meter with Self-Calibration Function](#)
- ❑ [Si Monolithic Microwave Prescaler](#)
- ❑ [Silicon High Resistivity Substrate Millimeter-Wave Technology \(1986 \[MCS\]\)](#)
- ❑ [Simple and Accurate Expression for the Dominant Mode Properties of Open Groove Guide](#)
- ❑ [Single-Post Inductive Obstacle in Rectangular Waveguide \(Comments\)](#)
- ❑ [Single-Post Inductive Obstacle in Rectangular Waveguide \(Reply to Comments\)](#)
- ❑ [Single-Stage GaAs Monolithic Feedback Amplifiers \(Short Papers\)](#)
- ❑ [Singularity Extraction from the Electric Green's Function for a Spherical Resonator \(Short Papers\)](#)



IEEE

[Contents](#)

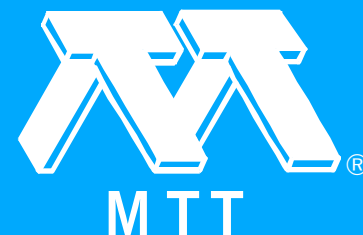
[Publications](#)

[Issues](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

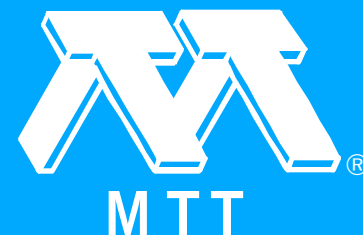
Issues

- ❑ Slow-Wave Propagation in Two Types of Cylindrical Waveguides Loaded with a Semiconductor (Short Papers)
- ❑ Small Size VCO Module for 900 MHz Band Using Coupled Microstrip-Coplanar Lines
- ❑ Solid-State Microwave and Millimeter-Wave Sources Development--A Personal Account
- ❑ Solution of the Finline Step-Discontinuity Problem Using the Generalized Variational Technique
- ❑ Some Properties of the Matched, Symmetrical Six-Port Junction
- ❑ Some Results on Low-Level Microwave Treatment of the Mountain Pine Beetle and the Darkling Beetle
- ❑ Space Domain Decoupling of LSE and LSM Fields in Generalized Planar Guiding Structures
- ❑ Space-Domain Decoupling of LSE and LSM Fields in Generalized Planar Guiding Structures
- ❑ Specific Absorption Rate Distribution in a Full-Scale Model of Man at 350 MHz

Click on title for a paper summary.



Paper Index



[Contents](#)

[Publications](#)

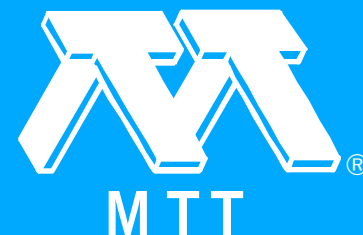
[Issues](#)

- ❑ [Specific Absorption Rate Distribution in a Model of Man at Various Polarizations](#)
- ❑ [Spectral Domain Analysis of an Elliptic Microstrip Ring Resonator \(Short Papers\)](#)
- ❑ [Spectral Iterative Technique for Analyzing Multiconductor Microstrip Lines](#)
- ❑ [Spectral-Domain Approach for Continuous Spectrum of Slot-Like Transmission Lines \(Short Papers\)](#)
- ❑ [Stability Margins in Microwave Amplifiers](#)
- ❑ [Stability of Multifrequency Negative-Resistance Oscillators](#)
- ❑ [Stability of the Oscillation Mode in a Multiple-Oscillator System](#)
- ❑ [Stable Microwave Source Using High Overtone Bulk Resonators](#)
- ❑ [Step Response of Lossless Nonuniform Transmission Lines with Power-Law Characteristic Impedance Function \(Short Papers\)](#)
- ❑ [Stokes Vector Representation of the Six-Port Network Analyzer: Calibration and Measurement](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

- ☐ Surface Wave Losses at Discontinuities in Millimeter Wave Integrated Transmission Lines
- ☐ Symposium Schedule (1984 [MWSYM])
- ☐ Synthesis of Optimum Fin-Line Tapers
- ☐ Synthesis of Optimum Finline Tapers Using Dispersion Formulas for Arbitrary Slot Widths and Locations
- ☐ Synthesis of Quarter-Wave Coupled Junction Circulators with Degrees 1 and 2 Complex Gyrator Circuits

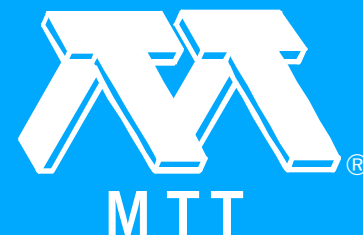
T

- ☐ Table of Contents (1984 [MWSYM])
- ☐ Table of Contents (1985 [MCS])
- ☐ Table of Contents (1985 [MWSYM])
- ☐ Table of Contents (1986 [MCS])
- ☐ Table of Contents (Dec. 1984 [T-MTT])
- ☐ Table of Contents (Dec. 1985 [T-MTT])
- ☐ Table of Contents (Sep. 1984 [T-MTT])
- ☐ Table of Contents, 1984 MTT Symposium Digest (Dec. 1984 [T-MTT])

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

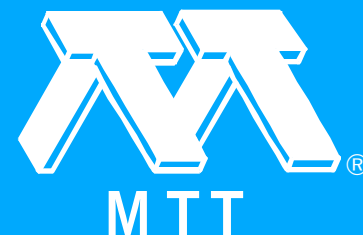
Issues

- ☐ Table of Contents, 1985 MTT Symposium Digest (Dec. 1985 [T-MTT])
- ☐ Table of Contents, Preview of April (Mar. 1985 [T-MTT])
- ☐ Table of Contents, Preview of February (Jan. 1985 [T-MTT])
- ☐ Table of Contents, Preview of July (June 1985 [T-MTT])
- ☐ Table of Contents, Preview of June (May 1985 [T-MTT])
- ☐ Table of Contents, Preview of March (Feb. 1985 [T-MTT])
- ☐ Table of Contents, Preview of May (Apr. 1985 [T-MTT])
- ☐ Technical Program Contents (1985 [MWSYM])
- ☐ Technology Summaries for Microwave Theory and Techniques--1983
- ☐ Technology Summaries for Microwave Theory and Techniques--1983 (Corrections)
- ☐ Temperature Controlled Predistortion Circuits for 64 QAM Microwave Power Amplifiers
- ☐ The 1985 MTT-S International Microwave Symposium (Dec. 1985 [T-MTT])

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

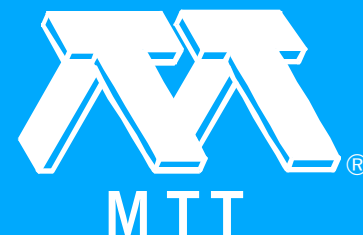
Issues

- ❑ The Absence of Significant Short-Term Electromagnetic Bioeffects in Giant Algal Cells Exposed to CW and Pulse-Modulated X-Band Bursts
- ❑ The Annular Slot Antenna in a Lossy Biological Medium (Short Papers)
- ❑ The Application of Planar Anisotropy to Millimeter-Wave Ferrite Phase Shifters
- ❑ The Birth of Lightwave Technology and Its Implications to Microwaves
- ❑ The Design and Performance of a Double Balanced Mixer Using FETs
- ❑ The Design Parameters of Nonsymmetrical Coupled Microstrips (Comments)
- ❑ The Displaced Rectangular Waveguide Junction and Its Use as an Adjustable Reference Reflection
- ❑ The Dominant Mode Properties of Open Groove Guide: An Improved Solution
- ❑ The Dynamical Behavior of a Single-Mode Optical Fiber Strain Gage (Correction to Comments)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

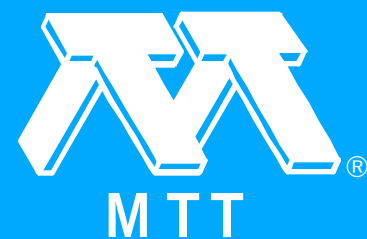
Issues

- ❑ The Electric-Field Problem of an Interdigital Transducer in a Multilayered Structure
- ❑ The Electrostatic Field of Conducting Bodies in Multiple Dielectric Media
- ❑ The Finite-Element Method for Finding Modes of Dielectric-Loaded Cavities (Short Papers)
- ❑ The Historical Development of GaAs FET Digital IC Technology
- ❑ The History of Power Transmission by Radio Waves
- ❑ The Influence of Metallization Thickness and Mounting Grooves on the Characteristics of Finline
- ❑ The Interdigitated Three-Strip Coupler (Short Papers)
- ❑ The Intrinsic Noise Figure of the MESFET Distributed Amplifier
- ❑ The Inverse Problem for Biaxial Materials
- ❑ The Measured and Computed Performance of a 140--220 GHz Schottky Diode Mixer
- ❑ The Measurement of Noise in Microwave Transmitters (Comments) (May 1984 [T-MTT])

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

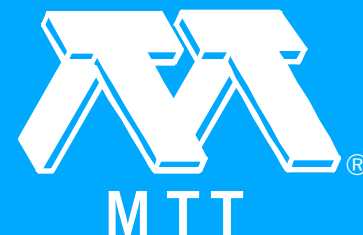
Issues

- ☐ The Method of Lines for the Analysis of Planar Waveguides with Magnetized Ferrite Substrate
- ☐ The Microstrip Open-Ring Resonator
- ☐ The Microstrip Open-Ring Resonator (Comments)
- ☐ The Origin of Waveguides: A Case of Multiple Rediscovery
- ☐ The Propagation Characteristics of Signal Lines in a Mesh-Plane Environment
- ☐ The Reflection from an Open-Ended Rectangular Waveguide Terminated by a Layered Dielectric Medium
- ☐ The Relationship of Magnetotransconductance Mobility Profiles and RF Performance of GaAs FETs
- ☐ The Simulation of Three-Dimensional Wave Propagation by a Scalar TLM Model
- ☐ The Skin-Effect at High Frequencies
- ☐ The Spectral-Domain Approach for Microwave Integrated Circuits
- ☐ The Thermal and Spatial Resolution of a Broad-Band Correlation Radiometer with Application to Medical Microwave Thermography (Short Papers)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

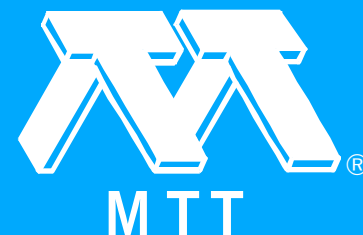
Issues

- ❑ The Transmission-Line Matrix Method--Theory and Applications
- ❑ The Use of Higher Resonant Modes in Measuring the Dielectric Constant of Dielectric Resonators
- ❑ The Virtues of Nonlinearity--Detection, Frequency Conversion, Parametric Amplification and Harmonic Generation
- ❑ Theoretical Analysis of Intermodulation Distortion of Reflection-Type IMPATT Amplifiers
- ❑ Theoretical and Experimental Investigation of Asymmetric Coplanar Waveguide
- ❑ Theoretical and Experimental Investigation of Asymmetric Coplanar Waveguides (Short Papers)
- ❑ Theoretical and Experimental Studies of Gain Compression of Millimeter-Wave Self-Oscillating Mixers
- ❑ Theoretical and Experimental Study of a Novel H-Guide Transverse Slot Antenna (Short Papers)
- ❑ Theoretical Comparison of Six-Port Reflectometer Junction Designs

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

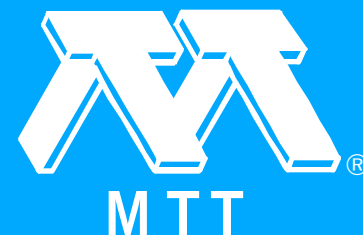
Issues

- ☐ Theoretical Efficiency for Triplers Using Nonideal Varistor Diodes at Submillimeter Wavelengths
- ☐ Theoretical Efficiency for Triplers Using Real Varister Diodes at Submillimeter Wavelengths
- ☐ Theoretical of and Experimental Investigation Finline Discontinuities
- ☐ Theory and Analysis of GaAs MESFET Mixers (Short Papers)
- ☐ Theory and Application of Coupling Between Curved Transmission Lines (Corrections)
- ☐ Theory and Experiment Predicting the Cutoff Frequencies for a Rectangular Stripline
- ☐ Theory and Measurement of Back Bias Voltage in IMPATT Diodes (Comments)
- ☐ Theory and Numerical Modeling of a Compact Low-Field High-Frequency Gyrotron
- ☐ Theory and Numerical Simulation of a TE/sub 111/ Gyroresonant Accelerator
- ☐ Third-Order Nonlinearity of GaAs MESFET's

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

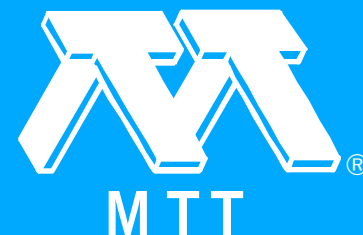
Issues

- ☐ Time Dispersion Properties of Cascaded Multimode Fiber Links
- ☐ Time-Domain Perturbational Analysis of Nonuniformly Coupled Transmission Lines
- ☐ TM/sub 0 gamma delta/ Mode of Cylindrical Dielectric Resonators Applications to Microwave Filters
- ☐ Tolerance Analysis of Shielded Microstrip Lines (Short Papers)
- ☐ Toward a Generalized Algorithm for the Modeling of the Dispersive Properties of Integrated Circuit Structures on Anisotropic Substrates
- ☐ Transfer Properties of the Upper-Sideband Varactor Upconverter
- ☐ Transient Analysis of a Stripline Having a Corner in Three-Dimensional Space
- ☐ Transient Analysis of Microstrip Gap in Three-Dimensional Space (Short Papers)
- ☐ Transmission Matrix Representation of Finline Discontinuities

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

- ❑ Transmission-Matrix Representation of Fin-Line Discontinuities
- ❑ Transverse Modal Analysis of Printed Circuit Transmission Lines
- ❑ Transverse Resonance Analysis Discontinuities of Finline
- ❑ Transverse Resonance Analysis of Finline Discontinuities
- ❑ Two-Path Cutoff Waveguide Dielectric Resonator Filters (1985 [MWSYM])
- ❑ Two-Port Equivalent Circuits of Two-Wire Parabolic Tapered Coupled Transmission Lines
- ❑ TWTA Linearize Using Dual-Gate MESFET

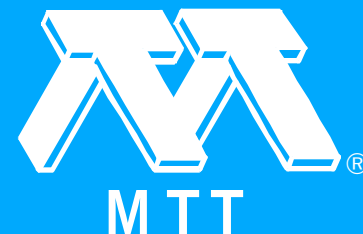
U

-
- ❑ UHF Film Resonator Evaluation and Resonator-Controlled Oscillator and Filter Design Using Computer-Aided Design Techniques
 - ❑ Up/Down Converter for SCPC Applications
 - ❑ Use of the FFT to Speed Analysis of Planar Symmetrical 3- and 5-Ports by the Integral Equation Method

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

V

- ☐ [V-Band Double-Drift Read Silicon IMPATTs](#)
- ☐ [Variational Analysis of Ridged Waveguide Modes](#)
- ☐ [Variational Methods for Nonstandard Eigenvalue Problems \(Further Comments\)](#)
- ☐ [Vector Analyses of Propagation Constants in Dielectric Optical Waveguides with Perturbed Refractive-Index Profile](#)
- ☐ [Vector Method of Characterizing Nonlinearity in Microwave Power Devices](#)

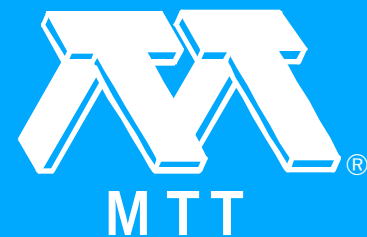
W

- ☐ [W-Band \(75 to 110 GHz\) Microstrip Components \(1985 \[MWSYM\]\)](#)
- ☐ [W-Band \(75-110 GHz\) Microstrip Components \(Dec. 1985 \[T-MTT\]\)](#)
- ☐ [W-Band Broadband Integrated Circuit Receiver](#)
- ☐ [W-band GaAs Gunn Diode Harmonic Power Combiners](#)
- ☐ [W-Band Low-Insertion-Loss E-Plane Filter \(Short Papers\)](#)

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

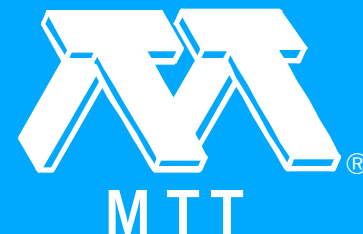
Issues

- ❑ Wave Interaction in Doubly Periodic Structures
- ❑ Wave Propagation and Attenuation in the General Class of Circular Hollow Waveguides with Uniform Curvature
- ❑ Waveguide and Cavity Oscillations in the Presence of Nonlinear Media
- ❑ Waveguide Modes Via an Integral Equation Leading to a Linear Matrix Eigenvalue Problem (Corrections)
- ❑ Waveguide Modes Via an Integral Equation Leading to a Linear Matrix Eigenvalue Problem (Short Papers)
- ❑ Waveguide Star Junction Used in Ka Band Dual Six Port Measurements
- ❑ Wide-Band Limiting Amplifiers with Low Second Harmonic Distortion, Utilizing GaAs MMIC Limiters
- ❑ Wide-Band Monolithic Phase Shifter
- ❑ Wideband Electronically Tunable GaAs Gunn VCO's at W-Band (75-110GHz)
- ❑ Workshops (1984 [MWSYM])
- ❑ Workshops (1985 [MWSYM])

Click on title for a paper summary.



Paper Index



IEEE

Contents

Publications

Issues

X

- ☐ X-Band Low-Noise GaAs Monolithic Frequency Converter (Short Papers)
- ☐ X-Band Monolithic Series Feedback LNA (1985 [MCS])
- ☐ X-band Monolithic Series Feedback LNA (1985 [MWSYM])
- ☐ X-Band Monolithic Series Feedback LNA (Dec. 1985 [T-MTT])
- ☐ X-Band Noise Parameters of HEMT Devices at 300K and 12.5K

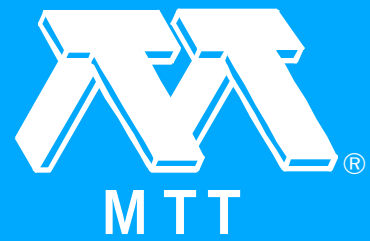
Y

- ☐ YIG Oscillators: Is a Planar Geometry Better?
- ☐ YIG Oscillators: Is a Planar Geometry Better? (Short Papers)

Click on title for a paper summary.



Author Index



IEEE

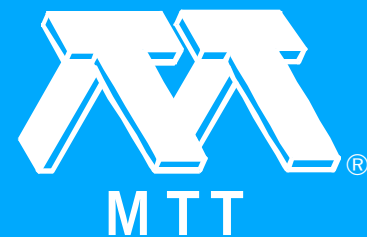
Contents

Authors

A B C D E F G H I
J K L M N O P Q R
S T U V W X Y Z

Colored letters are active links to the index.

Author Index



[Contents](#)

[Authors](#)

A

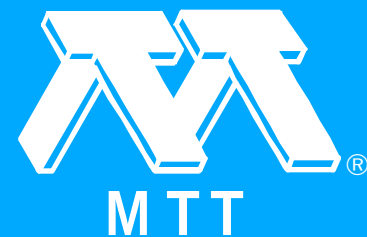
- ☐ Abdallah, E.A.F.
- ☐ Abe, B.
- ☐ Abe, T.
- ☐ Abeles, J.H.
- ☐ Abell, J.
- ☐ Abouzahra, M.
- ☐ Abouzahra, M.D.
- ☐ Abrie, P.L.D.
- ☐ Abrokwah, J.
- ☐ Adam, J.D.
- ☐ Adam, S.F.
- ☐ Adami, M.
- ☐ Adams, A.T.
- ☐ Adamski, D.
- ☐ Adler, Z.
- ☐ Adlerstein, M.G.

- ☐ Afendykiw, M.
- ☐ Afsar, M.N.
- ☐ Agarwal, K.K.
- ☐ Agrawal, M.C.
- ☐ Ahmad, N.M.
- ☐ Aichmann, H.
- ☐ Aikawa, M.
- ☐ Aishima, A.
- ☐ Aitchison, C.S.
- ☐ Akers, N.P.
- ☐ Akinaga, W.
- ☐ Alanen, E.
- ☐ Alexopoulos, N.G.
- ☐ Allan, P.D.
- ☐ Allen, D.L.
- ☐ Altes, S.K.
- ☐ Ananasso, F.
- ☐ Andersen, J.B.

Click on author name for a list of papers.



Author Index



[Contents](#)

[Authors](#)

- ☐ [Anderson, D.G.](#)
- ☐ [Andrade, T.](#)
- ☐ [Andrews, J.E.](#)
- ☐ [Andricos, C.](#)
- ☐ [Ansorge, C.](#)
- ☐ [Antepyan, R.](#)
- ☐ [Aoki, K.](#)
- ☐ [Aoki, T.](#)
- ☐ [Apel, T.R.](#)
- ☐ [Arai, K.](#)
- ☐ [Arain, M.H.](#)
- ☐ [Araki, K.](#)
- ☐ [Araneta, J.C.](#)
- ☐ [Arcangeli, G.](#)
- ☐ [Archambault, Y.](#)
- ☐ [Archer, J.W.](#)
- ☐ [Armstrong, A.L.](#)
- ☐ [Arndt, F.](#)

- ☐ [Arthur, D.C.](#)
- ☐ [Asher, P.](#)
- ☐ [Asher, P.G.](#)
- ☐ [Ashley, J.R.](#)
- ☐ [Atsuki, K.](#)
- ☐ [Atwater, H.A.](#)
- ☐ [Au, K.J.](#)
- ☐ [Aubert, D.](#)
- ☐ [Auda, H.](#)
- ☐ [Avalos, M.T.](#)
- ☐ [Axelrod, A.](#)
- ☐ [Ayasli, Y.](#)
- ☐ [Azan, F.](#)

B

- ☐ [Baba, T.](#)
- ☐ [Bagby, J.S.](#)
- ☐ [Bahar, E.](#)

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ Bahl, I.
- ☐ Bahl, I.J.
- ☐ Ball, D.
- ☐ Bandler, J.W.
- ☐ Bandy, S.
- ☐ Bansal, R.
- ☐ Bar-lev, A.
- ☐ Bardati, F.
- ☐ Barlow, H.
- ☐ Barnes, F.S.
- ☐ Barrett, R.M.
- ☐ Barta, G.S.
- ☐ Barth, H.
- ☐ Barton, D.K.
- ☐ Bastida, E.M.
- ☐ Basu, B.N.
- ☐ Bates, B.D.
- ☐ Baudrand, H.
- ☐ Bauhahn, P.
- ☐ Bayraktaroglu, B.
- ☐ Beall, J.M.
- ☐ Beccone, J.P.
- ☐ Becker, R.C.
- ☐ Bedair, S.S.
- ☐ Beggs, B.
- ☐ Behari, J.
- ☐ Beike, J.
- ☐ Bell, H.C.
- ☐ Benson, K.
- ☐ Beren, J.
- ☐ Berenz, J.
- ☐ Berenz, J.J.
- ☐ Bernardi, P.
- ☐ Besser, R.S.
- ☐ Best, W.S.
- ☐ Beyer, A.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

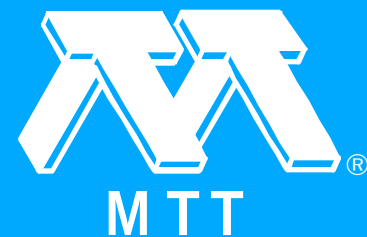
[Authors](#)

- ☐ Beyer, J.B.
- ☐ Bhartia, P.
- ☐ Bhasin, K.B.
- ☐ Bhat, B.
- ☐ Bhattacharya, D.
- ☐ Bialkowski, M.E.
- ☐ Bianchini, M.J.
- ☐ Bie, P.R.
- ☐ Bilik, V.
- ☐ Bingham, S.D.
- ☐ Blakey, P.A.
- ☐ Boire, D.C.
- ☐ Boireau, P.
- ☐ Bolle, D.M.
- ☐ Bolomey, J.C.
- ☐ Bonetti, R.R.
- ☐ Bornemann, J.
- ☐ Borrani, A.
- ☐ Borup, D.T.
- ☐ Bosch, B.G.
- ☐ Bosisio, R.G.
- ☐ Botstein, C.
- ☐ Boudouris, G.
- ☐ Boulanger, P.
- ☐ Bowes, J.
- ☐ Bowling, D.
- ☐ Bowman, R.R.
- ☐ Bradley, P.D.
- ☐ Bradley, W.J.
- ☐ Brand, G.F.
- ☐ Brantervik, K.
- ☐ Bressan, M.
- ☐ Bridge, J.P.
- ☐ Bridges, E.
- ☐ Bridges, W.B.
- ☐ Brodwin, M.E.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ Bromborsky, A.
- ☐ Brown, W.C.
- ☐ Brozovich, R.S.
- ☐ Brunkard, K.M.
- ☐ Bruno, W.M.
- ☐ Bruns, H.
- ☐ Bryant, J.H.
- ☐ Buchalter, M.S.
- ☐ Buckmaster, H.A.
- ☐ Bucolo, R.J.
- ☐ Buechler, J.
- ☐ Bui, L.Q.
- ☐ Buris, N.E.
- ☐ Burkhart, S.
- ☐ Burns, J.W.
- ☐ Burns, S.G.
- ☐ Burton, M.
- ☐ Bush, W.G.

- ☐ Butler, C.M.
- ☐ Butter, C.
- ☐ Button, K.J.
- ☐ Byzery, B.

C

- ☐ Calamai, G.
- ☐ Calandra, E.F.
- ☐ Calawa, A.R.
- ☐ Calazans, Jr., E.T.
- ☐ Callarotti, R.C.
- ☐ Callsen, H.
- ☐ Calviello, J.A.
- ☐ Camilleri, N.
- ☐ Camisa, R.L.
- ☐ Cancellieri, G.
- ☐ Cann, A.J.
- ☐ Caorsi, S.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

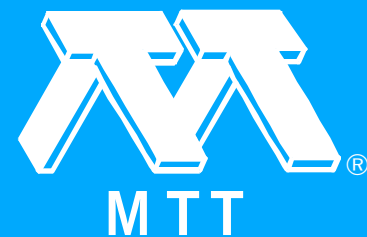
[Authors](#)

- ☐ Cap, F.F.
- ☐ Cappello, A.
- ☐ Cappello, A.J.
- ☐ Cappy, A.
- ☐ Carlin, H.J.
- ☐ Carlstrom, J.E.
- ☐ Carmel, Y.
- ☐ Carr, K.L.
- ☐ Carter, R.L.
- ☐ Cashman, J.D.
- ☐ Caslow, S.
- ☐ Celliers, A.F.
- ☐ Censor, D.
- ☐ Ch'en, D.R.
- ☐ Chakraborti, N.B.
- ☐ Chalker, R.
- ☐ Champness, C.H.
- ☐ Chan, C.
- ☐ Chan, K.H.
- ☐ Chan, S.K.
- ☐ Chang, C.-D.
- ☐ Chang, C.D.
- ☐ Chang, C.S.
- ☐ Chang, D.C.
- ☐ Chang, K.
- ☐ Chang, K.W.
- ☐ Chang, R.-S.
- ☐ Chang, W.S.C.
- ☐ Chao, C.
- ☐ Chao, S.-H.
- ☐ Chase, E.M.
- ☐ Chatterjee, I.
- ☐ Chattopadhyay, A.
- ☐ Chaubet, M.
- ☐ Chauchard, E.
- ☐ Chaudhuri, S.K.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ [Chen, B.U.](#)
- ☐ [Chen, C.](#)
- ☐ [Chen, C.H.](#)
- ☐ [Chen, J.C.](#)
- ☐ [Chen, K.-M.](#)
- ☐ [Chen, K.M.](#)
- ☐ [Chen, R.T.](#)
- ☐ [Chen, T.-H.](#)
- ☐ [Chernick, M.R.](#)
- ☐ [Chiba, J.](#)
- ☐ [Cho, A.Y.](#)
- ☐ [Choi, D.H.](#)
- ☐ [Choinski, T.C.](#)
- ☐ [Chong, M.P.](#)
- ☐ [Chou, C.-K.](#)
- ☐ [Chou, C.K.](#)
- ☐ [Chu, A.](#)
- ☐ [Chu, K.R.](#)
- ☐ [Chu, S.L.G.](#)
- ☐ [Chu, T.S.](#)
- ☐ [Chuandong, H.](#)
- ☐ [Chuang, H.-R.](#)
- ☐ [Chuang, S.L.](#)
- ☐ [Chung, N.S.](#)
- ☐ [Citerne, J.](#)
- ☐ [Cividalli, A.](#)
- ☐ [Cloete, J.H.](#)
- ☐ [Cohen, L.D.](#)
- ☐ [Cohn, M.](#)
- ☐ [Cohn, S.B.](#)
- ☐ [Cole, J.B.](#)
- ☐ [Collier, R.J.](#)
- ☐ [Collin, R.E.](#)
- ☐ [Collins, J.H.](#)
- ☐ [Compton, R.C.](#)
- ☐ [Conciauro, G.](#)

Click on author name for a list of papers.



Author Index



IEEE

Contents

Authors

- ☐ Connolly, D.J.
- ☐ Conrado, L.F.M.
- ☐ Contarino, V.M.
- ☐ Contolatis, A.
- ☐ Contolatis, T.
- ☐ Cooper, Jr., J.A.
- ☐ Courtney, W.E.
- ☐ Cox, N.W.
- ☐ Crescenzi, Jr., E.J.
- ☐ Cronin, N.J.
- ☐ Cullen, A.
- ☐ Curran, J.E.
- ☐ Curtice, W.R.
- ☐ Curtins, H.
- ☐ Cutler, C.C.

D

- ☐ D' Inzeo, G.
- ☐ Daly, P.
- ☐ Damaskos, N.J.
- ☐ Dandekar, N.V.
- ☐ Daniel, D.
- ☐ Daniele, V.
- ☐ Dao, T.
- ☐ Daryoush, A.S.
- ☐ Das, B.N.
- ☐ Davidson, D.
- ☐ Davies, J.B.
- ☐ Davis, H.
- ☐ Davis, L.E.
- ☐ Davis, W.A.
- ☐ Dawson, D.E.
- ☐ Day, W.R.
- ☐ De Smedt, R.
- ☐ De, D.K.
- ☐ Deal, J.C.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

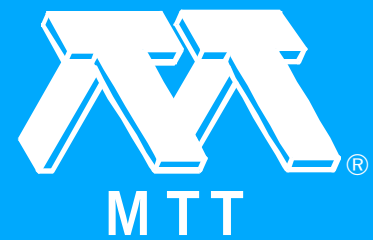
[Authors](#)

- ☐ Degenford, J.E.
- ☐ Del Cerro, M.
- ☐ Delaney, M.J.
- ☐ Delph, T.J.
- ☐ Denlinger, E.J.
- ☐ Derycke, A.C.
- ☐ Dhillon, S.S.
- ☐ DiBiase, R.
- ☐ Diestel, H.
- ☐ Dileo, R.
- ☐ DiMarco, V.V.
- ☐ Ding, L.
- ☐ Dinger, R.J.
- ☐ Dixon, Jr., S.
- ☐ Djankov, G.L.
- ☐ Djordjevic, A.R.
- ☐ Doane, J.L.
- ☐ Dobrowolski, J.A.
- ☐ Dong, J.M.
- ☐ Donzelli, G.
- ☐ Donzelli, G.P.
- ☐ Dornan, B.
- ☐ Douglas, N.G.
- ☐ Douville, R.J.
- ☐ Downey, A.N.
- ☐ Drachman, B.C.
- ☐ Dragone, C.
- ☐ Dreifuss, J.
- ☐ Driscoll, M.M.
- ☐ Drobot, A.T.
- ☐ Drury, D.M.
- ☐ Durney, C.H.
- ☐ Dydyk, M.
- ☐ Dyson, H.B.

Click on author name for a list of papers.



Author Index



IEEE

Contents

Authors

E

- ☐ [Eguchi, I.](#)
- ☐ [Ehlers, E.R.](#)
- ☐ [Eid, E.M.A.](#)
- ☐ [Eisenhart, R.L.](#)
- ☐ [El Khoury, T.](#)
- ☐ [El-Deeb, N.A.](#)
- ☐ [El-Gabaly, M.](#)
- ☐ [El-Gabaly, M.A.](#)
- ☐ [El-Mahdj, A.M.](#)
- ☐ [El-Shandwily, M.E.](#)
- ☐ [Encinar, J.A.](#)
- ☐ [Endo, A.](#)
- ☐ [Endo, I.](#)
- ☐ [Engen, G.F.](#)
- ☐ [English, D.](#)
- ☐ [English, D.M.](#)

- ☐ [Enoki, T.](#)
- ☐ [Erickson, N.R.](#)
- ☐ [Erikson, N.R.](#)
- ☐ [Esaki, M.](#)
- ☐ [Ettenberg, M.](#)
- ☐ [Ezzeddine, A.](#)

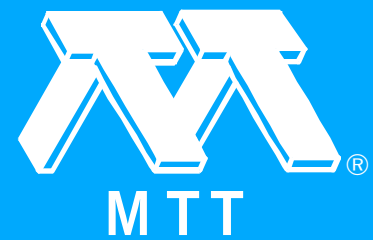
F

- ☐ [Faber, M.T.](#)
- ☐ [Faillon, G.](#)
- ☐ [Fang, X.-S.](#)
- ☐ [Fantini, P.](#)
- ☐ [Farhoomand, J.](#)
- ☐ [Farzaneh, F.](#)
- ☐ [Fazi, C.](#)
- ☐ [Felderman, T.P.](#)
- ☐ [Fessenden, P.](#)
- ☐ [Fetterman, H.R.](#)

Click on author name for a list of papers.



Author Index



IEEE

Contents

Authors

- ☐ Fiedziuszko, S.J.
- ☐ Filho, E.A.
- ☐ Fischer, R.P.
- ☐ Fong-Tom, R.A.
- ☐ Forrest, J.R.
- ☐ Forster, J.D.
- ☐ Franceschetti, G.
- ☐ Frazer, J.W.
- ☐ Freibergs, E.
- ☐ Frerking, M.A.
- ☐ Freude, W.
- ☐ Freyer, J.
- ☐ Fricke, K.
- ☐ Friedberg, A.
- ☐ Friedenthal, E.
- ☐ Friscourt, M.R.
- ☐ Frucht, A.-H.
- ☐ Frye, A.

- ☐ Fujiwara, Y.
- ☐ Fukai, I.
- ☐ Fukaya, J.
- ☐ Fukui, K.
- ☐ Fukumoto, K.
- ☐ Fukuoka, Y.
- ☐ Fukushima, Y.
- ☐ Furuno, D.S.

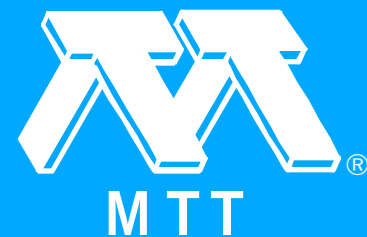
G

- ☐ Gabriel, G.J.
- ☐ Galani, Z.
- ☐ Gallo, A.
- ☐ Gandhi, O.P.
- ☐ Garault, Y.
- ☐ Gardiol, F.E.
- ☐ Gartner, U.
- ☐ Garver, R.V.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

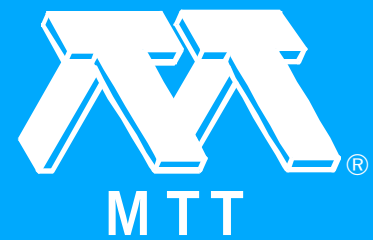
[Authors](#)

- ☐ [Gautier, J.L.](#)
- ☐ [Geddes, J.](#)
- ☐ [Gelin, P.](#)
- ☐ [Geller, B.D.](#)
- ☐ [Genin, R.](#)
- ☐ [Gerli, D.](#)
- ☐ [Geshiro, M.](#)
- ☐ [Getsinger, W.J.](#)
- ☐ [Ghatak, A.K.](#)
- ☐ [Ghijsen, W.J.](#)
- ☐ [Ghose, A.K.](#)
- ☐ [Ghosh, S.](#)
- ☐ [Giannini, F.](#)
- ☐ [Gillespie, A.R.](#)
- ☐ [Gilmore, R.J.](#)
- ☐ [Glance, B.S.](#)
- ☐ [Glandorf, F.-J.](#)
- ☐ [Gleason, K.](#)
- ☐ [Glisson, A.W.](#)
- ☐ [Godshalk, E.M.](#)
- ☐ [Goebel, U.](#)
- ☐ [Goel, J.](#)
- ☐ [Gokhale, A.V.](#)
- ☐ [Goldberg, H.](#)
- ☐ [Goldgeier, P.](#)
- ☐ [Goldman, S.J.](#)
- ☐ [Goldner, R.B.](#)
- ☐ [Goldsmith, P.F.](#)
- ☐ [Golio, J.M.](#)
- ☐ [Gombar, A.](#)
- ☐ [Goodman, J.W.](#)
- ☐ [Goodrich, J.](#)
- ☐ [Goyal, R.](#)
- ☐ [Granatstein, V.L.](#)
- ☐ [Grande, V.](#)
- ☐ [Grange, T.](#)

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ Grauerholz, D.
- ☐ Gray, K.G.
- ☐ Gray, R.L.
- ☐ Green, H.E.
- ☐ Greiling, P.
- ☐ Griffin, E.
- ☐ Griffin, E.J.
- ☐ Griffin, E.L.
- ☐ Grondin, R.O.
- ☐ Gross, M.
- ☐ Grote, A.
- ☐ Grote, A.J.
- ☐ Gruner, L.
- ☐ Gu, Q.
- ☐ Gu, Y.-G.
- ☐ Guillon, P.
- ☐ Guo, T.C.
- ☐ Guo, W.W.

- ☐ Gupta, A.K.
- ☐ Gupta, C.D.
- ☐ Gupta, K.C.
- ☐ Gupta, R.K.
- ☐ Gutierrez, R.H.
- ☐ Guy, A.W.
- ☐ Gwarek, W.K.

H

- ☐ Haddad, G.I.
- ☐ Hagmann, M.J.
- ☐ Hallford, B.R.
- ☐ Hamabe, T.
- ☐ Hamamura, Y.
- ☐ Hamaya, S.
- ☐ Handa, K.
- ☐ Hanes, L.K.
- ☐ Hanna, V.F.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

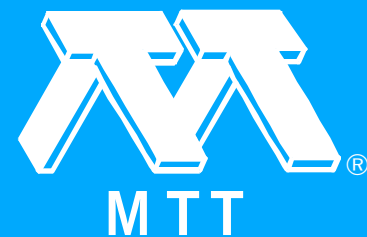
- ☐ Hano, M.
- ☐ Hansen, C.H.
- ☐ Hansson, E.R.B.
- ☐ Hant, W.
- ☐ Harada, K.
- ☐ Hardy, J.C.
- ☐ Harrington, R.F.
- ☐ Harris, B.L.
- ☐ Harrison, R.G.
- ☐ Hartnagel, H.L.
- ☐ Hartsgrove, G.
- ☐ Harvey, A.
- ☐ Hasegawa, H.
- ☐ Hashimoto, M.
- ☐ Haslam, C.G.T.
- ☐ Haslam, N.C.
- ☐ Hayashibara, G.
- ☐ Hayashibara, G.M.

- ☐ Hayata, K.
- ☐ Haynes, J.T.
- ☐ Healy, R.
- ☐ Hegazi, G.
- ☐ Hegazi, G.M.
- ☐ Heiter, G.L.
- ☐ Helard, M.
- ☐ Helszajn, J.
- ☐ Hendrick, L.W.
- ☐ Herczfield, P.R.
- ☐ Hernandez-Gil, F.
- ☐ Herrick, G.C.
- ☐ Hessary, M.K.
- ☐ Heston, D.D.
- ☐ Hida, H.
- ☐ Higgins, J.A.
- ☐ Hikita, M.
- ☐ Hill, D.A.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

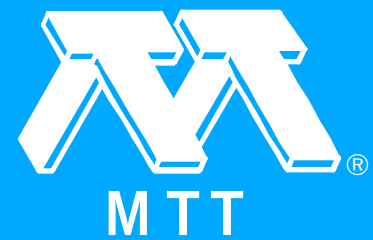
[Authors](#)

- ☐ Hill, J.C.
- ☐ Hines, M.E.
- ☐ Hinken, J.H.
- ☐ Hirachi, Y.
- ☐ Hirano, Y.
- ☐ Hirayama, M.
- ☐ Hirota, K.
- ☐ Hirota, T.
- ☐ Hirsh, I.
- ☐ Hji pieris, G.
- ☐ Hodgetts, T.E.
- ☐ Hoefer, W.J.R.
- ☐ Hoer, C.A.
- ☐ Hohenwarter, G.K.
- ☐ Holme, S.C.
- ☐ Honjo, K.
- ☐ Honma, K.
- ☐ Hori, S.
- ☐ Horine, B.H.
- ☐ Horita, A.
- ☐ Horn, R.E.
- ☐ Horno, M.
- ☐ Horton, J.B.
- ☐ Hoshikawa, K.
- ☐ Hosono, Y.
- ☐ Hoss, W.
- ☐ Howard, J.
- ☐ Howe, Jr., H.
- ☐ Howes, M.J.
- ☐ Hsu, T.-I.
- ☐ Hu, C.-L.J.
- ☐ Huang, C.C.
- ☐ Huang, H.C.
- ☐ Huguenin, G.R.
- ☐ Hung, H.-L.A.
- ☐ Hunter, J.D.

Click on author name for a list of papers.



Author Index



[Contents](#)

[Authors](#)

☐ Hutchings, J.L.

☐ Hwan, E.J.

I

☐ Idda, M.

☐ Igarashi, M.

☐ Iida, A.

☐ Ikalainen, P.K.

☐ Ikeda, Y.

☐ Ikenoue, J.-I.

☐ Imai, N.

☐ Imai, Y.

☐ Inoue, T.

☐ Irvin, J.C.

☐ Ishihara, O.

☐ Ishii, M.

☐ Ishii, T.K.

☐ Ishikawa, Y.

☐ Iskander, M.F.

☐ Itoh, M.

☐ Itoh, S.

☐ Itoh, T.

☐ Ittipiboon, A.

☐ Ivanov, S.A.

☐ Iwakuni, M.

☐ Izadnegahdar, A.

J

☐ Jablonski, D.G.

☐ Jacard, B.

☐ Jackson, D.R.

☐ Jackson, K.P.

☐ Jackson, R.W.

☐ Jacob, A.

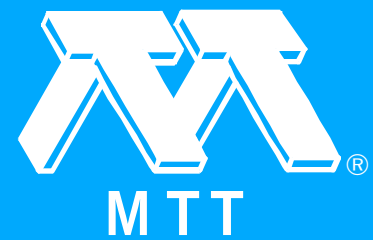
☐ Jacobs, H.

☐ Jaeger, J.

Click on author name for a list of papers.



Author Index



IEEE

Contents

Authors

- ☐ Jager, D.
- ☐ Jain, F.C.
- ☐ James, J.
- ☐ Janaswamy, R.
- ☐ Janiczak, B.J.
- ☐ Jansen, R.H.
- ☐ Janton, W.M.
- ☐ Jelenski, A.
- ☐ Jelsma, L.F.
- ☐ Jenett, M.
- ☐ Jeng, M.C.
- ☐ Jennings, A.
- ☐ Jofre, L.
- ☐ Johnson, H.C.
- ☐ Jones, K.E.
- ☐ Jones, M.H.
- ☐ Joseph, T.R.
- ☐ Juroshek, J.R.

- ☐ Jyoshin, K.

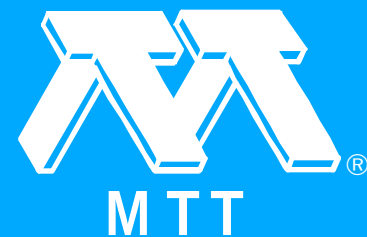
K

- ☐ Kabe, Y.
- ☐ Kacprzak, T.
- ☐ Kadisch, G.
- ☐ Kadziela, J.
- ☐ Kagami, S.
- ☐ Kagiwada, R.S.
- ☐ Kahn, W.K.
- ☐ Kaihara, Y.
- ☐ Kaires, R.
- ☐ Kajfez, D.
- ☐ Kak, A.C.
- ☐ Kal, S.
- ☐ Kaliouby, L.
- ☐ Kalivas, G.A.
- ☐ Kalra, S.P.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ Kamei, K.
- ☐ Kammerer, E.
- ☐ Kanai, H.
- ☐ Kanazawa, K.
- ☐ Kanazawa, M.
- ☐ Kaneko, Y.
- ☐ Kano, G.
- ☐ Karolkar, B.D.
- ☐ Kasper, E.
- ☐ Katehi, P.B.
- ☐ Kato, N.
- ☐ Kato, Y.
- ☐ Katoh, M.
- ☐ Katoh, T.
- ☐ Katsumata, T.
- ☐ Katz, A.
- ☐ Kaufman, I.
- ☐ Kawabe, D.
- ☐ Kawakami, S.
- ☐ Kawamoto, K.
- ☐ Kawano, K.
- ☐ Kawasaki, H.
- ☐ Kazumura, M.
- ☐ Kellermann, W.
- ☐ Kennan, W.
- ☐ Kennis, P.
- ☐ Keogh, G.
- ☐ Kerr, A.R.
- ☐ Kessler, J.R.
- ☐ Ketcham, R.S.
- ☐ Khan, P.J.
- ☐ Khana, A.P.S.
- ☐ Khanna, A.P.S.
- ☐ Kharadly, M.M.Z.
- ☐ Kheifets, S.A.
- ☐ Kiang, Y.-W.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ Kiehne, R.
- ☐ Kikuchi, M.
- ☐ Kikuchi, Y.
- ☐ Kim, B.
- ☐ Kim, D.I.
- ☐ Kim, J.H.
- ☐ Kinoshita, M.
- ☐ Kinoshita, Y.
- ☐ Kinuhata, K.
- ☐ Kirschning, M.
- ☐ Kisliuk, M.
- ☐ Kitazawa, T.
- ☐ Kline, M.D.
- ☐ Klock, P.
- ☐ Knorr, J.
- ☐ Knorr, J.B.
- ☐ Kobayashi, K.
- ☐ Kobayashi, M.
- ☐ Kobayashi, Y.
- ☐ Kobiki, M.
- ☐ Koch, B.
- ☐ Koike, S.
- ☐ Kojima, H.
- ☐ Kolan, M.
- ☐ Kollberg, E.L.
- ☐ Kollberg, E.R.
- ☐ Komaru, M.
- ☐ Komizo, H.
- ☐ Konishi, Y.
- ☐ Kopeika, N.S.
- ☐ Kosemura, K.
- ☐ Koshiba, M.
- ☐ Koshiji, K.
- ☐ Kother, D.
- ☐ Kotzebue, K.L.
- ☐ Koul, S.K.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ Krafcsik, D.M.
- ☐ Kraszewski, A.
- ☐ Kreischer, K.E.
- ☐ Kretch, B.
- ☐ Kriegsmann, G.A.
- ☐ Krishnaswamy, S.V.
- ☐ Kritzer, T.R.
- ☐ Krowne, C.M.
- ☐ Krupka, J.
- ☐ Ku, J.
- ☐ Ku, W.H.
- ☐ Kudoh, M.
- ☐ Kuester, E.F.
- ☐ Kumagai, N.
- ☐ Kumar, A.
- ☐ Kumar, M.
- ☐ Kuno, H.J.
- ☐ Kurihara, H.

- ☐ Kuroki, F.
- ☐ Kusama, N.
- ☐ Kuttler, J.R.

L

- ☐ Labroo, S.
- ☐ Lacombe, J.
- ☐ LaGrange, J.B.
- ☐ Lai, H.
- ☐ Laing, J.
- ☐ Lambrianou, G.
- ☐ Lambrianou, G.M.
- ☐ Lampariello, P.
- ☐ Lampe, R.
- ☐ Lan, G.
- ☐ Lan, G.-L.
- ☐ Landt, D.L.
- ☐ Langmann, U.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

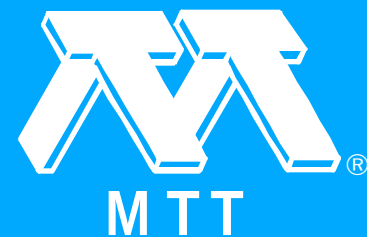
[Authors](#)

- ☐ [Larsen, L.E.](#)
- ☐ [Larson, W.](#)
- ☐ [LaRue, R.](#)
- ☐ [Laton, R.W.](#)
- ☐ [Lau, K.F.](#)
- ☐ [Lau, K.M.](#)
- ☐ [Laura, P.A.A.](#)
- ☐ [Law, V.J.](#)
- ☐ [Lazar, S.](#)
- ☐ [Lee, C.H.](#)
- ☐ [Lee, C.S.](#)
- ☐ [Lee, H.](#)
- ☐ [Lee, J.](#)
- ☐ [Lee, K.W.](#)
- ☐ [Lee, S.W.](#)
- ☐ [Lehmann, R.E.](#)
- ☐ [Leighton, W.H.](#)
- ☐ [Leung, C.C.](#)
- ☐ [Leuzzi, G.](#)
- ☐ [Leviatan, Y.](#)
- ☐ [Levin, R.L.](#)
- ☐ [Levush, B.](#)
- ☐ [Levy, J.](#)
- ☐ [Levy, R.](#)
- ☐ [Lewin, L.](#)
- ☐ [Lewin, P.T.](#)
- ☐ [Li, Da.](#)
- ☐ [Li, K.R.](#)
- ☐ [Li, M.G.](#)
- ☐ [Li, P.G.](#)
- ☐ [Li, S.-F.](#)
- ☐ [Liles, B.](#)
- ☐ [Lilonga, D.](#)
- ☐ [Lin, J.C.](#)
- ☐ [Lin, W.](#)
- ☐ [Lin, Z.-Q.](#)

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ [Lindell, I.V.](#)
- ☐ [Lingemann, Ch.](#)
- ☐ [Lipparini, A.](#)
- ☐ [Lisak, M.](#)
- ☐ [Liu, C.S.](#)
- ☐ [Liu, L.C.T.](#)
- ☐ [Lloyd, F.L.](#)
- ☐ [Lopuch, S.L.](#)
- ☐ [Losch, I.E.](#)
- ☐ [Loser, E.](#)
- ☐ [Loser, E.H.](#)
- ☐ [Loukas, S.](#)
- ☐ [Lovisolo, G.A.](#)
- ☐ [Lu, S.-T.](#)
- ☐ [Luhmann, Jr., N.C.](#)
- ☐ [Luk, K.M.](#)
- ☐ [Lukaszek, T.](#)
- ☐ [Lunden, H.B.](#)

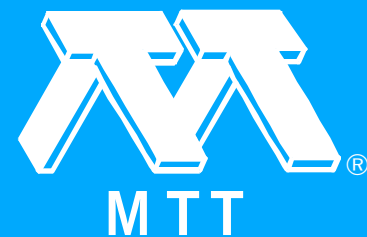
M

- ☐ [Ma, J.Y.L.](#)
- ☐ [Ma, Y.E.](#)
- ☐ [Maas, S.A.](#)
- ☐ [Mack, R.B.](#)
- ☐ [Macksey, H.M.](#)
- ☐ [MaClean, D.J.H.](#)
- ☐ [MacMaster, G.](#)
- ☐ [MacPhie, R.H.](#)
- ☐ [Madjar, A.](#)
- ☐ [Madni, A.M.](#)
- ☐ [Madsen, K.](#)
- ☐ [Maffett, A.L.](#)
- ☐ [Magalhaes, F.M.](#)
- ☐ [Magarshack, J.](#)
- ☐ [Magid, M.](#)
- ☐ [Magni, P.](#)

Click on author name for a list of papers.



Author Index



[Contents](#)

[Authors](#)

- ☐ Mahesh, K.
- ☐ Mahoney, L.J.
- ☐ Mains, R.K.
- ☐ Maj, S.
- ☐ Maki, D.W.
- ☐ Makimoto, M.
- ☐ Maldonado, O.
- ☐ Malherbe, J.A.G.
- ☐ Malkomes, M.
- ☐ Mallavarpu, R.
- ☐ Mallick, A.K.
- ☐ Manfra, M.J.
- ☐ Manheim, W.M.
- ☐ Mann, A.G.
- ☐ Mansour, R.R.
- ☐ March, S.L.
- ☐ Mariki, G.E.
- ☐ Marques, R.
- ☐ Marrero, J.L.R.
- ☐ Martinelli, M.
- ☐ Martines, G.
- ☐ Martinez, J.P.
- ☐ Marx, R.E.
- ☐ Massoudi, H.
- ☐ Materka, A.
- ☐ Matsumoto, M.
- ☐ Mattauch, R.J.
- ☐ Matthaei, G.L.
- ☐ Mauro, F.
- ☐ Mautz, J.R.
- ☐ Mayaram, K.
- ☐ Mayes, P.
- ☐ Mayes, P.E.
- ☐ Maynard, Jr., E.D.
- ☐ Mazumder, G.G.
- ☐ McAvoy, B.R.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

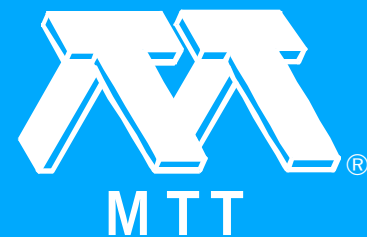
[Authors](#)

- ☐ [McCarter, S.D.](#)
- ☐ [McClelland, R.W.](#)
- ☐ [McDermott, D.B.](#)
- ☐ [McDermott, G.](#)
- ☐ [McDonald, N.A.](#)
- ☐ [McEuen, A.H.](#)
- ☐ [McGrath, W.R.](#)
- ☐ [McHenry, M.A.](#)
- ☐ [McKay, T.](#)
- ☐ [McQuiddy, Jr., D.N.](#)
- ☐ [Medina, F.](#)
- ☐ [Mehdizadeh, M.](#)
- ☐ [Meier, P.J.](#)
- ☐ [Meierer, R.](#)
- ☐ [Meinel, H.](#)
- ☐ [Mendecki, J.](#)
- ☐ [Menzel, W.](#)
- ☐ [Mezger, P.G.](#)
- ☐ [Miazga, P.](#)
- ☐ [Michaelson, S.M.](#)
- ☐ [Michaud, A.](#)
- ☐ [Mikuni, M.](#)
- ☐ [Miles, R.E.](#)
- ☐ [Miller, P.D.](#)
- ☐ [Miller, R.E.](#)
- ☐ [Miller, S.W.](#)
- ☐ [Milnes, A.G.](#)
- ☐ [Minasian, R.A.](#)
- ☐ [Miner, Jr., W.H.](#)
- ☐ [Miner, W.H.](#)
- ☐ [Mink, J.W.](#)
- ☐ [Mishra, P.K.](#)
- ☐ [Mishra, U.K.](#)
- ☐ [Misra, D.](#)
- ☐ [Mitchell, B.K.](#)
- ☐ [Mitsui, Y.](#)

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ [Mittra, R.](#)
- ☐ [Miura, M.](#)
- ☐ [Miyagi, M.](#)
- ☐ [Miyamoto, H.](#)
- ☐ [Miyazaki, M.](#)
- ☐ [Miyazaki, S.-I.](#)
- ☐ [Mizumoto, T.](#)
- ☐ [Mizuno, H.](#)
- ☐ [Mizushina, S.](#)
- ☐ [Mizutani, T.](#)
- ☐ [Mochizuki, T.](#)
- ☐ [Modelski, J.W.](#)
- ☐ [Moghe, S.B.](#)
- ☐ [Mohsenian, N.](#)
- ☐ [Molin, G.](#)
- ☐ [Moller, P.E.](#)
- ☐ [Mollier, J.-C.](#)
- ☐ [Mondal, J.P.](#)
- ☐ [Mongiardo, M.](#)
- ☐ [Montrosset, I.](#)
- ☐ [Moore, R.A.](#)
- ☐ [Morawski, T.](#)
- ☐ [Mori, S.](#)
- ☐ [Morimura, T.](#)
- ☐ [Morita, N.](#)
- ☐ [Moschuring, H.](#)
- ☐ [Moslehi, B.](#)
- ☐ [Mourier, G.](#)
- ☐ [Mozzi, R.](#)
- ☐ [Mozzi, R.L.](#)
- ☐ [Muller, M.W.](#)
- ☐ [Muller-Gronau, W.](#)
- ☐ [Mulligan, W.J.](#)
- ☐ [Murakami, Y.](#)
- ☐ [Mushiake, Y.](#)
- ☐ [Mykietyn, E.](#)

Click on author name for a list of papers.



Author Index

☐ Myung, J.-S.

N

☐ Nachman, M.

☐ Nagao, H.

☐ Naiheng, Y.

☐ Nair, N.V.

☐ Naito, Y.

☐ Nakagawa, M.

☐ Nakaji, E.M.

☐ Nakajima, M.

☐ Nakano, K.

☐ Nakata, T.-a.

☐ Nakatani, A.

☐ Nambu, S.

☐ Namordi, M.R.

☐ Nannicini, M.

☐ Narasimhan, S.

☐ Neikirk, D.P.

☐ Nelson, S.R.

☐ Nelson, T.M.

☐ Nelson, W.W.

☐ Nemoto, Y.

☐ Nesbit, G.H.

☐ Ness, J.

☐ Neuhaus, B.

☐ Nevels, R.D.

☐ Newman, P.F.

☐ Newton, S.A.

☐ Ney, M.M.

☐ Nguyen, C.

☐ Nicholas, J.M.C.

☐ Nichols, A.

☐ Nicholson, D.

☐ Niclas, K.B.

☐ Niehenke, E.C.



MTT



IEEE

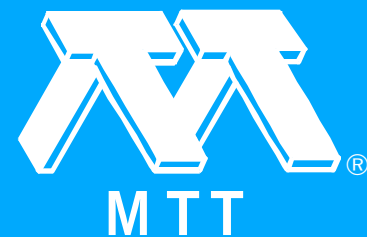
[Contents](#)

[Authors](#)

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

☐ Nightingale, S.J.

☐ Niizaki, N.

☐ Nikawa, Y.

☐ Nimtz, G.

☐ Niori, M.

☐ Nishida, S.

☐ Nishikawa, T.

☐ Nishio, K.

☐ Nogi, S.

☐ Nordman, J.E.

☐ Norris, C.S.

☐ Nunotani, T.

☐ Nuspl, P.

☐ Nyquist, D.P.

O

☐ O'Connell, M.R.

☐ Oakes, J.G.

☐ Obregon, J.

☐ Ogawa, H.

☐ Ogawa, M.

☐ Oggionni, F.

☐ Ogusu, K.

☐ Oh-ishi, H.

☐ Ohata, K.

☐ Ohkawa, S.

☐ Ohke, H.

☐ Ohnishi, H.

☐ Ohwada, K.

☐ Oishi, T.

☐ Okubo, N.

☐ Okwit, S.

☐ Oliner, A.A.

☐ Ollivon, M.R.

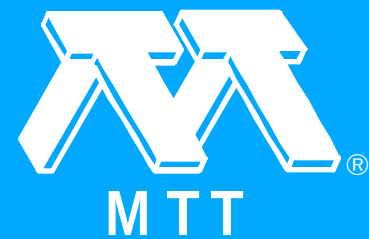
☐ Omar, A.S.

☐ Ondria, J.

Click on author name for a list of papers.



Author Index



[Contents](#)

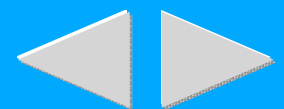
[Authors](#)

- ☐ Orlok, H.-J.
- ☐ Orr, J.
- ☐ Osafune, K.
- ☐ Osepchuk, J.M.
- ☐ Overfelt, P.L.
- ☐ Owada, K.
- ☐ Owens, J.M.
- ☐ Oxley, T.H.
- ☐ Ozeki, S.

P

- ☐ Packard, K.S.
- ☐ Paglione, R.W.
- ☐ Pal, B.B.
- ☐ Palamateer, S.C.
- ☐ Palmateer, S.C.
- ☐ Panasik, C.M.
- ☐ Pantoja, F.R.
- ☐ Parisot, M.
- ☐ Park, D.C.
- ☐ Parmon, W.
- ☐ Pasquet, D.
- ☐ Patela, S.
- ☐ Paul, D.K.
- ☐ Pauley, R.G.
- ☐ Pavio, A.M.
- ☐ Pavio, Jr., A.M.
- ☐ Pavlasek, T.J.F.
- ☐ Pavlidis, D.
- ☐ Peebles, W.A.
- ☐ Pelka, P.
- ☐ Peng, S.T.
- ☐ Perelli, S.J.
- ☐ Perez, F.
- ☐ Perez, J.
- ☐ Perini, J.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

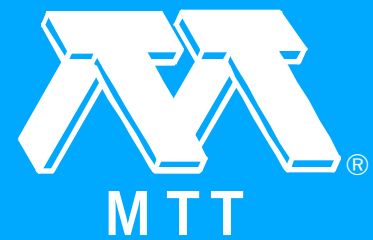
[Authors](#)

- ☐ Perkins, III, T.O.
- ☐ Perks, G.
- ☐ Perlman, B.S.
- ☐ Perlow, S.
- ☐ Perlow, S.M.
- ☐ Peronnet, G.
- ☐ Peterson, D.F.
- ☐ Peterson, D.L.
- ☐ Pham, T.
- ☐ Pic, E.
- ☐ Pichot, C.
- ☐ Pickard, W.F.
- ☐ Pickett, H.M.
- ☐ Picon, O.
- ☐ Pierro, J.
- ☐ Pierzina, R.
- ☐ Pinto, I.
- ☐ Piotrowski, J.K.
- ☐ Piotrowski, W.
- ☐ Piotrowski, W.S.
- ☐ Plambeck, R.L.
- ☐ Pley, M.
- ☐ Podcameni, A.
- ☐ Podell, A.F.
- ☐ Pombo, J.L.
- ☐ Pomian, R.J.
- ☐ Ponchak, G.E.
- ☐ Poole, C.R.
- ☐ Pospieszalski, M.
- ☐ Pouvil, P.
- ☐ Powell, W.
- ☐ Pozar, D.M.
- ☐ Pramanick, P.
- ☐ Prasad, K.V.S.V.R.
- ☐ Prasad, S.N.
- ☐ Prata, Jr., A.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

☐ Predmore, C.R.

☐ Pregla, R.

☐ Presser, A.

☐ Pribetich, P.

☐ Prim, A.

Q

☐ Qian, J.-R.

☐ Qiang, X.

R

☐ Rabel, J.A.

☐ Rademeyer, P.

☐ Radojewski, J.

☐ Ragonese, L.J.

☐ Rahman, B.M.A.

☐ Raisanen, A.V.

☐ Ramadan, M.

☐ Rao, K.V.S.

☐ Rao, S.M.

☐ Raskmark, P.

☐ Raue, J.E.

☐ Rauscher, C.

☐ Ravfogel, M.

☐ Ravichandran, M.S.

☐ Ray, S.

☐ Read, M.E.

☐ Rebollar, J.M.

☐ Redd, J.

☐ Reddy, A.K.

☐ Reed, K.W.

☐ Rettig, J.B.

☐ Reynolds, Jr., L.D.

☐ Reynolds, L.D.

☐ Rhee, M.J.

☐ Rhodes, D.

☐ Rhyne, G.W.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ [Riaziat, M.](#)
- ☐ [Riblet, G.P.](#)
- ☐ [Richards, P.L.](#)
- ☐ [Richmond, M.R.](#)
- ☐ [Riddle, A.N.](#)
- ☐ [Ring, C.](#)
- ☐ [Rizzoli, V.](#)
- ☐ [Roberts, Jr., N.J.](#)
- ☐ [Robertson, R.S.](#)
- ☐ [Robinson, L.C.](#)
- ☐ [Rodrigue, G.P.](#)
- ☐ [Rohdin, H.](#)
- ☐ [Rolla, P.A.](#)
- ☐ [Rolland, P.A.](#)
- ☐ [Romanofsky, R.R.](#)
- ☐ [Rosen, A.](#)
- ☐ [Rosenbaum, F.J.](#)
- ☐ [Roy, R.P.](#)

- ☐ [Rubin, B.J.](#)
- ☐ [Russer, P.](#)
- ☐ [Ruth, B.](#)
- ☐ [Rutledge, D.B.](#)

S

- ☐ [Saad, A.M.K.](#)
- ☐ [Saad, S.M.](#)
- ☐ [Saad, T.S.](#)
- ☐ [Sagawa, M.](#)
- ☐ [Saha, P.K.](#)
- ☐ [Sahalos, J.N.](#)
- ☐ [Saito, T.](#)
- ☐ [Sakurai, T.](#)
- ☐ [Salama, A.E.](#)
- ☐ [Saleh, A.A.M.](#)
- ☐ [Salmer, G.](#)
- ☐ [Salvo, H.L.](#)

Click on author name for a list of papers.



Author Index



[Contents](#)

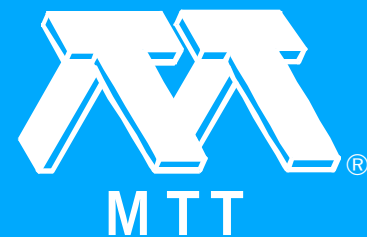
[Authors](#)

- ☐ Samulski, T.V.
- ☐ Sanchez, A.
- ☐ Sannino, M.
- ☐ Sarkar, S.
- ☐ Sarkar, T.K.
- ☐ Sasaki, M.
- ☐ Sasaki, Y.
- ☐ Sato, R.
- ☐ Saunier, P.
- ☐ Sawa, S.
- ☐ Sawires, R.
- ☐ Saylor, J.D.
- ☐ Schaller, G.
- ☐ Schaubert, H.D.
- ☐ Scheitlin, D.
- ☐ Schell, S.W.
- ☐ Schellenberg, J.M.
- ☐ Schieblich, C.
- ☐ Schiebold, C.F.
- ☐ Schiek, B.
- ☐ Schlosser, W.O.
- ☐ Schlosser, W.O.W.
- ☐ Schmitt, H.J.
- ☐ Schneider, M.V.
- ☐ Schroder, N.
- ☐ Schunemann, K.
- ☐ Schwarz, S.E.
- ☐ Schweig, E.
- ☐ Schwelb, O.
- ☐ Schwering, F.K.
- ☐ Scott, J.R.
- ☐ Seashore, C.
- ☐ Sechi, F.
- ☐ Sechi, F.N.
- ☐ Seeds, A.J.
- ☐ Seehausen, G.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ Sega, R.M.
- ☐ Seguinot, C.
- ☐ Seino, K.
- ☐ Seki, S.
- ☐ Sekiguchi, T.
- ☐ Sengupta, D.L.
- ☐ Sequeira, H.B.
- ☐ Sethares, J.C.
- ☐ Sferrazza, J.
- ☐ Shaeffer, J.
- ☐ Shafai, L.
- ☐ Shah, A.V.
- ☐ Shaoshi, Z.
- ☐ Sharma, A.
- ☐ Sharma, A.K.
- ☐ Sharma, P.C.
- ☐ Sharp, J.
- ☐ Shau, D.-H.
- ☐ Shaw, H.J.
- ☐ Sheng, K.M.
- ☐ Shenggen, P.
- ☐ Shenoy, M.R.
- ☐ Shepherd, P.R.
- ☐ Shepherd, S.G.
- ☐ Shibata, H.
- ☐ Shibata, K.
- ☐ Shigesawa, H.
- ☐ Shih, H.D.
- ☐ Shih, I.
- ☐ Shih, Y.-C.
- ☐ Shih, Y.C.
- ☐ Shima, T.
- ☐ Shimabukuro, F.I.
- ☐ Shimazu, Y.
- ☐ Shin, J.
- ☐ Shinozaki, S.

Click on author name for a list of papers.



Author Index



MTT



IEEE

[Contents](#)

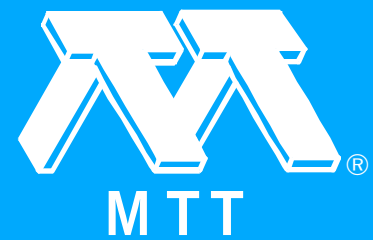
[Authors](#)

- ☐ Shirotori, K.
- ☐ Sholley, M.
- ☐ Shu, E.
- ☐ Siegel, P.H.
- ☐ Silbermann, A.
- ☐ Sillars, D.B.
- ☐ Simons, R.N.
- ☐ Simonutti, M.D.
- ☐ Singh, V.N.
- ☐ Sipila, M.T.A.
- ☐ Siracusa, M.
- ☐ Siu, D.
- ☐ Siweris, H.J.
- ☐ Slaney, M.
- ☐ Smilowitz, B.
- ☐ Smith, C.E.
- ☐ Smith, C.S.
- ☐ Smith, D.
- ☐ Smith, G.S.
- ☐ Smith, M.A.
- ☐ Smith, P.M.
- ☐ Smith, V.H.
- ☐ Snapp, C.P.
- ☐ Snyder, R.V.
- ☐ Sobhy, M.I.
- ☐ Sobol, H.
- ☐ Sokolich, M.
- ☐ Sokolov, V.
- ☐ Solaimani, M.
- ☐ Solbach, K.
- ☐ Solimini, D.
- ☐ Somlo, P.I.
- ☐ Sorrentino, R.
- ☐ Sovero, E.A.
- ☐ Spada, J.A.
- ☐ Sphicopoulos, T.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

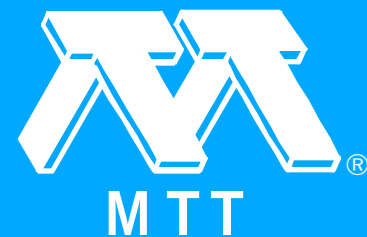
[Authors](#)

- ☐ Spiegel, R.J.
- ☐ Spielman, B.E.
- ☐ Stabile, P.J.
- ☐ Stahlmann, R.
- ☐ Stancil, D.D.
- ☐ Starski, J.P.
- ☐ Stecker, Jr., J.F.
- ☐ Steer, M.B.
- ☐ Stephan, K.D.
- ☐ Stephens, W.E.
- ☐ Sterzer, F.
- ☐ Stilwell, G.W.
- ☐ Stokes, R.B.
- ☐ Stolte, C.
- ☐ Strid, E.W.
- ☐ Strohm, K.M.
- ☐ Strube, J.
- ☐ Stubbs, M.G.
- ☐ Stuchly, M.A.
- ☐ Stuchly, S.S.
- ☐ Su, C.-C.
- ☐ Su, C.-Y.
- ☐ Sudarsanam, R.
- ☐ Sudbury, R.W.
- ☐ Sudo, T.
- ☐ Sugeta, T.
- ☐ Sugiura, T.
- ☐ Sultan, M.F.
- ☐ Sun, C.
- ☐ Sun, H.-J.
- ☐ Sun, Z.-L.
- ☐ Surawatpunya, C.
- ☐ Sussman-Fort, S.E.
- ☐ Suzuki, M.
- ☐ Szedon, J.R.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

T

- ☐ [Tabuchi, T.](#)
- ☐ [Taflove, A.](#)
- ☐ [Tahim, R.](#)
- ☐ [Tahim, R.S.](#)
- ☐ [Tai, G.-C.](#)
- ☐ [Tajima, J.](#)
- ☐ [Tajima, Y.](#)
- ☐ [Takada, T.](#)
- ☐ [Takagi, T.](#)
- ☐ [Takahashi, Y.](#)
- ☐ [Takakuwa, H.](#)
- ☐ [Takano, T.](#)
- ☐ [Takeda, F.](#)
- ☐ [Takeuchi, Y.](#)
- ☐ [Takiyama, K.](#)
- ☐ [Talisa, S.H.](#)
- ☐ [Talwar, A.K.](#)
- ☐ [Tanabe, E.](#)
- ☐ [Tanaka, K.](#)
- ☐ [Tang, O.S.A.](#)
- ☐ [Tang, W.-C.](#)
- ☐ [Tang, W.C.](#)
- ☐ [Tanner, D.](#)
- ☐ [Tarusawa, Y.](#)
- ☐ [Tatomir, P.J.](#)
- ☐ [Tedjini, S.](#)
- ☐ [Temkin, R.J.](#)
- ☐ [Temmyo, J.](#)
- ☐ [Temple, S.](#)
- ☐ [Teodoridis, V.](#)
- ☐ [Terakado, R.](#)
- ☐ [Teramoto, I.](#)
- ☐ [Tetu, M.](#)
- ☐ [Teunas, J.A.](#)

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

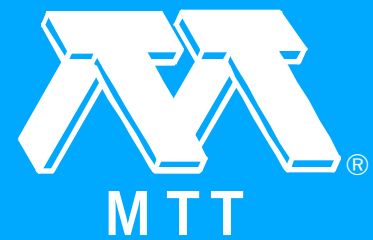
[Authors](#)

- ☐ Thebault, D.
- ☐ Thompson, S.B.
- ☐ Thompson, S.D.
- ☐ Thompson, W.J.
- ☐ Thomsen, F.
- ☐ Thornber, K.K.
- ☐ Thornton, D.D.
- ☐ Thrower, W.F.
- ☐ Thyagarajan, K.
- ☐ Tiwari, A.K.
- ☐ Tiwari, S.C.
- ☐ Togashi, K.
- ☐ Togashi, M.
- ☐ Tokumitsu, Y.
- ☐ Toler, J.C.
- ☐ Tomar, R.S.
- ☐ Tombari, E.
- ☐ Tomita, N.
- ☐ Ton, N.
- ☐ Tong, P.P.
- ☐ Tong, R.
- ☐ Toutain, S.
- ☐ Tozawa, N.
- ☐ Tozawa, Y.
- ☐ Tremblay, P.
- ☐ Trew, R.J.
- ☐ Tripathi, V.K.
- ☐ Tsai, W.C.
- ☐ Tsalamengas, J.L.
- ☐ Tserng, H.Q.
- ☐ Tsironis, C.
- ☐ Tsuji, M.
- ☐ Tsuji, T.
- ☐ Tsutsumi, M.
- ☐ Tucholke, U.
- ☐ Tucker, B.A.

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ [Tucker, R.S.](#)
- ☐ [Tur, M.](#)
- ☐ [Turgeon, G.](#)
- ☐ [Turner, P.F.](#)
- ☐ [Turski, Z.](#)

U

- ☐ [Uchida, K.](#)
- ☐ [Ueda, K.](#)
- ☐ [Ueki, K.](#)
- ☐ [Umashankar, K.R.](#)
- ☐ [Upton, M.A.G.](#)
- ☐ [Uslenghi, P.L.E.](#)
- ☐ [Utsumi, Y.](#)
- ☐ [Uzunoglu, N.K.](#)

V

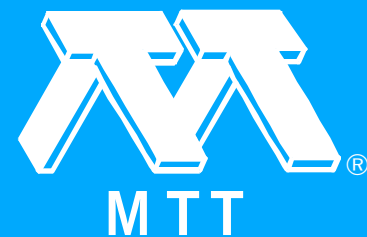
- ☐ [Vafiadis, E.](#)
- ☐ [Vahldieck, R.](#)

- ☐ [Vaidya, N.C.](#)
- ☐ [Valentin, M.](#)
- ☐ [Valerio, Jr., C.V.](#)
- ☐ [van den Berg, P.M.](#)
- ☐ [Van Lil, E.](#)
- ☐ [Varian, D.](#)
- ☐ [Venema, A.](#)
- ☐ [Venkataraman, J.](#)
- ☐ [Versfeld, L.R.G.](#)
- ☐ [Verver, C.J.](#)
- ☐ [Villar, J.C.](#)
- ☐ [Villeneuve, A.T.](#)
- ☐ [Villeneuve, B.](#)
- ☐ [Vitello, P.](#)
- ☐ [Vorhaus, J.L.](#)
- ☐ [Vrba, J.](#)
- ☐ [Vuong, J.B.](#)

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

W

- ☐ [Wachtel, H.](#)
- ☐ [Wada, H.](#)
- ☐ [Wagen, J.-F.](#)
- ☐ [Wahi, P.K.](#)
- ☐ [Wait, J.R.](#)
- ☐ [Wakino, K.](#)
- ☐ [Waldow, P.](#)
- ☐ [Walker, J.L.B.](#)
- ☐ [Walton, M.P.](#)
- ☐ [Wan, L.A.](#)
- ☐ [Wang, B.Y.](#)
- ☐ [Wang, D.C.](#)
- ☐ [Wang, K.G.](#)
- ☐ [Wang, L.M.](#)
- ☐ [Wang, S.-K.](#)
- ☐ [Wang, S.K.](#)
- ☐ [Wang, Y.X.](#)
- ☐ [Ward, C.S.](#)
- ☐ [Wassel, J.W.](#)
- ☐ [Watanabe, H.](#)
- ☐ [Watanabe, S.](#)
- ☐ [Waterman, Jr., R.C.](#)
- ☐ [Watkins, E.T.](#)
- ☐ [Wazowicz, M.F.](#)
- ☐ [Webb, J.](#)
- ☐ [Webb, J.P.](#)
- ☐ [Webb, K.J.](#)
- ☐ [Weber, R.J.](#)
- ☐ [Webster, R.T.](#)
- ☐ [Wei, C.](#)
- ☐ [Wei, M.S.](#)
- ☐ [Weil, C.M.](#)
- ☐ [Weinberg, I.J.](#)
- ☐ [Weinreb, S.](#)

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

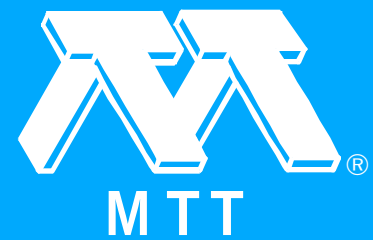
[Authors](#)

- ☐ Weitzel, C.E.
- ☐ Weller, K.P.
- ☐ Wellnitz, M.
- ☐ Welt, D.
- ☐ Wemple, S.H.
- ☐ Wengler, M.J.
- ☐ Westphal, G.H.
- ☐ Whartenby, J.C.
- ☐ Wheeler, D.E.
- ☐ Wheeler, H.A.
- ☐ Wheless, Jr., P.
- ☐ White, D.J.
- ☐ White, D.W.
- ☐ White, J.F.
- ☐ White, P.M.
- ☐ Whitney, H.S.
- ☐ Williams, A.E.
- ☐ Williams, D.A.
- ☐ Williams, D.F.
- ☐ Williams, R.
- ☐ Williams, R.E.
- ☐ Williams, W.M.
- ☐ Williamson, A.G.
- ☐ Wilson, K.
- ☐ Wilson, P.F.
- ☐ Wiltse, J.C.
- ☐ Winter, A.
- ☐ Wirsing, R.
- ☐ Wisseman, W.R.
- ☐ Wolff, I.
- ☐ Wolkstein, H.J.
- ☐ Wong, D.W.
- ☐ Wong, G.H.
- ☐ Woods, G.S.
- ☐ Woody, D.P.
- ☐ Worm, S.B.

Click on author name for a list of papers.



Author Index



IEEE

Contents

Authors

- ☐ [Worontzoff, N.](#)
- ☐ [Wriedt, T.](#)
- ☐ [Wu, R.-B.](#)

X

- ☐ [Xu, S.J.](#)

Y

- ☐ [Yabe, H.](#)
- ☐ [Yablon, W.](#)
- ☐ [Yamada, Y.](#)
- ☐ [Yamaguchi, Y.](#)
- ☐ [Yamamoto, K.](#)
- ☐ [Yamamoto, R.](#)
- ☐ [Yamamoto, S.](#)
- ☐ [Yamanaka, T.](#)
- ☐ [Yamao, Y.](#)
- ☐ [Yamasaki, H.](#)
- ☐ [Yamasaki, K.](#)
- ☐ [Yamashita, E.](#)
- ☐ [Yamashita, S.](#)
- ☐ [Yamazaki, H.](#)
- ☐ [Yanagawa, S.](#)
- ☐ [Yang, Y.-C.E.](#)
- ☐ [Yashiro, K.](#)
- ☐ [Yates, B.C.](#)
- ☐ [Yatsuka, H.](#)
- ☐ [Yee, H.-Y.](#)
- ☐ [Yeh, C.](#)
- ☐ [Yen, H.-w.](#)
- ☐ [Yen, K.H.](#)
- ☐ [Yen, P.](#)
- ☐ [Yen, P.C.H.](#)
- ☐ [Yngvesson, K.S.](#)
- ☐ [Yngvesson, S.](#)
- ☐ [Yoder, M.N.](#)
- ☐ [Yokoshima, I.](#)

Click on author name for a list of papers.



Author Index



IEEE

[Contents](#)

[Authors](#)

- ☐ Yon-hui, S.
- ☐ Yoneyama, T.
- ☐ Yong-Hui, S.
- ☐ Yoshida, N.
- ☐ Yoshikiyo, H.
- ☐ Young, J.A.
- ☐ Young, P.E.
- ☐ Yova, D.
- ☐ Yu, P.K.
- ☐ Yu, S.S.
- ☐ Yuan, L.T.
- ☐ Yuen, C.
- ☐ Yun-yi, W.
- ☐ Yurek, A.M.

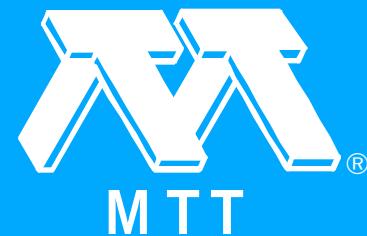
Z

- ☐ Zaghloul, A.I.
- ☐ Zaghloul, H.
- ☐ Zaki, K.A.
- ☐ Zborowska, J.
- ☐ Zdasiuk, G.
- ☐ Zhang, Q.
- ☐ Zhiyi, C.
- ☐ Zhongru, G.
- ☐ Zhu, S.-G.
- ☐ Zhuang, W.-C.
- ☐ Zich, R.
- ☐ Ziegler, C.
- ☐ Zieniutycz, W.
- ☐ Zimmerman, D.C.
- ☐ Zimmerman, D.E.
- ☐ Zirath, H.
- ☐ Zmuda, H.
- ☐ Znojkiwicz, M.E.
- ☐ Zuffada, C.
- ☐ Zurcher, J.-F.

Click on author name for a list of papers.



Papers by Author



IEEE

Contents

Authors

Abdallah, E.A.F.

- ☐ [On the Analysis and Design of Three Coupled Microstrip Lines \(Short Papers\)](#)

Abe, B.

- ☐ [Broadband HEMT and GaAs FET Amplifiers for 18 - 26.5 GHz](#)

Abe, T.

- ☐ [Attenuation Constants of UHF Radio Waves in Arched Tunnels \(Short Papers\)](#)

Abeles, J.H.

- ☐ [Third-Order Nonlinearity of GaAs MESFET's](#)

Abell, J.

- ☐ [36.0 - 40.0 GHz HEMT Low Noise Amplifier](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Abouzahra, M.

- ☐ [Analysis and Design of Five Port Circular Disc Structures for Six-Port Analyzers](#)
- ☐ [Theory and Application of Coupling Between Curved Transmission Lines \(Corrections\)](#)

Abouzahra, M.D.

- ☐ [Analysis and Design of Four-Port and Five-Port Microstrip Disc Circuits](#)
- ☐ [Coupling of Degenerate Modes on Curved Dielectric Slab Sections and Application to Directional Couplers \(Corrections\)](#)

Abrie, P.L.D.

- ☐ [A Method for Evaluating and the Evaluation of the Influence of the Reverse Transfer Gain on the Transducer Power Gain of Some Microwave Transistors \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Abrokwah, J.

- ☐ [94 GHz Planar GaAs Monolithic Balanced Mixer \(1984 \[MWSYM\]\)](#)
- ☐ [High Efficiency GaAs MBE Power FETs for Ka-Band \(1984 \[MWSYM\]\)](#)

Adam, J.D.

- ☐ [Magnetostatic Volume Wave Delay Lines with Stepped Ground Planes](#)

Adam, S.F.

- ☐ [1984 MTT-S International Microwave Symposium \(Dec. 1984 \[T-MTT\]\)](#)
- ☐ [Microwave Instrumentation: An Historical Perspective](#)

Adami, M.

- ☐ [A Multifrequency Water-Filled Waveguide Applicator: Thermal Dosimetry in Vivo \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Adams, A.T.

- ☐ Lossy Inductive-Post Obstacles in Lossy Waveguide
- ☐ Multiple-Post Inductive Obstacles in Rectangular Waveguide
- ☐ Numerical Study of the Current Distribution on a Post in a Rectangular Waveguide (Short Papers)
- ☐ Single-Post Inductive Obstacle in Rectangular Waveguide (Reply to Comments)

Adamski, D.

- ☐ Specific Absorption Rate Distribution in a Full-Scale Model of Man at 350 MHz

Adler, Z.

- ☐ Octave-Band High Precision Balanced Modulator

Adlerstein, M.G.

- ☐ GaAs IMPATT Diodes Pulsed at 40 GHz

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Afendykiw, M.

- ☐ [Dynamic Behavior of Pulsed-IMPATT Oscillators \(Short Papers\)](#)

Afsar, M.N.

- ☐ [Dielectric Measurements of Common Polymers at Millimeter Wavelength](#)
- ☐ [Dielectric Measurements of Millimeter-Wave Materials](#)
- ☐ [Dielectric Properties of Millimeter Wave Materials](#)
- ☐ [Precision Dielectric Measurements of Nonpolar Polymers in the Millimeter Wavelength Range](#)

Agarwal, K.K.

- ☐ [Vector Method of Characterizing Nonlinearity in Microwave Power Devices](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Agrawal, M.C.

- ☐ [On the Graceful Degradation Performance of Multiple-Device Oscillators \(Short Papers\)](#)

Ahmad, N.M.

- ☐ [Up/Down Converter for SCPC Applications](#)

Aichmann, H.

- ☐ [On the Nonthermal Microwave Response of Drosophila Melanogaster \(Short Papers\)](#)

Aikawa, M.

- ☐ [New MIC Power Dividers Using Coupled Microstrip-Slot Lines: Two-Sided MIC Power Dividers](#)

Aishima, A.

- ☐ [An Analysis of an Electronically Tunable n-GaAs Distributed Oscillator](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Aitchison, C.S.

- ☐ [A Practical Microwave Travelling-Wave MESFET Gate Mixer](#)
- ☐ [A Very Wide-Band Microwave MESFET Mixer Using the Distributed Mixing Principle](#)
- ☐ [Optimization of Third-Order Intermodulation Product and Output Power from an X-Band MESFET Amplifier Using Volterra Series Analysis](#)
- ☐ [Power Characterisation of a MESFET Amplifier Using Small Signal Measurements and Volterra Series](#)
- ☐ [The Intrinsic Noise Figure of the MESFET Distributed Amplifier](#)

Akers, N.P.

- ☐ [An Evanescent Mode Waveguide Bandpass Filter at Q Band \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Akinaga, W.

- ☐ [Low Noise Amplifiers Using Two Dimensional Electron Gas FETs](#)

Alanen, E.

- ☐ [Exact Image Theory for Field Calculation in Layered Biological Medium](#)

Alexopoulos, N.G.

- ☐ [A Generalized Algorithm for the Modeling of the Dispersive Characteristics of Microstrip, Inverted Microstrip, Stripline, Slotline, Finline, and Coplanar Waveguide Circuits on Anisotropic Substrates](#)
- ☐ [Frequency-Dependent Characteristics of Microstrip Discontinuities in Millimeter-Wave Integrated Circuits](#)
- ☐ [Fundamental Superstrate Effects on Printed Circuit Antenna Efficiency](#)
- ☐ [Integrated-Circuit Structures on Anisotropic Substrates](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ❑ [Microstrip Discontinuity Modelling for Millimetric Integrated Circuits](#)
- ❑ [Propagation Characteristics of a Microstrip Line Printed on a General Anisotropic Substrate](#)
- ❑ [Toward a Generalized Algorithm for the Modeling of the Dispersive Properties of Integrated Circuit Structures on Anisotropic Substrates](#)

Allan, P.D.

- ❑ [An Evanescent Mode Waveguide Bandpass Filter at Q Band \(Short Papers\)](#)

Allen, D.L.

- ❑ [A Solid-State 2-10 GHz 1 Watt TWT Replacement Amplifier](#)

Altes, S.K.

- ❑ [GaAs Phase-Coherent Microwave Multiple-Signal Generation Using All-Pass Networks](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Ananasso, F.

- ☐ [A Novel Technique to Realize SMSK Conversion and Matched Filters at Microwave Frequencies](#)

Andersen, J.B.

- ☐ [Focused Electromagnetic Heating of Muscle Tissue \(Short Papers\)](#)

Anderson, D.G.

- ☐ [Noise Due to Pulse-to-Pulse Incoherence in Injection-Locked Pulsed-Microwave Oscillators. Part II-Effects of Phase-Locking Dynamics](#)

Andrade, T.

- ☐ [A 2--18-GHz Monolithic Distributed Amplifier Using Dual-Gate GaAs FET's](#)
- ☐ [A Monolithic Direct-Coupled GaAs Amplifier with 12-GHz Bandwidth](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Andrews, J.E.

- ☐ [Digital and Analog Frequency - Temperature Compensation of Dielectric Resonator Oscillators](#)

Andricos, C.

- ☐ [C-Band 6-Bit GaAs Monolithic Phase Shifter \(1985 \[MCS\]\)](#)
- ☐ [C-Band 6-Bit GaAs Monolithic Phase Shifter \(Dec. 1985 \[T-MTT\]\)](#)

Ansorge, C.

- ☐ [Microstrip Mixer Design with Image Cancellation and Low Conversion Loss](#)

Antepyan, R.

- ☐ [Conservation Laws for Distributed Four-Ports \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Aoki, K.

- ☐ [Scattering of Surface Waves on Transverse Discontinuities in Symmetrical Three-Layer Dielectric Waveguides](#)

Aoki, T.

- ☐ [Influence of Conductor Shields on the Q-Factors of a TE /sub 0/ Dielectric Resonator](#)
- ☐ [Influence of Conductor Shields on the Q-Factors of a Te/sub 0/ Dielectric Resonator](#)

Apel, T.R.

- ☐ [Large Signal Pulsed Network Analyzer Operation](#)

Arai, K.

- ☐ [High-Power and High-Efficiency Ion-Implanted Power GaAs FETs for C and X Bands](#)

Arain, M.H.

- ☐ [A 94 GHz Suspended Stripline Circulator](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Araki, K.

- ☐ [Directly Connected Image Guide 3-dB Couplers with Very Flat Couplings](#)
- ☐ [Directly-Connected Image Guide 3dB Coupler with very Flat Coupling](#)
- ☐ [Properties of the Symmetrical Five-Port Circuit and Its Broad-Band Design](#)

Araneta, J.C.

- ☐ [High-Temperature Microwave Characterization of Dielectric Rods](#)
- ☐ [High-Temperature Microwave Characterization of Dielectric Rods \(Corrections\)](#)

Arcangeli, G.

- ☐ [A Multifrequency Water-Filled Waveguide Applicator: Thermal Dosimetry in Vivo \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Archambault, Y.

- ❑ [Highly Accurate Design of Spiral Inductors for MMIC's with Small Size and High Cut-Off Frequency Characteristics \(1984 \[MWSYM\]\)](#)

Archer, J.W.

- ❑ [A High Efficiency Frequency Doubler for 100 GHz](#)
- ❑ [A Novel Quasi-Optical Frequency Multiplier Design for Millimeter and Submillimeter Wavelengths](#)
- ❑ [A Novel Quasi-Optical Frequency Multiplier Design for Millimeter and Submillimeter Wavelengths \(Corrections\)](#)
- ❑ [A Very Low-Noise, Fixed-Tuned Mixer for 240-270 GHz](#)
- ❑ [An Efficient 200--290-GHz Frequency Tripler Incorporating a Novel Stripline Structure](#)
- ❑ [Computer-Aided Testing of Mixers Between 90 and 350 GHz](#)
- ❑ [High-Output, Single- and Dual-Diode, Millimeter-Wave Frequency Doublers](#)

Click on title for a paper summary.



Papers by Author

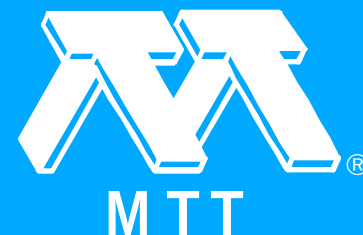
- ❑ Low-Noise, Fixed Tuned, Broadband Mixer for 200-270 GHz
- ❑ Millimeter-Wave, Shot-Noise Limited, Fixed-Tuned Mixer

Armstrong, A.L.

- ❑ High Power Broadband, 35 GHz Waveguide Switch Using a Monolithic Diode Array

Arndt, F.

- ❑ Computer-Optimized Multisection Transformers Between Rectangular Waveguides of Adjacent Frequency Bands (Short Papers)
- ❑ Design of Multisection Impedance-Matched Dielectric-Slab Filled Waveguide Phase Shifters
- ❑ Double Dielectric-Slab-Filled Waveguide Phase Shifter
- ❑ E-Plane Integrated Circuit Filters with Improved Stopband Attenuation (Comments)
- ❑ E-Plane Integrated Circuit Filters with Improved Stopband Attenuation (Short Papers)



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ☐ E-Plane Integrated Parallel-Strip Screen Waveguide Filters (Short Papers)
- ☐ Field Theory Design of Rectangular Waveguide Broad-Wall Metal-Insert Slot Couplers for Millimeter-Wave Applications
- ☐ Rigorous Hybrid-Mode Analysis of the Transition from Rectangular Waveguide to Shielded Dielectric Image Guide
- ☐ W-Band Low-Insertion-Loss E-Plane Filter (Short Papers)

Arthur, D.C.

- ☐ Accurate Six-Port Operation with Uncalibrated Nonlinear Diodes Digital (Short Papers)

Asher, P.

- ☐ Production Technology for High-Yield, High-Performance GaAs Monolithic Amplifiers

Asher, P.G.

- ☐ A W-Band Monolithic Balanced Mixer (1985 [MCS])
- ☐ A W-Band Monolithic Balanced Mixer (1985 [MWSYM])

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Ashley, J.R.

- ☐ [An Analysis of the AC Bandwidth of Transmission Line Discriminators for FM Noise Measurement](#)

Atsuki, K.

- ☐ [A New Method for the Modal Analysis Having Symmetrically Distributed of Optical Fibers Multiple Cores](#)
- ☐ [Effects of Side-Wall Grooves on Transmission Characteristics of Suspended Strip Lines \(1985 \[MWSYM\]\)](#)
- ☐ [Effects of Side-Wall Grooves on Transmission Characteristics of Suspended Striplines \(Dec. 1985 \[T-MTT\]\)](#)

Atwater, H.A.

- ☐ [Circuit Design of the Loaded-Line Phase Shifter](#)
- ☐ [GaAs Monolithic Frequency Doublers with Series Connected Varactor Diodes \(1984 \[MWSYM\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Au, K.J.

- ☐ [Time-Domain Perturbational Analysis of Nonuniformly Coupled Transmission Lines](#)

Aubert, D.

- ☐ [A Reflective Diode Linearize for Spacecraft Applications](#)

Auda, H.

- ☐ [Inductive Posts and Diaphragms of Arbitrary Shape and Number in a Rectangular Waveguide](#)

Avalos, M.T.

- ☐ [Optimizing an Electromagnetic Field Sensor for Microwave Amplitude and Phase Detection via Fiber Optic Transmission Link](#)

Axelrod, A.

- ☐ [Experimental Study of the W-Band Dielectric-Guide Y-Branch Interferometer](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ☐ Theoretical and Experimental Study of a Novel H-Guide Transverse Slot Antenna (Short Papers)

Ayasli, Y.

- ☐ 2--20-GHz GaAs Traveling-Wave Amplifier
- ☐ 2--20-GHz GaAs Traveling-Wave Power Amplifier (Mar. 1984 [T-MTT])
- ☐ Capacitively Coupled Traveling-Wave Power Amplifier (Dec. 1984 [T-MTT])
- ☐ Wide-Band Monolithic Phase Shifter

Azan, F.

- ☐ An Improved Method of Mixer Noise Figure Measurement As Applied to Beam Lead Schottky Diodes at 94 GHz.

Baba, T.

- ☐ A Low Noise AiGaAs/GaAs FET with P/sup +/-Gate and Selectively Doped Structure

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Bagby, J.S.

- ☐ [Integral Formulation for Analysis of Integrated Dielectric Waveguides](#)

Bahar, E.

- ☐ [A Feasibility Study to Monitor Using Microwave Soil Moisture Content Signals](#)

Bahl, I.

- ☐ [A High Speed GaAs Monolithic Transimpedance Amplifier](#)
- ☐ [C-Band 6-Bit GaAs Monolithic Phase Shifter \(1985 \[MCS\]\)](#)

Bahl, I.J.

- ☐ [C-Band 6-Bit GaAs Monolithic Phase Shifter \(Dec. 1985 \[T-MTT\]\)](#)

Ball, D.

- ☐ [A D-Band Millimeter-Wave Crossbar Mixer](#)

Click on title for a paper summary.



Papers by Author

- ☐ Broad-Band Millimeter-Wave E-Plane Bandpass Filters (Short Papers)
- ☐ Broadband Millimeter-Wave E-Plane Bandpass Filters

Bandler, J.W.

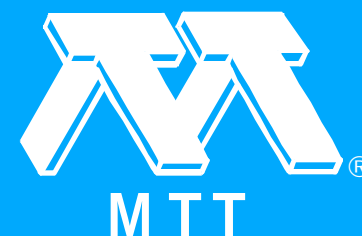
- ☐ A Superlinearly Convergent Minimax Algorithm for Microwave Circuit Design (1985 [MWSYM])
- ☐ A Superlinearly Convergent Minimax Algorithm for Microwave Circuit Design (Dec. 1985 [T-MTT])
- ☐ Functional Approach to Microwave Postproduction Tuning

Bandy, S.

- ☐ A High Gain, Monolithic Distributed Amplifier Using Cascode Active Elements (1986 [MCS])

Bansal, R.

- ☐ Monolithic Antennas for Millimeter Wave GaAs Integrated Circuits



Contents

Authors

Click on title for a paper summary.



Papers by Author

- ❑ [Semiconductor Antenna: A New Device in Millimeter- and Submillimeter-Wave Integrated Circuits \(Short Papers\)](#)

Bar-lev, A.

- ❑ [A Novel Method for the Analysis of Microwave Two-Port Active Mixers \(Short Papers\)](#)

Bardati, F.

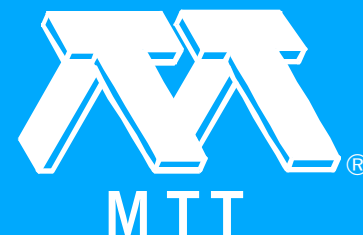
- ❑ [Inversion of Microwave Thermographic Data by the Singular Function Method](#)

Barlow, H.

- ❑ [A Conversation Between Harold Barlow and Alec Cullen, on November 24, 1983](#)

Barnes, F.S.

- ❑ [An Exposure System for Variable Electromagnetic-Field Orientation Electrophysiological Studies](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Barrett, R.M.

- ☐ [Microwave Printed Circuits - The Early Years](#)

Barta, G.S.

- ☐ [A 2 to 8 GHz Leveling Loop Using a GaAs MMIC Active Splitter and Attenuator](#)

Barth, H.

- ☐ [Fundamental Wave Injection Locked 2nd Harmonic Gunn Oscillators at 94 GHz](#)
- ☐ [GaAs Gunn Oscillators Reach the 140 GHz Range](#)

Barton, D.K.

- ☐ [A Half Century of Radar](#)

Bastida, E.M.

- ☐ [Air Bridge Gate FET for GaAs Monolithic Circuits \(1985 \[MCS\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ Air Bridge Gate FET for GaAs Monolithic Circuits (1985 [MWSYM])
- ❑ Airbridge Gate FET for GaAs Monolithic Circuits

Basu, B.N.

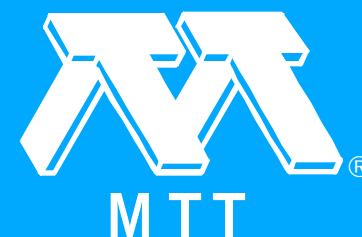
- ❑ Optimum Design of a Potentially Dispersion-Free Helical Slow-Wave Circuit of a Broad-Band TWT (Short Papers)

Bates, B.D.

- ❑ A Comparison of IMPATT Oscillator Power and Frequency Above 100 GHz with Results Derived from Theoretical Models (Short Papers)
- ❑ Stability of Multifrequency Negative-Resistance Oscillators

Baudrand, H.

- ❑ Amplification by Interdigital Excitation of Space-Charge Waves in Semiconductors



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Bauhahn, P.

- ❑ 30 GHz Monolithic Balanced Mixers Using an Ion-Implanted FET-Compatible 3-Inch GaAs Wafer Process Technology
- ❑ 30 GHz Multi-Bit Monolithic Phase Shifters
- ❑ 94 GHz Planar GaAs Monolithic Balanced Mixer (1984 [MWSYM])

Bayraktaroglu, B.

- ❑ High Efficiency Millimeter Wave Monolithic IMPATT Oscillators (1985 [MCS])
- ❑ High Efficiency Millimeter Wave Monolithic IMPATT Oscillators (1985 [MWSYM])

Beall, J.M.

- ❑ Design and Process Sensitivity of a Two Stage 6-18 GHz Monolithic Feedback Amplifier (1985 [MCS])
- ❑ Design and Process Sensitivity of a Two-Stage 6--18-GHz Monolithic Feedback Amplifier (Dec. 1985 [T-MTT])

Click on title for a paper summary.



Papers by Author



IEEE

[Contents](#)

[Authors](#)

Beccone, J.P.

- ☐ [A 6 Watt 6 GHz GaAsFET Power Module with GaAs Matching Circuits](#)
- ☐ [Third-Order Nonlinearity of GaAs MESFET's](#)

Becker, R.C.

- ☐ [MESFET Distributed Amplifier Design Guidelines](#)

Bedair, S.S.

- ☐ [Characteristics of Some Asymmetrical Coupled Transmission Lines \(Short Papers\)](#)
- ☐ [Tolerance Analysis of Shielded Microstrip Lines \(Short Papers\)](#)

Beggs, B.

- ☐ [Dielectric Resonator Output Multiplexer for C-Band Satellite Applications](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Behari, J.

- ☐ [Biological Tissues Characterization at Microwave Frequencies \(Short Papers\)](#)

Beike, J.

- ☐ [E-Plane Integrated Parallel-Strip Screen Waveguide Filters \(Short Papers\)](#)

Bell, H.C.

- ☐ [Session 12 Introduction \(1984 \[MWSYM\]\)](#)

Benson, K.

- ☐ [Theoretical Efficiency for Triplers Using Nonideal Varistor Diodes at Submillimeter Wavelengths](#)
- ☐ [Theoretical Efficiency for Triplers Using Real Varister Diodes at Submillimeter Wavelengths](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Beren, J.

- ☐ [Direct Method of Obtaining Capacitance from Finite-Element Matrices \(Clarification\)](#)

Berenz, J.

- ☐ [36.0 - 40.0 GHz HEMT Low Noise Amplifier](#)

Berenz, J.J.

- ☐ [Low Noise High Electron Mobility Transistors \(1984 \[MWSYM\]\)](#)

Bernardi, P.

- ☐ [A Nonlinear Analysis of the Effects of Transient Electromagnetic Fields on Excitable Membranes](#)

Besser, R.S.

- ☐ [Wide-Band Limiting Amplifiers with Low Second Harmonic Distortion, Utilizing GaAs MMIC Limiters](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Best, W.S.

- ☐ Coherent Transmitter Considerations Utilizing Injection Locked Magnetrons

Beyer, A.

- ☐ A Computer-Controlled Integrated Microwave Measurement System in Finline Technique for Automatic Material Parameter Measurements
- ☐ Analysis of the Transmission Characteristics of Inhomogeneous Grounded Finline (Short Papers)
- ☐ Development of a Coupler in Finline Technique
- ☐ Finline Taper Design Made Easy
- ☐ Power Density Distribution Analysis of Ferrite Loaded Finline for the Development of Integrated Nonreciprocal Millimeter Wave Elements

Beyer, J.B.

- ☐ MESFET Distributed Amplifier Design Guidelines

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Bhartia, P.

- ☐ [A New Microstrip Dispersion Model \(Short Papers\)](#)
- ☐ [Accurate Analysis Equations and Synthesis Technique for Unilateral Finline](#)
- ☐ [Analysis and Synthesis of Tapered Fin-Lines](#)
- ☐ [CAD Models for Millimeter-Wave Suspended Substrate Microstrip Lines and Fin-Lines](#)
- ☐ [Computer-Aided Design Models for Millimeter-Wave Finline and Suspended-Substrate Microstrip Lines](#)

Bhasin, K.B.

- ☐ [An Experimental Investigation of Microstrip Properties on Soft Substrates from 2 to 40 GHz](#)

Bhat, B.

- ☐ [Analysis of Low-Loss Broadside-Coupled Dielectric Image Guide Using the Mode-Matching Technique \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author

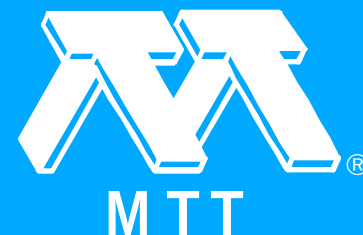
- ❑ Equivalent Circuit of Broadside-Coupled Microstrip Open Ends
- ❑ Lumped Capacitance, Open-Circuit End Effects, and Edge-Capacitance of Microstrip-Like Transmission Lines for Microwave and Millimeter-Wave Applications

Bhattacharya, D.

- ❑ Normal-Mode Parameters of Microstrip Coupled Lines of Unequal Width (Short Papers)

Bialkowski, M.E.

- ❑ Calibrating a Six-Port Reflectometer Using Three Known Loads
- ❑ Determination of the Admittance of a General Waveguide-Coaxial Line Junction (Short Papers)
- ❑ Disc-Type Resonator Mount in Rectangular Waveguide



Contents

Authors

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Bianchini, M.J.

- ☐ [A Single-Resonator GaAs FET Oscillator with Noise Degeneration](#)
- ☐ [Analysis and Design of a Single-Resonator GaAs FET Oscillator with Noise Degeneration](#)

Bie, P.R.

- ☐ [Integrated Ka-Band Front End with Monolithic Mixer](#)

Bilik, V.

- ☐ [One-Root Intervals of Dispersion Relations for a Resonator with Dielectric Sample \(Short Papers\)](#)

Bingham, S.D.

- ☐ [A 6.5--16-GHz Monolithic Power Amplifier Module](#)
- ☐ [A Miniaturized 6.5 - 16 GHz Monolithic Power Amplifier Module](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Blakey, P.A.

- ☐ [A General CAD Tool for Large-Signal GaAs MESFET Circuit Design](#)

Boire, D.C.

- ☐ [A 4.5 to 18 GHz Phase Shifter](#)

Boireau, P.

- ☐ [An Improved Method of Mixer Noise Figure Measurement As Applied to Beam Lead Schottky Diodes at 94 GHz.](#)

Bolle, D.M.

- ☐ [Edge-Guided Magnetoplasmons on Curved Interfaces in Submillimeter Wave Devices](#)
- ☐ [Finite Element Analysis Applied to Gyroelectrically Loaded Waveguiding Structures](#)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Bolomey, J.C.

- ☐ [Microwave Diffraction Tomography for Biomedical Applications \(Further Comments\)](#)

Bonetti, R.R.

- ☐ [Narrow Bandpass Filters Using the High-Q Cylindrical TE/sub 0ml/ Resonator Modes](#)
- ☐ [Predistortion Techniques for Multicoupled Resonator Filters](#)
- ☐ [Predistortion Techniques for Multicoupled Resonator Filters \(Short Papers\)](#)

Bornemann, J.

- ☐ [A Modified Mode-Matching Technique and its Application to a Class of Quasi-Planar Transmission Lines](#)
- ☐ [Design of Multisection Impedance-Matched Dielectric-Slab Filled Waveguide Phase Shifters](#)
- ☐ [E-Plane Integrated Circuit Filters with Improved Stopband Attenuation \(Comments\)](#)

Click on title for a paper summary.



Papers by Author

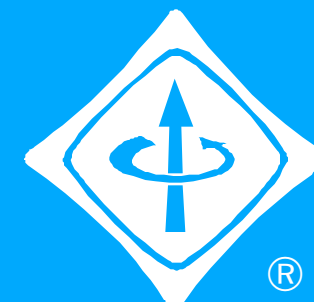
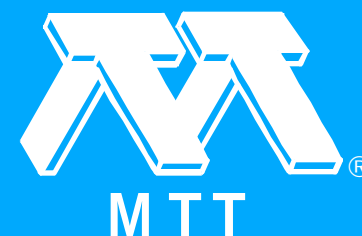
- ❑ E-Plane Integrated Circuit Filters with Improved Stopband Attenuation (Short Papers)
- ❑ E-Plane Integrated Parallel-Strip Screen Waveguide Filters (Short Papers)
- ❑ W-Band Low-Insertion-Loss E-Plane Filter (Short Papers)

Borrani, A.

- ❑ A Multifrequency Water-Filled Waveguide Applicator: Thermal Dosimetry in Vivo (Short Papers)

Borup, D.T.

- ❑ Calculation of High-Resolution SAR Distributions in Biological Bodies Using the FFT Algorithm and Conjugate Gradient Method (Short Papers)
- ❑ Fast-Fourier-Transform Method for Calculation of SAR Distributions in Finely Discretized Inhomogeneous Models of Biological Bodies



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Bosch, B.G.

- ❑ [2.24 Gbit/s Direct Modulation of Injection Laser by Monolithic Silicon Multiplexer](#)
- ❑ [Injection Laser Modulation at 2 Gbit/s by Monolithic Silicon Multiplexer \(Short Papers\)](#)

Bosisio, R.G.

- ❑ [A New Method for Six-Port Swept Frequency Automatic Network Analysis \(Short Papers\)](#)
- ❑ [A New Real-Time Six-Port A N A Method](#)

Botstein, C.

- ❑ [Enhancing the Efficacy of Localized Thermotherapy by Monitoring Changes in Tumor Blood Flow](#)

Boudouris, G.

- ❑ [Changes in Liposomes Permeability Induced by Gramicidin D After Microwave Irradiation \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Boulanger, P.

- ☐ [A Technique to Identify Electromagnetic Modes in Oversize Waveguides \(Short Papers\)](#)

Bowes, J.

- ☐ [Miniature Band Reject Filters Applications for Satellite](#)

Bowling, D.

- ☐ [Dynamic Behavior of Pulsed-IMPATT Oscillators \(Short Papers\)](#)

Bowman, R.R.

- ☐ [An Exposure System for Variable Electromagnetic-Field Orientation Electrophysiological Studies](#)

Bradley, P.D.

- ☐ [Computer-Aided Error Correction of Large-Signal Load-Pull Measurements](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Bradley, W.J.

- ☐ [A Low Cost, Accurate, Target Detecting Device for Altimetry and Fuzing](#)

Brand, G.F.

- ☐ [A 125--260-GHz Gyrotron](#)

Brantervik, K.

- ☐ [A New Four-Port Automatic Network Analyzer: Part I--Description and Performance](#)
- ☐ [A New Four-Port Automatic Network Analyzer: Part II--Theory](#)

Bressan, M.

- ☐ [Singularity Extraction from the Electric Green's Function for a Spherical Resonator \(Short Papers\)](#)
- ☐ [Waveguide Modes Via an Integral Equation Leading to a Linear Matrix Eigenvalue Problem \(Corrections\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ [Waveguide Modes Via an Integral Equation Leading to a Linear Matrix Eigenvalue Problem \(Short Papers\)](#)

Bridge, J.P.

- ❑ [Analysis of a J-Band Pulsed Read IMPATT Oscillator](#)

Bridges, E.

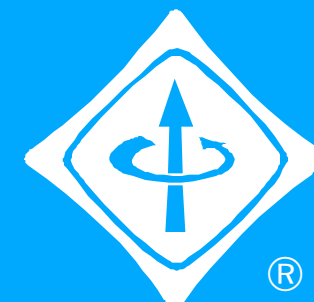
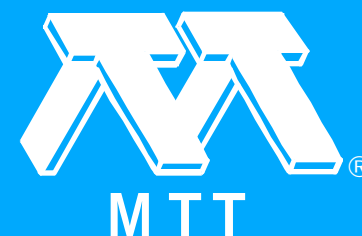
- ❑ [A Calibration Method for a Six-Port Reflectometer Which the Effect of Power Measurement Errors Minimizes](#)

Bridges, W.B.

- ❑ [Computer Analysis of Dielectric Waveguides: A Finite-Difference Method](#)
- ❑ [Powder Core Dielectric Waveguides](#)

Brodwin, M.E.

- ❑ [High-Temperature Microwave Characterization of Dielectric Rods](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author

- ❑ [High-Temperature Microwave Characterization of Dielectric Rods \(Corrections\)](#)

Bromborsky, A.

- ❑ [Calculation of TM/sub 0n/ Dispersion Relations in a Corrugated Cylindrical Waveguide](#)

Brown, W.C.

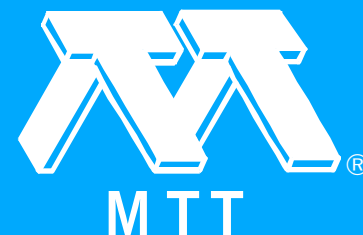
- ❑ [Performance Characteristics of the Thin-Film, Etched-Circuit Rectenna](#)
- ❑ [The History of Power Transmission by Radio Waves](#)

Brozovich, R.S.

- ❑ [An Analysis of the AC Bandwidth of Transmission Line Discriminators for FM Noise Measurement](#)

Brunkard, K.M.

- ❑ [The Absence of Significant Short-Term Electromagnetic Bioeffects in Giant Algal Cells Exposed to CW and Pulse-Modulated X-Band Bursts](#)



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Bruno, W.M.

- ☐ [Powder Core Dielectric Waveguides](#)

Bruns, H.

- ☐ [Dynamic Diode Mixer Damage Measurements](#)

Bryant, J.H.

- ☐ [Coaxial Transmission Lines, Related Two-Conductor Transmission Lines, Connectors, and Components: A U.S. Historical Perspective](#)
- ☐ [Coaxial Transmission Lines, Related Two-Conductor Transmission Lines, Connectors, and Components: A U.S. Historical Perspective \(Corrections\)](#)

Buchalter, M.S.

- ☐ [Stable Microwave Source Using High Overtone Bulk Resonators](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Buckmaster, H.A.

- ☐ [Complex Permittivity Instrumentation for High-Loss Liquids at Microwave Frequencies \(Short Papers\)](#)

Bucolo, R.J.

- ☐ [A Simple Network Analog Approach for the Quasi-Static Characteristics of General Lossy, Anisotropic, Layered Structures \(1985 \[MWSYM\]\)](#)
- ☐ [A Simple Network Analog Approach for the Quasi-Static Characteristics of General Lossy, Anisotropic, Layered Structures \(Dec. 1985 \[T-MTT\]\)](#)

Buechler, J.

- ☐ [Silicon High Resistivity Substrate Millimeter-Wave Technology \(1986 \[MCS\]\)](#)

Bui, L.Q.

- ☐ [A D-Band Millimeter-Wave Crossbar Mixer](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ☐ Broad-Band Millimeter-Wave E-Plane Bandpass Filters (Short Papers)
- ☐ Broadband Millimeter-Wave E-Plane Bandpass Filters
- ☐ Millimeter-Wave Diplexers with Printed Circuit Elements (1985 [MWSYM])
- ☐ Millimeter-Wave Diplexers with Printed Circuit Elements (Dec. 1985 [T-MTT])

Buris, N.E.

- ☐ Magnetostatic Surface-Wave Propagation in Ferrite Thin Films with Arbitrary Variations of the Magnetization Through the Film Thickness
- ☐ Magnetostatic Volume Modes of Ferrite Thin Films with Magnetization Inhomogeneities through the Film Thickness

Burkhart, S.

- ☐ Coaxial E-Field Probe for High-Power Microwave Measurement (Short Papers)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Burns, J.W.

- ☐ [A Novel MMIC X-Band Phase Shifter](#)

Burns, S.G.

- ☐ [Fundamental-Mode Pierce Oscillators Utilizing Bulk-Acoustic-Wave Resonators in the 250 - 300 MHz Range](#)
- ☐ [Fundamental-Mode Pierce Oscillators Utilizing Bulk-Acoustic-Wave Resonators in the 250--300-MHz Range \(Short Papers\)](#)

Burton, M.

- ☐ [An Improved Model for Short- and Open-Circuited Series Stubs in Fin Lines](#)

Bush, W.G.

- ☐ [Predistortion Techniques for Multicoupled Resonator Filters](#)
- ☐ [Predistortion Techniques for Multicoupled Resonator Filters \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author

Butler, C.M.

- ☐ [The Annular Slot Antenna in a Lossy Biological Medium \(Short Papers\)](#)

Butter, C.

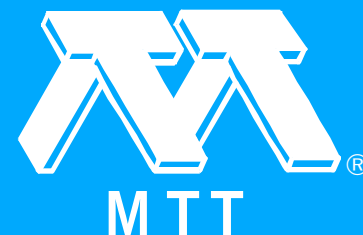
- ☐ [30 GHz Multi-Bit Monolithic Phase Shifters](#)

Button, K.J.

- ☐ [Dielectric Properties of Millimeter Wave Materials](#)
- ☐ [Microwave Ferrite Devices: The First Ten Years](#)

Byzery, B.

- ☐ [Coupling Parameters Between a Dielectric Resonator and a Microstripline](#)
- ☐ [TM/sub 0 gamma delta/ Mode of Cylindrical Dielectric Resonators Applications to Microwave Filters](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Calamai, G.

- ☐ [A Multifrequency Water-Filled Waveguide Applicator: Thermal Dosimetry in Vivo \(Short Papers\)](#)

Calandra, E.F.

- ☐ [Characterization of GaAs FET's in Terms of Noise, Gain, and Scattering Parameters through a Noise Parameter Test Set](#)

Calawa, A.R.

- ☐ [Dual Function Mixer Circuit for Millimeter Wave Transceiver Applications \(1985 \[MCS\]\)](#)
- ☐ [Dual Function Mixer Circuit for Millimeter Wave Transceiver Applications \(1985 \[MWSYM\]\)](#)

Calazans, Jr., E.T.

- ☐ [Theoretical and Experimental Studies of Gain Compression of Millimeter-Wave Self-Oscillating Mixers](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Callarotti, R.C.

- ☐ [On the Solution of a Microstripline with Two Dielectrics](#)

Callsen, H.

- ☐ [140-GHz Finline Components \(Short Papers\)](#)

Calviello, J.A.

- ☐ [Integrated Ka-Band Front End with Monolithic Mixer](#)

Camilleri, N.

- ☐ [A Quasi-Optical Multiplying Slot Array](#)

Camisa, R.L.

- ☐ [Self-Consistent FET Models for Amplifier Design and Device Diagnostics](#)
- ☐ [Self-Consistent GaAs FET Models for Amplifier Design and Device Diagnostics](#)
- ☐ [Session 17 Introduction \(1984 \[MWSYM\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Cancellieri, G.

- ☐ [Time Dispersion Properties of Cascaded Multimode Fiber Links](#)

Cann, A.J.

- ☐ [A Low Cost, Accurate, Target Detecting Device for Altimetry and Fuzing](#)

Caorsi, S.

- ☐ [Microwave Hyperthermic Distributions in a Layered Living Body with Nonlinear Thermoregulatory Properties \(Short Papers\)](#)

Cap, F.F.

- ☐ [Electromagnetic Waves in Toroidal Vessels of Arbitrary Cross Section Filled with Radially Inhomogeneous Dielectric Medium](#)

Click on title for a paper summary.



Papers by Author

Cappello, A.

- ❑ [A 22--24-GHz Cryogenically Cooled GaAs FET Amplifier](#)

Cappello, A.J.

- ❑ [Integrated Ka-Band Front End with Monolithic Mixer](#)

Cappy, A.

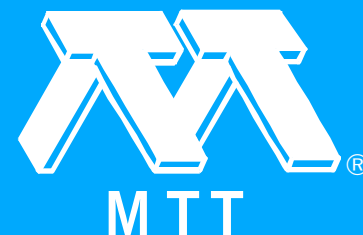
- ❑ [GaAs Monolithic Transferred-Electron Devices for Millimeter Wave Applications](#)

Carlin, H.J.

- ❑ [A New Approach to Dispersion Analysis of Graded Index Optical Fibers](#)

Carlstrom, J.E.

- ❑ [A Continuously Tunable 65--115-GHz Gunn Oscillator](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Carmel, Y.

- ☐ [A Technique to Identify Electromagnetic Modes in Oversize Waveguides \(Short Papers\)](#)

Carr, K.L.

- ☐ [Microwave Radiometric Detection of Thermal Asymmetry of Varicocele](#)

Carter, R.L.

- ☐ [Passive Magnetostatic Wave Pulse Compression Loop](#)
- ☐ [YIG Oscillators: Is a Planar Geometry Better?](#)
- ☐ [YIG Oscillators: Is a Planar Geometry Better? \(Short Papers\)](#)

Cashman, J.D.

- ☐ [Higher Order Mode Cutoff in Polygonal Transmission Lines \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ [Reflection Coefficient of a Conducting Sphere on the Broad Wall of a Rectangular Waveguide](#)

Caslow, S.

- ❑ [Microstrip Spiral Antenna for Local Hyperthermia](#)

Celliers, A.F.

- ❑ [Design Curves for -3-dB Branchline Couplers \(Short Paper\)](#)

Censor, D.

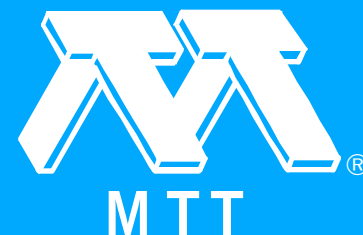
- ❑ [Waveguide and Cavity Oscillations in the Presence of Nonlinear Media](#)

Ch'en, D.R.

- ❑ [Session 4 Introduction \(1984 \[MWSYM\]\)](#)

Chakraborti, N.B.

- ❑ [Normal-Mode Parameters of Microstrip Coupled Lines of Unequal Width \(Short Papers\)](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Chalker, R.

- ☐ [An Exposure System for Variable Electromagnetic-Field Orientation Electrophysiological Studies](#)

Champness, C.H.

- ☐ [Measurements of the Photo-Induced Complex Permittivity of Si, Ge, and Te at 9 GHz](#)

Chan, C.

- ☐ [Spectral Iterative Technique for Analyzing Multiconductor Microstrip Lines](#)

Chan, K.H.

- ☐ [Microwave Thermoelastic Tissue Imaging--System Design](#)

Chan, S.K.

- ☐ [The Relationship of Magnetotransconductance Mobility Profiles and RF Performance of GaAs FETs](#)

Click on title for a paper summary.



Papers by Author

Chang, C.-D.

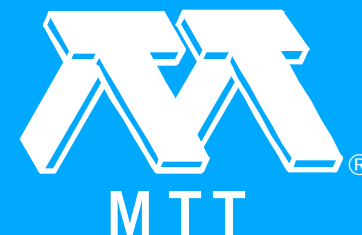
- ❑ [Production Technology for High-Yield, High-Performance GaAs Monolithic Amplifiers](#)

Chang, C.D.

- ❑ [High Performance Monolithic Power Amplifier Using a Unique Ion Implantation Process \(1986 \[MCS\]\)](#)
- ❑ [Production Technology Development for High Yield, High Performance X-Band Monolithic Power and Low Noise Amplifiers](#)

Chang, C.S.

- ❑ [Direct DC to RF Conversion by Picosecond Optoelectronic Switching](#)
- ❑ [Optoelectronic Techniques for Microwave and Millimeter-Wave Applications](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Chang, D.C.

- ☐ Coupled-Mode Theory of Two Nonparallel Dielectric Waveguides
- ☐ Mode Coupling by a Longitudinal Slot for a Class of Planar Waveguiding Structures: Part I--Theory
- ☐ Mode Coupling by a Longitudinal Slot for a Class of Planar Waveguiding Structures: Part II--Applications

Chang, K.

- ☐ 60 GHz Integrated Circuit Quadriphase Exciter and Modulator
- ☐ 60-GHz Integrated-Circuit High Data Rate Quadriphase Shift Keying Exciter and Modulator (Short Papers)
- ☐ Analysis and Design of Spurline Bandstop Filters
- ☐ Design and Performance of a W-Band Broadband Finline Diplexer with Over 20 GHz Bandwidth

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

- ❑ Impedance Calculation of Three Narrow Resonant Strips on the Transverse Plane of a Rectangular Waveguide (Short Papers)
- ❑ Miniature Millimeter-Wave Integrated Circuit Wideband Downconverters
- ❑ On the Analysis and Design of Spurline Bandstop Filters
- ❑ W-Band (75 to 110 GHz) Microstrip Components (1985 [MWSYM])
- ❑ W-Band (75-110 GHz) Microstrip Components (Dec. 1985 [T-MTT])
- ❑ W-Band Broadband Integrated Circuit Receiver

Chang, K.W.

- ❑ Passive Magnetostatic Wave Pulse Compression Loop

Chang, R.-S.

- ❑ Microstrip Transmission Line with Finite-Width Dielectric and Ground Plane (Short Papers)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Chang, W.S.C.

- ☐ [The Birth of Lightwave Technology and Its Implications to Microwaves](#)

Chao, C.

- ☐ [30 GHz Monolithic Balanced Mixers Using an Ion-Implanted FET-Compatible 3-Inch GaAs Wafer Process Technology](#)
- ☐ [94 GHz Planar GaAs Monolithic Balanced Mixer \(1984 \[MWSYM\]\)](#)

Chao, S.-H.

- ☐ [Measurements of Microwave Conductivity and Dielectric Constant by the Cavity Perturbation Method and Their Errors](#)

Chase, E.M.

- ☐ [A Power Distributed Amplifier Using Constant-R Networks](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Chatterjee, I.

- ❑ [Human Body Impedance for Electromagnetic Hazard Analysis in the VLF to MF Band](#)

Chattopadhyay, A.

- ❑ [Up/Down Converter for SCPC Applications](#)

Chaubet, M.

- ❑ [Coupling Parameters Between a Dielectric Resonator and a Microstripline](#)

Chauchard, E.

- ❑ [Optoelectronic Techniques for Microwave and Millimeter-Wave Applications](#)

Chaudhuri, S.K.

- ❑ [A True Elliptic-Function Filter Using Triple-Mode Degenerate Cavities](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Chen, B.U.

- ☐ [Analog Microwave Fiber Optic Communications Links](#)

Chen, C.

- ☐ [Field Distribution of Hybrid Modes in Dielectric Loaded Waveguides](#)
- ☐ [Intensity and Distribution of Hybrid-Mode Fields in Dielectric-Loaded Waveguides](#)
- ☐ [Loss Mechanisms in Dielectric Loaded Resonators \(1985 \[MWSYM\]\)](#)
- ☐ [Loss Mechanisms in Dielectric-Loaded Resonators \(Dec. 1985 \[T-MTT\]\)](#)

Chen, C.H.

- ☐ [A Variational Analysis of Dielectric Waveguides by the Conformal Mapping Technique](#)
- ☐ [On the Variational Reaction Theory for Dielectric Waveguides](#)

Click on title for a paper summary.



Papers by Author

- ❑ Plasma-Dielectric Sandwich Structure Used as a Tunable Bandpass Microwave Filter (Short Papers)

Chen, J.C.

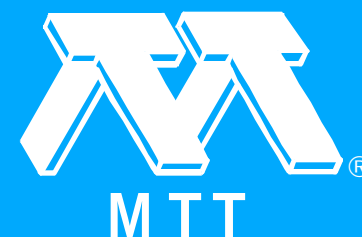
- ❑ A W-Band Monolithic GaAs PIN Diode Switch

Chen, K.-M.

- ❑ EM Local Heating with HF Electric Fields
- ❑ Interaction of the Near-Zone Fields of a Slot on a Conducting Sphere with a Spherical Model of Man
- ❑ Responses of Electric-Field Probes Near a Cylindrical Model of the Human Body

Chen, K.M.

- ❑ Interaction of the Near-Zone Fields of a Slot on a Conducting Sphere with a Spherical Model of Man (Corrections)



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Chen, R.T.

- ☐ [Power Saturation Characteristics of GaAs/AlGaAs High Electron Mobility Transistors](#)

Chen, T.-H.

- ☐ [GaAs Phase-Coherent Microwave Multiple-Signal Generation Using All-Pass Networks](#)

Chernick, M.R.

- ☐ [A Quasi-Optical Method for Measuring the Complex Permittivity of Materials](#)

Chiba, J.

- ☐ [Attenuation Constants of UHF Radio Waves in Arched Tunnels \(Short Papers\)](#)

Cho, A.Y.

- ☐ [Noise Measurements and Noise Mechanisms in Microwave Mixer Diodes](#)

Click on title for a paper summary.



Papers by Author

Choi, D.H.

- ☐ [The Simulation of Three-Dimensional Wave Propagation by a Scalar TLM Model](#)

Choinski, T.C.

- ☐ [Composite Coupler Design](#)

Chong, M.P.

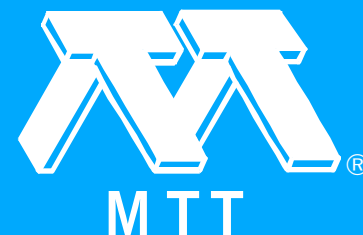
- ☐ [Dielectric Resonators Band Pass Filter with High Attenuation Rate](#)

Chou, C.-K.

- ☐ [Average SAR and SAR Distributions in Man Exposed to 450-MHz Radiofrequency Radiation](#)

Chou, C.K.

- ☐ [Microwave-Induced Post-Exposure Hyperthermia: Involvement of Endogenous Opioids and Serotonin](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Chu, A.

- ☐ Dual Function Mixer Circuit for Millimeter Wave Transceiver Applications (1985 [MCS])
- ☐ Dual Function Mixer Circuit for Millimeter Wave Transceiver Applications (1985 [MWSYM])
- ☐ GaAs Monolithic Frequency Doublers with Series Connected Varactor Diodes (1984 [MWSYM])

Chu, K.R.

- ☐ A Technique to Identify Electromagnetic Modes in Oversize Waveguides (Short Papers)

Chu, S.L.G.

- ☐ GaAs IMPATT Diodes Pulsed at 40 GHz

Chu, T.S.

- ☐ Analysis of Microstrip Step Discontinuity by the Modified Residue Calculus Technique

Click on title for a paper summary.



Papers by Author

- ❑ Comparative Study of Mode Matching Formulations for Microstrip Discontinuity Problems (1985 [MWSYM])
- ❑ Comparative Study of Mode-Matching Formulations for Microstrip Discontinuity Problems (Oct. 1985 [T-MTT])

Chuandong, H.

- ❑ MIC Assembly for 12-GHz Direct Broadcast Satellite Receiver

Chuang, H.-R.

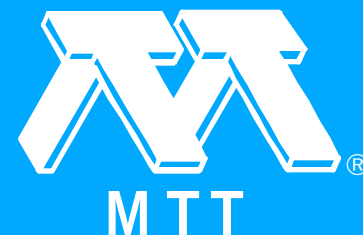
- ❑ Interaction of the Near-Zone Fields of a Slot on a Conducting Sphere with a Spherical Model of Man

Chuang, S.L.

- ❑ Plot of Modal Field Distribution in Rectangular and Circular Waveguides (Short Papers)

Chung, N.S.

- ❑ A Dual Six-Port Automatic Network Analyzer and its Performance (Short Papers)



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author

- ❑ [A Dual Six-Port Automatic Network Analyzer and its Performance Tests](#)

Citerne, J.

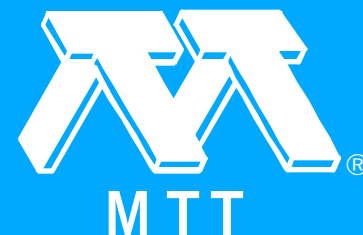
- ❑ [Spectral-Domain Approach for Continuous Spectrum of Slot-Like Transmission Lines \(Short Papers\)](#)
- ❑ [Theoretical of and Experimental Investigation Finline Discontinuities](#)

Cividalli, A.

- ❑ [A Multifrequency Water-Filled Waveguide Applicator: Thermal Dosimetry in Vivo \(Short Papers\)](#)

Cloete, J.H.

- ❑ [A Transition from Rectangular to Nonradiating Dielectric Waveguide \(Short Papers\)](#)
- ❑ [A Transition to Non-Radiating Dielectric Waveguide](#)
- ❑ [Rectangular Bars Coupled Through a Finite-Thickness Slot](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author

- ❑ [Single-Post Inductive Obstacle in Rectangular Waveguide \(Comments\)](#)

Cohen, L.D.

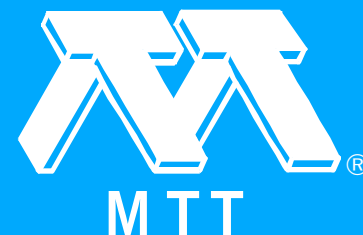
- ❑ [Active Phase Shifters for the Millimeter and Microwave Bands](#)
- ❑ [Integrated Ka-Band Front End with Monolithic Mixer](#)
- ❑ [Millimeter Wave Multiplexer with Printed Circuit Elements for the 88 to 100 GHz Frequency Range](#)

Cohn, M.

- ❑ [A 4.5 to 18 GHz Phase Shifter](#)

Cohn, S.B.

- ❑ [A History of Microwave Filter Research, Design, and Development](#)
- ❑ [History of Microwave Passive Components with Particular Attention to Directional Couplers](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Cole, J.B.

- ☐ [A Single-Resonator GaAs FET Oscillator with Noise Degeneration](#)
- ☐ [Analysis and Design of a Single-Resonator GaAs FET Oscillator with Noise Degeneration](#)

Collier, R.J.

- ☐ [A Broad-Band Directional Coupler for Both Dielectric and Image Guides \(Short Papers\)](#)

Collin, R.E.

- ☐ [A Perturbation Theory for Microstrip Propagation](#)

Collins, J.H.

- ☐ [A Short History of Microwave Acoustics](#)
- ☐ [A Short History of Microwave Acoustics \(Corrections\)](#)

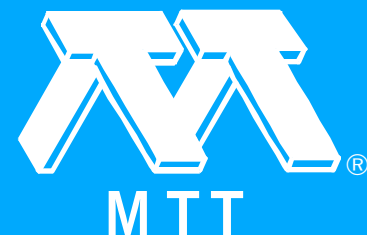
Compton, R.C.

- ☐ [Approximation Techniques for Planar Periodic Structures](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Conciauro, G.

- ❑ Singularity Extraction from the Electric Green's Function for a Spherical Resonator (Short Papers)
- ❑ Waveguide Modes Via an Integral Equation Leading to a Linear Matrix Eigenvalue Problem (Corrections)
- ❑ Waveguide Modes Via an Integral Equation Leading to a Linear Matrix Eigenvalue Problem (Short Papers)

Connolly, D.J.

- ❑ An Experimental Investigation of Microstrip Properties on Soft Substrates from 2 to 40 GHz

Conrado, L.F.M.

- ❑ A New Approach for the Design of Microwave and Filters Using Dielectric Oscillators Resonators
- ❑ Design of Microwave Oscillators and Filters Using Transmission-Mode Dielectric Resonators Coupled to Microstrip Lines

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Contarino, V.M.

- ☐ [Optically Controlled Microwave Devices and Circuits](#)

Contolatis, A.

- ☐ [30 GHz Monolithic Balanced Mixers Using an Ion-Implanted FET-Compatible 3-Inch GaAs Wafer Process Technology](#)
- ☐ [30 GHz Multi-Bit Monolithic Phase Shifters](#)

Contolatis, T.

- ☐ [94 GHz Planar GaAs Monolithic Balanced Mixer \(1984 \[MWSYM\]\)](#)
- ☐ [High Efficiency GaAs MBE Power FETs for Ka-Band \(1984 \[MWSYM\]\)](#)

Cooper, Jr., J.A.

- ☐ [Contiguous-Domain Transferred-Electron Oscillators](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Courtney, W.E.

- ☐ Dual Function Mixer Circuit for Millimeter Wave Transceiver Applications (1985 [MCS])
- ☐ Dual Function Mixer Circuit for Millimeter Wave Transceiver Applications (1985 [MWSYM])
- ☐ GaAs Monolithic Frequency Doublers with Series Connected Varactor Diodes (1984 [MWSYM])

Cox, N.W.

- ☐ Session 21 Introduction (1984 [MWSYM])

Crescenzi, Jr., E.J.

- ☐ Editor's Overview (Dec. 1984 [T-MTT])
- ☐ Wide-Band Limiting Amplifiers with Low Second Harmonic Distortion, Utilizing GaAs MMIC Limiters

Cronin, N.J.

- ☐ Planar Millimeter-Wave Diode Mixer (Short Papers)

Click on title for a paper summary.



Papers by Author

Cullen, A.

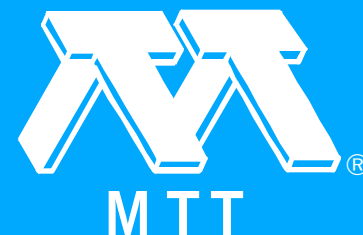
- ❑ [A Conversation Between Harold Barlow and Alec Cullen, on November 24, 1983](#)

Curran, J.E.

- ❑ [Analysis of a J-Band Pulsed Read IMPATT Oscillator](#)

Curtice, W.R.

- ❑ [A Nonlinear GaAs FET Model for Use in the Design of Output Circuits for Power Amplifiers \(1985 \[MWSYM\]\)](#)
- ❑ [A Nonlinear GaAs FET Model for Use in the Design of Output Circuits for Power Amplifiers \(Dec. 1985 \[T-MTT\]\)](#)
- ❑ [Self-Consistent FET Models for Amplifier Design and Device Diagnostics](#)
- ❑ [Self-Consistent GaAs FET Models for Amplifier Design and Device Diagnostics](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Curtins, H.

- ❑ [Step Response of Lossless Nonuniform Transmission Lines with Power-Law Characteristic Impedance Function \(Short Papers\)](#)

Cutler, C.C.

- ❑ [Optical Fiber Delay-Line Signal Processing](#)

D' Inzeo, G.

- ❑ [A Nonlinear Analysis of the Effects of Transient Electromagnetic Fields on Excitable Membranes](#)

Daly, P.

- ❑ [Modeling and Measurement of Microstrip Transmission-Line Structures](#)
- ❑ [Modelling and Measurement of Microstrip Transmission Line Structures](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Damaskos, N.J.

- ☐ [The Inverse Problem for Biaxial Materials](#)

Dandekar, N.V.

- ☐ [The Design and Performance of a Double Balanced Mixer Using FETs](#)

Daniel, D.

- ☐ [2.24 Gbit/s Direct Modulation of Injection Laser by Monolithic Silicon Multiplexer](#)
- ☐ [Injection Laser Modulation at 2 Gbit/s by Monolithic Silicon Multiplexer \(Short Papers\)](#)

Daniele, V.

- ☐ [Scattering at a Junction of Two Waveguides with Different Surface Impedances \(Comments\)](#)

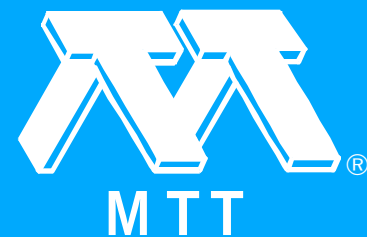
Dao, T.

- ☐ [A 1-Watt, 8-17 GHz FET Power Amplifier](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Daryoush, A.S.

- ☐ [Optically Controlled Microwave Devices and Circuits](#)

Das, B.N.

- ☐ [A Generalized Formulation of Electromagnetically Coupled Striplines](#)
- ☐ [Even- and Odd-Mode Impedances of Coupled Elliptic Arc Strips \(Short Papers\)](#)
- ☐ [Impedance of an Elliptic Conductor Arbitrarily Located Between Ground Planes Filled with Two Dielectric Media \(Short Papers\)](#)

Davidson, D.

- ☐ [140 and 220 GHz Ferrite Components](#)

Davies, J.B.

- ☐ [Finite-Element Analysis of Optical and Microwave Waveguide Problems](#)

Click on title for a paper summary.



Papers by Author

- ❑ [Penalty Function Improvement of Waveguide Solution by Finite Elements](#)

Davis, H.

- ❑ [Direct DC to RF Conversion by Picosecond Optoelectronic Switching](#)
- ❑ [Optoelectronic Techniques for Microwave and Millimeter-Wave Applications](#)

Davis, L.E.

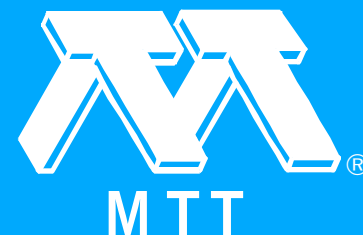
- ❑ [Millimetric Non-Reciprocal Coupled-Slot Fin-Line Components](#)

Davis, W.A.

- ❑ [Collinearly Excited Edge Coupled Resonators](#)

Dawson, D.E.

- ❑ [A Closed-Form Expression for Representing the Distributed Nature of the Spiral Inductor](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Day, W.R.

- ☐ Digital and Analog Frequency - Temperature Compensation of Dielectric Resonator Oscillators

De Smedt, R.

- ☐ Correction Due to a Finite Permittivity for a Ring Resonator in Free Space

De, D.K.

- ☐ YIG Oscillators: Is a Planar Geometry Better?
- ☐ YIG Oscillators: Is a Planar Geometry Better? (Short Papers)

Deal, J.C.

- ☐ Scattering Coefficients of an Inductive Strip in a Finline: Theory and Experiment

Degenford, J.E.

- ☐ A 4.5 to 18 GHz Phase Shifter

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Del Cerro, M.

- ❑ [Effects of 2450-MHz Microwave Energy on the Blood-Brain Barrier: An Overview and Critique of Past and Present Research](#)

Delaney, M.J.

- ❑ [20 GHz GaAs IMPATT Diode Development for Solid State Transmitter](#)

Delph, T.J.

- ❑ [Finite Element Analysis Applied to Gyroelectrically Loaded Waveguiding Structures](#)

Denlinger, E.J.

- ❑ [Session 5 Introduction \(1984 \[MWSYM\]\)](#)

Derycke, A.C.

- ❑ [Circuit Analysis and Design of Radial Pretuned Modules Used for Millimeter-Wave Oscillators](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Dhillon, S.S.

- ☐ [17/12 GHz Communication Receiver for Direct Broadcast Satellites](#)

DiBiase, R.

- ☐ [A Single-Resonator GaAs FET Oscillator with Noise Degeneration](#)
- ☐ [Analysis and Design of a Single-Resonator GaAs FET Oscillator with Noise Degeneration](#)

Diestel, H.

- ☐ [Analysis of Hybrid Field Problems by the Method of Lines with Nonequidistant Discretization](#)

Dileo, R.

- ☐ [Characteristic Impedance of Rectangular Coaxial Transmission Lines \(Correction\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

DiMarco, V.V.

- ☐ [Linear Analog Hyperabrupt Varactor Diode Phase Shifters](#)

Ding, L.

- ☐ [Measurements of the Photo-Induced Complex Permittivity of Si, Ge, and Te at 9 GHz](#)

Dinger, R.J.

- ☐ [A Planar 4.0 GHz Reactively Steered Adaptive Array](#)

Dixon, Jr., S.

- ☐ [Session 25 Introduction \(1984 \[MWSYM\]\)](#)

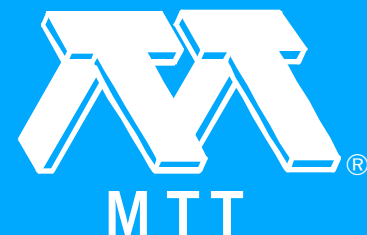
Djankov, G.L.

- ☐ [Determination of the Characteristic Impedance by a Step Current Density Approximation \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Djordjevic, A.R.

- ☐ [Analysis of Arbitrarily Oriented Microstrip Transmission Lines in Arbitrarily Shaped Dielectric Media Over a Finite Ground Plane](#)
- ☐ [Analysis of Finite Conductivity Cylindrical Conductors Excited by Axially-Independent TM Electromagnetic Field](#)
- ☐ [Computation of Inductance of Simple Vias Between Two Striplines Above a Ground Plane \(Short Papers\)](#)

Doane, J.L.

- ☐ [Hyperbolic Secant Coupling in Overmoded Waveguide](#)

Dobrowolski, J.A.

- ☐ [A Calibration Method for a Six-Port Reflectometer Which the Effect of Power Measurement Errors Minimizes](#)

Dong, J.M.

- ☐ [Wave Interaction in Doubly Periodic Structures](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Donzelli, G.

- ☐ [Airbridge Gate FET for GaAs Monolithic Circuits](#)

Donzelli, G.P.

- ☐ [Air Bridge Gate FET for GaAs Monolithic Circuits \(1985 \[MCS\]\)](#)
- ☐ [Air Bridge Gate FET for GaAs Monolithic Circuits \(1985 \[MWSYM\]\)](#)

Dornan, B.

- ☐ [Miniature Ceramic Circuit Components for Ku Band Receivers](#)

Douglas, N.G.

- ☐ [A 125--260-GHz Gyrotron](#)

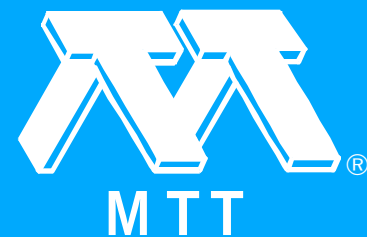
Douville, R.J.

- ☐ [Propagation in Broadside-Coupled Suspended-Substrate Stripline in E-Plane](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Downey, A.N.

- ☐ [An Experimental Investigation of Microstrip Properties on Soft Substrates from 2 to 40 GHz](#)

Drachman, B.C.

- ☐ [Integral Formulation for Analysis of Integrated Dielectric Waveguides](#)

Dragone, C.

- ☐ [Scattering at a Junction of Two Waveguides with Different Surface Impedances](#)

Dreifuss, J.

- ☐ [A Novel Method for the Analysis of Microwave Two-Port Active Mixers \(Short Papers\)](#)
- ☐ [Large-Signal Microwave Performance Prediction of Dual-Gate GaAs MESFET Using an Efficient and Accurate Model \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Driscoll, M.M.

- ☐ [UHF Film Resonator Evaluation and Resonator-Controlled Oscillator and Filter Design Using Computer-Aided Design Techniques](#)

Drobot, A.T.

- ☐ [Theory and Numerical Modeling of a Compact Low-Field High-Frequency Gyrotron](#)
- ☐ [Theory and Numerical Simulation of a TE/sub 111/ Gyroresonant Accelerator](#)

Drury, D.M.

- ☐ [A Dual-Gate FET Constant Phase Variable Power Amplifier](#)

Durney, C.H.

- ☐ [Limitations of the Cubical Block Model of Man in Calculating SAR Distributions](#)
- ☐ [Radiometric Technique for Measuring Changes in Lung Water \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Dydyk, M.

- ☐ [Session 19 Introduction \(1984 \[MWSYM\]\)](#)

Dyson, H.B.

- ☐ [A Quasi-Optical Method for Measuring the Complex Permittivity of Materials](#)

Eguchi, I.

- ☐ [Fabrication of Low Power, High-Speed GaAs LSI On-Board Baseband Switching Matrix](#)

Ehlers, E.R.

- ☐ [An Empirical Design Technique for Microwave Oscillators \(Short Papers\)](#)

Eid, E.M.A.

- ☐ [On the Definition of Parameters in Ferrite-Electromagnetic Wave Interactions \(Comments\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Eisenhart, R.L.

- ☐ [Controlled Bias Preheating for Variable Duty Factor IMPATT Transmitter](#)

El Khoury, T.

- ☐ [Amplification by Interdigital Excitation of Space-Charge Waves in Semiconductors](#)

El-Deeb, N.A.

- ☐ [On the Analysis and Design of Three Coupled Microstrip Lines \(Short Papers\)](#)

El-Gabaly, M.

- ☐ [Theoretical Analysis of Intermodulation Distortion of Reflection-Type IMPATT Amplifiers](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

El-Gabaly, M.A.

- ❑ [Effect of Doping Profile Variation on GaAs Hybrid and Double-Read IMPATT Diode Performance at 60 and 94 GHz](#)
- ❑ [Effects of Doping Profile on GaAs, Double-Drift IMPATT Diodes at 33 and 44 GHz Using the Energy-Momentum Transport Model](#)

El-Mahdj, A.M.

- ❑ [Microwave Radiometric Detection of Thermal Asymmetry of Varicocele](#)

El-Shandwily, M.E.

- ❑ [Theoretical Analysis of Intermodulation Distortion of Reflection-Type IMPATT Amplifiers](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Encinar, J.A.

- ☐ Convergence of Numerical Solutions of Open-Ended Waveguide by Modal Analysis and Hybrid Modal-Spectral Techniques (1985 [MWSYM])

Endo, A.

- ☐ Two-Port Equivalent Circuits of Two-Wire Parabolic Tapered Coupled Transmission Lines

Endo, I.

- ☐ Impedance Transformation and Matching for Lumped Complex Load with Nonuniform Transmission Line

Engen, G.F.

- ☐ Session 26 Introduction (1984 [MWSYM])

English, D.

- ☐ W-Band (75 to 110 GHz) Microstrip Components (1985 [MWSYM])

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

English, D.M.

- ❑ [W-Band \(75-110 GHz\) Microstrip Components \(Dec. 1985 \[T-MTT\]\)](#)

Enoki, T.

- ❑ [GaAs Ultra High Frequency Dividers with Advanced SAINT FETs \(1986 \[MCS\]\)](#)

Erickson, N.R.

- ❑ [A Broad-Band, Ultra-Low-Noise Schottky Diode Receiver from 80 to 115 GHz Diode](#)
- ❑ [A Continuous Comparison at 97 GHz Radiometer](#)
- ❑ [A Very Low-Noise Single-Sideband Receiver for 200-260 GHz](#)

Erikson, N.R.

- ❑ [A Continuous Comparison Radiometer at 97 GHz \(Corrections\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Esaki, M.

- ☐ [Measurement of TDC in Engine by Microwave Technique \(1985 \[MWSYM\]\)](#)
- ☐ [Measurement of TDC in Engine by Microwave Technique \(Dec. 1985 \[T-MTT\]\)](#)

Ettenberg, M.

- ☐ [A Nonlinear GaAs FET Model for Use in the Design of Output Circuits for Power Amplifiers \(1985 \[MWSYM\]\)](#)
- ☐ [A Nonlinear GaAs FET Model for Use in the Design of Output Circuits for Power Amplifiers \(Dec. 1985 \[T-MTT\]\)](#)

Ezzeddine, A.

- ☐ [High-Voltage FET Amplifiers for Satellite and Phased-Array Applications](#)

Faber, M.T.

- ☐ [A High Efficiency Frequency Doubler for 100 GHz](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ❑ A Very Low-Noise, Fixed-Tuned Mixer for 240-270 GHz
- ❑ Computer-Aided Testing of Mixers Between 90 and 350 GHz
- ❑ High-Output, Single- and Dual-Diode, Millimeter-Wave Frequency Doublers
- ❑ Low-Noise, Fixed Tuned, Broadband Mixer for 200-270 GHz
- ❑ Millimeter-Wave, Shot-Noise Limited, Fixed-Tuned Mixer

Faillon, G.

- ❑ A Technique to Identify Electromagnetic Modes in Oversize Waveguides (Short Papers)

Fang, X.-S.

- ❑ Field in Single-Mode Helically-Wound Optical Fibers

Fantini, P.

- ❑ Time Dispersion Properties of Cascaded Multimode Fiber Links

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Farhoomand, J.

- ☐ [Characterization of a Dual-Mode Horn for Submillimeter Wavelengths \(Short Papers\)](#)

Farzaneh, F.

- ☐ [Coupling Between a Dielectric Image Guide and a Dielectric Resonator](#)
- ☐ [Definition of Nonlinear Reflection Coefficient of a Microwave Device Using Describing Function Formalism \(Short Papers\)](#)

Fazi, C.

- ☐ [Dynamic Diode Mixer Damage Measurements](#)

Felderman, T.P.

- ☐ [Microwave Radiometric Detection of Thermal Asymmetry of Varicocele](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Fessenden, P.

- ☐ [Microstrip Spiral Antenna for Local Hyperthermia](#)

Fetterman, H.R.

- ☐ [Multimode Oscillation and Mode Competition in High-Frequency Gyrotrons](#)

Fiedziuszko, S.J.

- ☐ [Engine-Block - Dual Mode Dielectric Resonator Loaded Cavity Filter with Nonadjacent Cavity Couplings](#)
- ☐ [Miniature Band Reject Filters Applications for Satellite](#)
- ☐ [Miniature FET Oscillator Stabilized by a Dual Mode Dielectric Resonator Loaded Cavity](#)
- ☐ [Practical Aspects and Limitations of Dual Mode Dielectric Resonator Filters](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Filho, E.A.

- ☐ [A High Performance - Wide Band - Diplexing - Tracking - Depolarization Correcting Satellite Communication Antenna Feed](#)

Fischer, R.P.

- ☐ [Optoelectronic Techniques for Microwave and Millimeter-Wave Applications](#)

Fong-Tom, R.A.

- ☐ [Evaluation of a 94 GHz Diode-Based Dual Six-Port Network Analyzer](#)

Forrest, J.R.

- ☐ [Optical Injection Locking of BARITT Oscillators \(Comments\)](#)

Forster, J.D.

- ☐ [An Exposure System for Variable Electromagnetic-Field Orientation Electrophysiological Studies](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Franceschetti, G.

- ☐ [Cell Membrane Nonlinear Response to an Applied Electromagnetic Field](#)

Frazer, J.W.

- ☐ [An Exposure System for Variable Electromagnetic-Field Orientation Electrophysiological Studies](#)

Freibergs, E.

- ☐ [Integrated Tunable Cavity Gunn Oscillator for 60-GHz Operation in Image Line Waveguide](#)

Frerking, M.A.

- ☐ [Theoretical Efficiency for Triplers Using Nonideal Varistor Diodes at Submillimeter Wavelengths](#)
- ☐ [Theoretical Efficiency for Triplers Using Real Varister Diodes at Submillimeter Wavelengths](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Freude, W.

- ☐ [The Measurement of Noise in Microwave Transmitters \(Comments\) \(May 1984 \[T-MTT\]\)](#)

Freyer, J.

- ☐ [Power Increase of Pulsed Millimeter-Wave IMPATT Diodes \(Short Papers\)](#)

Fricke, K.

- ☐ [GaAs MESFET Optimization and New Device Applications Based on Wave Property Studies](#)

Friedberg, A.

- ☐ [Linear Analog Hyperabrupt Varactor Diode Phase Shifters](#)

Friedenthal, E.

- ☐ [A Microwave Apparatus for Producing Uniform Hyperthermic Temperatures Over Large Surfaces](#)

Click on title for a paper summary.



Papers by Author

- ❑ [Enhancing the Efficacy of Localized Thermotherapy by Monitoring Changes in Tumor Blood Flow](#)

Friscourt, M.R.

- ❑ [GaAs Monolithic Transferred-Electron Devices for Millimeter Wave Applications](#)

Frucht, A.-H.

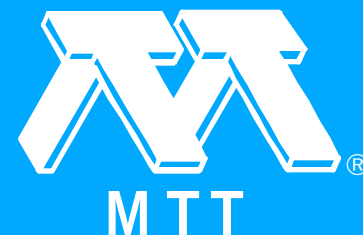
- ❑ [On the Nonthermal Microwave Response of Drosophila Melanogaster \(Short Papers\)](#)

Frye, A.

- ❑ [Double Dielectric-Slab-Filled Waveguide Phase Shifter](#)

Fujiwara, Y.

- ❑ [Small Size VCO Module for 900 MHz Band Using Coupled Microstrip-Coplanar Lines](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

[Contents](#)

[Authors](#)

Fukai, I.

- ☐ [Application of Boundary-Element Method to Electromagnetic Field Problems \(Short Papers\)](#)
- ☐ [Transient Analysis of a Stripline Having a Corner in Three-Dimensional Space](#)
- ☐ [Transient Analysis of Microstrip Gap in Three-Dimensional Space \(Short Papers\)](#)

Fukaya, J.

- ☐ [A C-Band 10 Watt GaAs Power FET](#)

Fukui, K.

- ☐ [Locking Behavior of a Microwave Multiple-Device Ladder Oscillator](#)

Fukumoto, K.

- ☐ [Mathematical Expression of the Loading Characteristics of Microwave Oscillators and Injection-Locking Characteristics \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Fukuoka, Y.

- ☐ [Analysis of Multilayer Interconnection Lines for a High-Speed Digital Integrated Circuit](#)
- ☐ [Field Analysis of a Millimeter-Wave GaAs Double-Drift IMPATT Diode in the Traveling-Wave Mode](#)
- ☐ [Field Analysis of Millimeter-Wave GaAs Double-Drift IMPATT Diode in the Travelling-Wave Mode](#)

Fukushima, Y.

- ☐ [An Analysis of an Electronically Tunable n-GaAs Distributed Oscillator](#)

Furuno, D.S.

- ☐ [High-Harmonic Gyrotron Oscillators and Gyro-Klystron Amplifiers](#)

Gabriel, G.J.

- ☐ [Variational Methods for Nonstandard Eigenvalue Problems \(Further Comments\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Galani, Z.

- ☐ [A Single-Resonator GaAs FET Oscillator with Noise Degeneration](#)
- ☐ [Analysis and Design of a Single-Resonator GaAs FET Oscillator with Noise Degeneration](#)

Gallo, A.

- ☐ [On the Solution of a Microstripline with Two Dielectrics](#)

Gandhi, O.P.

- ☐ [Calculation of High-Resolution SAR Distributions in Biological Bodies Using the FFT Algorithm and Conjugate Gradient Method \(Short Papers\)](#)
- ☐ [Fast-Fourier-Transform Method for Calculation of SAR Distributions in Finely Discretized Inhomogeneous Models of Biological Bodies](#)
- ☐ [Human Body Impedance for Electromagnetic Hazard Analysis in the VLF to MF Band](#)

Click on title for a paper summary.



Papers by Author

- ❑ [Phased-Dipole Applicators for Torso Heating in Electromagnetic Hyperthermia \(Short Papers\)](#)

Garault, Y.

- ❑ [Coupling Between a Dielectric Image Guide and a Dielectric Resonator](#)
- ❑ [Dielectric Resonators Band Pass Filter with High Attenuation Rate](#)

Gardiol, F.E.

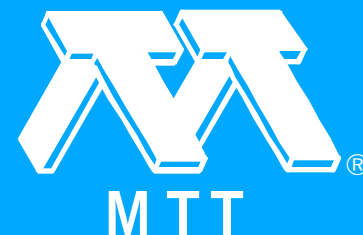
- ❑ [The Reflection from an Open-Ended Rectangular Waveguide Terminated by a Layered Dielectric Medium](#)

Gartner, U.

- ❑ [A Broadband Homodyne Network Analyser with Binary Phase Modulation](#)

Garver, R.V.

- ❑ [Dynamic Diode Mixer Damage Measurements](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Gautier, J.L.

- ☐ [Optical Effects on the Static and Dynamic Characteristics of a GaAs MESFET \(Short Papers\)](#)

Geddes, J.

- ☐ [High Efficiency GaAs MBE Power FETs for Ka-Band \(1984 \[MWSYM\]\)](#)

Gelin, P.

- ☐ [A Slot Antenna Radiating in Muscle](#)

Geller, B.D.

- ☐ [An MMIC/MIC-to-Waveguide Transition for Single- and Dual-Polarization Systems](#)

Genin, R.

- ☐ [A Low Cost, 3-7 GHz, 1/2 Watt MMIC GaAs Amplifier](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Gerli, D.

- ☐ [Passive Magnetostatic Wave Pulse Compression Loop](#)

Geshiro, M.

- ☐ [Analysis of Wave Propagation in Anisotropic Film Waveguides with Bent Optical Axes](#)

Getsinger, W.J.

- ☐ [Quasi-Lumped-Element 3- and 4-Port Networks for MIC and MMIC Applications](#)

Ghatak, A.K.

- ☐ [Scalar Variational Analysis of Single-Mode Waveguides with Rectangular Cross Section \(Short Papers\)](#)

Ghijsen, W.J.

- ☐ [The Electric-Field Problem of an Interdigital Transducer in a Multilayered Structure](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Ghose, A.K.

- ☐ [Up/Down Converter for SCPC Applications](#)

Ghosh, S.

- ☐ [A High Performance - Wide Band - Diplexing - Tracking - Depolarization Correcting Satellite Communication Antenna Feed](#)

Giannini, F.

- ☐ [Planar Circuit Analysis of Microstrip Radial Stub](#)
- ☐ [Planar Circuit Analysis of Microstrip Radial Stub \(Short Papers\)](#)

Gillespie, A.R.

- ☐ [Aperture Synthesis Thermography -- A New Approach to Passive Microwave Temperature Measurements in the Body](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Gilmore, R.J.

- ☐ [Circuit Design to Reduce 3rd Order Intermodulation Distortion in FET Amplifiers](#)
- ☐ [Modeling of Nonlinear Distortion in GaAs MESFETs](#)

Glance, B.S.

- ☐ [New Phase-Lock Loop Circuit Providing Very Fast Acquisition Time](#)

Glandorf, F.-J.

- ☐ [A Spectral Domain Hybrid Field Analysis of Periodically Inhomogeneous Microstrip Lines](#)

Gleason, K.

- ☐ [Calibration Methods for Microwave Wafer Probing \(1984 \[MWSYM\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Glisson, A.W.

- ☐ [Computed Modal Field Distributions for Isolated Dielectric Resonators](#)
- ☐ [Computed Modal Field Distributions of Isolated Dielectric Resonators](#)

Godshalk, E.M.

- ☐ [Nonreciprocal Effects in Semiconductor Loaded Waveguide at Millimeter Wavelengths](#)

Goebel, U.

- ☐ [Complete Determination of Circulator Eigenvalues With-Out Transmission Phase Measurement](#)

Goel, J.

- ☐ [A K-Band GaAs FET Amplifier with 8.2-W Output Power](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Gokhale, A.V.

- ☐ [The Absence of Significant Short-Term Electromagnetic Bioeffects in Giant Algal Cells Exposed to CW and Pulse-Modulated X-Band Bursts](#)

Goldberg, H.

- ☐ [17/12 GHz Communication Receiver for Direct Broadcast Satellites](#)

Goldgeier, P.

- ☐ [17/12 GHz Communication Receiver for Direct Broadcast Satellites](#)
- ☐ [Miniature Ceramic Circuit Components for Ku Band Receivers](#)

Goldman, S.J.

- ☐ [A Solid-State 2-10 GHz 1 Watt TWT Replacement Amplifier](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Goldner, R.B.

- ☐ [A Stabilized Broadband Correlator for Medical Microwave Thermography](#)
- ☐ [The Thermal and Spatial Resolution of a Broad-Band Correlation Radiometer with Application to Medical Microwave Thermography \(Short Papers\)](#)

Goldsmith, P.F.

- ☐ [A Broad-Band, Ultra-Low-Noise Schottky Diode Receiver from 80 to 115 GHz Diode](#)
- ☐ [A Continuous Comparison at 97 GHz Radiometer](#)
- ☐ [A Continuous Comparison Radiometer at 97 GHz \(Corrections\)](#)
- ☐ [Gaussian Beam Imaging with Cylindrical Optics](#)

Golio, J.M.

- ☐ [A General CAD Tool for Large-Signal GaAs MESFET Circuit Design](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Gombar, A.

- ❑ [Millimeter Wave Silicon Device and Integrated Circuit Technology](#)

Goodman, J.W.

- ❑ [Optical Fiber Delay-Line Signal Processing](#)

Goodrich, J.

- ❑ [High Power Broadband, 35 GHz Waveguide Switch Using a Monolithic Diode Array](#)

Goyal, R.

- ❑ [A Monolithic Direct-Coupled GaAs Amplifier with 12-GHz Bandwidth](#)

Granatstein, V.L.

- ❑ [A Technique to Identify Electromagnetic Modes in Oversize Waveguides \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Grande, V.

- ☐ [A 0.5 \$\mu\text{m}\$ Silicon Bipolar Transistor for Low Phase Noise Oscillator Applications Up to 20 GHz](#)

Grange, T.

- ☐ [Radiometric Technique for Measuring Changes in Lung Water \(Short Papers\)](#)

Grauerholz, D.

- ☐ [E-Plane Integrated Circuit Filters with Improved Stopband Attenuation \(Comments\)](#)
- ☐ [E-Plane Integrated Circuit Filters with Improved Stopband Attenuation \(Short Papers\)](#)
- ☐ [E-Plane Integrated Parallel-Strip Screen Waveguide Filters \(Short Papers\)](#)
- ☐ [W-Band Low-Insertion-Loss E-Plane Filter \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Gray, K.G.

- ☐ [Analysis and Design of Evanescent-Mode Waveguide Dielectric Resonator Filters](#)

Gray, R.L.

- ☐ [Extension of Levy's Large-Aperture Design Formulas to the Design of Circular Irises in Coupled-Resonator Waveguide Filters \(Short Papers\)](#)

Green, H.E.

- ☐ [Higher Order Mode Cutoff in Polygonal Transmission Lines \(Short Papers\)](#)
- ☐ [Reflection Coefficient of a Conducting Sphere on the Broad Wall of a Rectangular Waveguide](#)

Greiling, P.

- ☐ [The Historical Development of GaAs FET Digital IC Technology](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Griffin, E.

- ☐ [A High Speed GaAs Monolithic Transimpedance Amplifier](#)
- ☐ [C-Band 6-Bit GaAs Monolithic Phase Shifter \(1985 \[MCS\]\)](#)

Griffin, E.J.

- ☐ [Theoretical Comparison of Six-Port Reflectometer Junction Designs](#)

Griffin, E.L.

- ☐ [C-Band 6-Bit GaAs Monolithic Phase Shifter \(Dec. 1985 \[T-MTT\]\)](#)

Grondin, R.O.

- ☐ [A General CAD Tool for Large-Signal GaAs MESFET Circuit Design](#)

Gross, M.

- ☐ [A 125--260-GHz Gyrotron](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Grote, A.

- ☐ 60 GHz Integrated Circuit Quadriphase Exciter and Modulator
- ☐ 60-GHz Integrated-Circuit High Data Rate Quadriphase Shift Keying Exciter and Modulator (Short Papers)
- ☐ Miniature Millimeter-Wave Integrated Circuit Wideband Downconverters
- ☐ W-Band (75 to 110 GHz) Microstrip Components (1985 [MWSYM])
- ☐ W-Band Broadband Integrated Circuit Receiver

Grote, A.J.

- ☐ W-Band (75-110 GHz) Microstrip Components (Dec. 1985 [T-MTT])

Gruner, L.

- ☐ High-Order Mode Cutoff In Rectangular Striplines (Short Papers)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Gu, Q.

- ☐ Time-Domain Perturbational Analysis of Nonuniformly Coupled Transmission Lines

Gu, Y.-G.

- ☐ Phased-Dipole Applicators for Torso Heating in Electromagnetic Hyperthermia (Short Papers)

Guillon, P.

- ☐ Coupling Between a Dielectric Image Guide and a Dielectric Resonator
- ☐ Coupling Parameters Between a Dielectric Resonator and a Microstripline
- ☐ Dielectric Resonators Band Pass Filter with High Attenuation Rate
- ☐ TM/sub 0 gamma delta/ Mode of Cylindrical Dielectric Resonators Applications to Microwave Filters

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Guo, T.C.

- ☐ [A Local Field Study of a Water-Immersed Microwave Antenna Array for Medical Imagery and Therapy](#)
- ☐ [Microwave Diffraction Tomography for Biomedical Applications \(Comments\)](#)
- ☐ [Microwave-Induced Thermoacoustic Effect in Dielectrics and its Coupling to External Medium--A Thermodynamical Formulation](#)

Guo, W.W.

- ☐ [A Local Field Study of a Water-Immersed Microwave Antenna Array for Medical Imagery and Therapy](#)
- ☐ [Microwave Diffraction Tomography for Biomedical Applications \(Comments\)](#)
- ☐ [Microwave-Induced Thermoacoustic Effect in Dielectrics and its Coupling to External Medium--A Thermodynamical Formulation](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Gupta, A.K.

- ☐ Power Saturation Characteristics of GaAs/AlGaAs High Electron Mobility Transistors

Gupta, C.D.

- ☐ A Useful Equivalence for the Input Reactance Seen by the Coaxial Line in a Broadwall Coaxial-Microstrip Launcher

Gupta, K.C.

- ☐ An Alternative Procedure for Implementing the Desegmentation Method
- ☐ Analysis and Design of Five Port Circular Disc Structures for Six-Port Analyzers
- ☐ Analysis and Design of Four-Port and Five-Port Microstrip Disc Circuits

Gupta, R.K.

- ☐ Quasi-Lumped-Element 3- and 4-Port Networks for MIC and MMIC Applications

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Gutierrez, R.H.

- ❑ [A New Method for Calculating TE and TM Cutoff Frequencies of Uniform Waveguides with Lunar or Eccentric Annular Cross Section \(Comments\)](#)

Guy, A.W.

- ❑ [Average SAR and SAR Distributions in Man Exposed to 450-MHz Radiofrequency Radiation](#)
- ❑ [History of Biological Effects and Medical Applications of Microwave Energy](#)
- ❑ [Microwave-Induced Post-Exposure Hyperthermia: Involvement of Endogenous Opioids and Serotonin](#)

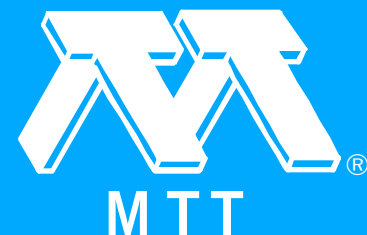
Gwarek, W.K.

- ❑ [Analysis of an Arbitrarily-Shaped Planar Circuit a Time-Domain Approach](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Haddad, G.I.

- ☐ [Dynamic Behavior of Pulsed-IMPATT Oscillators \(Short Papers\)](#)
- ☐ [Effect of Doping Profile Variation on GaAs Hybrid and Double-Read IMPATT Diode Performance at 60 and 94 GHz](#)
- ☐ [Effects of Doping Profile on GaAs, Double-Drift IMPATT Diodes at 33 and 44 GHz Using the Energy-Momentum Transport Model](#)

Hagmann, M.J.

- ☐ [Convergence of Local and Average Values in Three-Dimensional Moment-Method Solutions \(Short Papers\)](#)
- ☐ [EM Local Heating with HF Electric Fields \(Comments\)](#)
- ☐ [Limitations of the Cubical Block Model of Man in Calculating SAR Distributions \(Comments\)](#)
- ☐ [Propagation on a Sheath Helix in a Coaxially Layered Lossy Dielectric Medium \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Hallford, B.R.

- ☐ [30 dB of AGC from an FET](#)

Hamabe, T.

- ☐ [A 20 GHz Peltier-Cooled Low Noise HEMT Amplifier](#)

Hamamura, Y.

- ☐ [A Three-Band Microwave Radiometer for Noninvasive Temperature Measurement](#)

Hamaya, S.

- ☐ [Stability of the Oscillation Mode in a Multiple-Oscillator System](#)

Handa, K.

- ☐ [Low Noise Amplifiers Using Two Dimensional Electron Gas FETs](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Hanes, L.K.

- ☐ 2--20-GHz GaAs Traveling-Wave Amplifier
- ☐ 2--20-GHz GaAs Traveling-Wave Power Amplifier (Mar. 1984 [T-MTT])
- ☐ Capacitively Coupled Traveling-Wave Power Amplifier (Dec. 1984 [T-MTT])
- ☐ Wide-Band Monolithic Phase Shifter

Hanna, V.F.

- ☐ Theoretical and Experimental Investigation of Asymmetric Coplanar Waveguide
- ☐ Theoretical and Experimental Investigation of Asymmetric Coplanar Waveguides (Short Papers)
- ☐ Theoretical of and Experimental Investigation Finline Discontinuities

Hano, M.

- ☐ Finite-Element Analysis of Dielectric-Loaded Waveguides

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Hansen, C.H.

- ☐ [Complex Permittivity Instrumentation for High-Loss Liquids at Microwave Frequencies \(Short Papers\)](#)

Hansson, E.R.B.

- ☐ [Some Properties of the Matched, Symmetrical Six-Port Junction](#)

Hant, W.

- ☐ [Short Millimeter Low Local Wavelength Mixer with Oscillator Power](#)

Harada, K.

- ☐ [Wave Propagation and Attenuation in the General Class of Circular Hollow Waveguides with Uniform Curvature](#)

Hardy, J.C.

- ☐ [Characterization of a Dual-Mode Horn for Submillimeter Wavelengths \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Harrington, R.F.

- ☐ [Characteristic Modes for Aperture Problems](#)
- ☐ [Inductive Posts and Diaphragms of Arbitrary Shape and Number in a Rectangular Waveguide](#)
- ☐ [Losses on Multiconductor Transmission Lines in Multilayered Dielectric Media](#)
- ☐ [Multiconductor Transmission Lines In Multilayered Dielectric Media](#)
- ☐ [The Electrostatic Field of Conducting Bodies in Multiple Dielectric Media](#)

Harris, B.L.

- ☐ [Analysis and Synthesis of Guides with Closely Spaced Discontinuities](#)

Harrison, R.G.

- ☐ [A New Slotline-Microstrip Frequency Halver](#)

Click on title for a paper summary.



Papers by Author

- ❑ [A Two-Frequency Method for Impedance Measurement in Microwave Frequency-Halving Networks](#)
- ❑ [Impedance Measurement in Frequency-Halving Networks Using a Two-Frequency Synthetic Loading Technique](#)

Hartnagel, H.L.

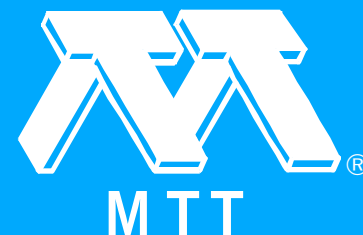
- ❑ [GaAs MESFET Optimization and New Device Applications Based on Wave Property Studies](#)

Hartsgrove, G.

- ❑ [Specific Absorption Rate Distribution in a Full-Scale Model of Man at 350 MHz](#)
- ❑ [Specific Absorption Rate Distribution in a Model of Man at Various Polarizations](#)

Harvey, A.

- ❑ [Millimeter Wave Multiplexer with Printed Circuit Elements for the 88 to 100 GHz Frequency Range](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Hasegawa, H.

- ☐ [Analysis of Crosstalk in Very High-Speed LSI/VLSI's Using a Coupled Multiconductor MIS Microstrip Line Model](#)
- ☐ [Analysis of Interconnection Delay on Very High-Speed LSI/VLSI Chips Using an MIS Microstrip Line Model](#)

Hashimoto, M.

- ☐ [A Rigorous Solution for Dispersive Microstrip](#)

Haslam, C.G.T.

- ☐ [Aperture Synthesis Thermography -- A New Approach to Passive Microwave Temperature Measurements in the Body](#)

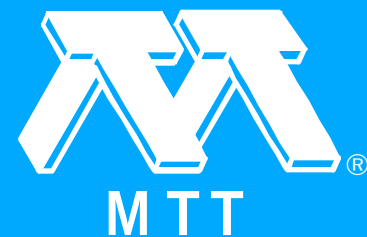
Haslam, N.C.

- ☐ [Aperture Synthesis Thermography -- A New Approach to Passive Microwave Temperature Measurements in the Body](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Hayashibara, G.

- ❑ [W-Band \(75 to 110 GHz\) Microstrip Components \(1985 \[MWSYM\]\)](#)

Hayashibara, G.M.

- ❑ [W-Band \(75-110 GHz\) Microstrip Components \(Dec. 1985 \[T-MTT\]\)](#)
- ❑ [W-Band Broadband Integrated Circuit Receiver](#)

Hayata, K.

- ❑ [Approximate Scalar Finite-Element Analysis of Anisotropic Optical Waveguides with Off-Diagonal Elements in a Permittivity Tensor](#)
- ❑ [Finite-Element Formulation in Terms of the Electric-Field Vector for Electromagnetic Waveguide Problems](#)
- ❑ [Improved Finite-Element Formulation in Terms of the Magnetic Field Vector for Dielectric Waveguides](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Haynes, J.T.

- ☐ [Stable Microwave Source Using High Overtone Bulk Resonators](#)

Healy, R.

- ☐ [A 1-Watt, 8-17 GHz FET Power Amplifier](#)

Hegazi, G.

- ☐ [Limitations of Microwave and Millimeter-Wave Mixers Due to Excess Noise \(1985 \[MWSYM\]\)](#)

Hegazi, G.M.

- ☐ [Limitations of Microwave and Millimeter-Wave Mixers Due to Excess Noise \(Dec. 1985 \[T-MTT\]\)](#)

Heiter, G.L.

- ☐ [Session 10 Introduction \(1984 \[MWSYM\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Helard, M.

- ☐ Theoretical and Experimental Investigation of Finline Discontinuities

Helszajn, J.

- ☐ Adjustment of In-Phase Mode in Circulators Using Turnstile Junctions (Short Papers)
- ☐ Design of Waveguide Circulators with Chebyshev Characteristics Using Partial-Height Ferrite Resonators
- ☐ Synthesis of Quarter-Wave Coupled Junction Circulators with Degrees 1 and 2 Complex Gyrator Circuits

Hendrick, L.W.

- ☐ Self Equalized, Equiripple Microwave Filter

Herczfeld, P.R.

- ☐ Optically Controlled Microwave Devices and Circuits

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Hernandez-Gil, F.

- ☐ Analysis of Dielectric Resonators with Tuning Screw and Supporting Structure (1985 [MWSYM])
- ☐ Analysis of Dielectric Resonators with Tuning Screw and Supporting Structure (Dec. 1985 [T-MTT])

Herrick, G.C.

- ☐ A 2 to 8 GHz Leveling Loop Using a GaAs MMIC Active Splitter and Attenuator

Hessary, M.K.

- ☐ EM Local Heating with HF Electric Fields

Heston, D.D.

- ☐ X-Band Monolithic Series Feedback LNA (1985 [MCS])
- ☐ X-band Monolithic Series Feedback LNA (1985 [MWSYM])
- ☐ X-Band Monolithic Series Feedback LNA (Dec. 1985 [T-MTT])

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Hida, H.

- ☐ [A Low Noise AiGaAs/GaAs FET with P/sup +/-Gate and Selectively Doped Structure](#)

Higgins, J.A.

- ☐ [Power Saturation Characteristics of GaAs/AlGaAs High Electron Mobility Transistors](#)

Hikita, M.

- ☐ [800-MHz High-Performance SAW Filter Using New Resonant Configuration](#)

Hill, D.A.

- ☐ [Effect of Separation from Ground on Human Whole-Body RF Absorption Rates](#)

Hill, J.C.

- ☐ [A Stabilized Broadband Correlator for Medical Microwave Thermography](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ☐ The Thermal and Spatial Resolution of a Broad-Band Correlation Radiometer with Application to Medical Microwave Thermography (Short Papers)

Hines, M.E.

- ☐ The Virtues of Nonlinearity--Detection, Frequency Conversion, Parametric Amplification and Harmonic Generation

Hinken, J.H.

- ☐ Synthesis of Optimum Fin-Line Tapers
- ☐ Synthesis of Optimum Finline Tapers Using Dispersion Formulas for Arbitrary Slot Widths and Locations

Hirachi, Y.

- ☐ A Packaged 20-GHz 1-W GaAs MESFET with a Novel Via-Hole Plated Heat Sink Structure

Hirano, Y.

- ☐ A C-Band 10 Watt GaAs Power FET

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Hirayama, M.

- ☐ [GaAs Monolithic Low-Power Amplifiers with RC Parallel Feedback \(Short Papers\)](#)

Hirota, K.

- ☐ [Small Size VCO Module for 900 MHz Band Using Coupled Microstrip-Coplanar Lines](#)

Hirota, T.

- ☐ [A Novel K-Band Balanced FET Up-Converter](#)
- ☐ [New MIC Power Dividers Using Coupled Microstrip-Slot Lines: Two-Sided MIC Power Dividers](#)
- ☐ [Planar MMIC Hybrid Circuit and Frequency Converter](#)

Hirsh, I.

- ☐ [Microwave Point Contact Diode Responsivity Improvement through Surface Effects in Vacuum \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Hjipieris, G.

- ☐ [A Broad-Band Directional Coupler for Both Dielectric and Image Guides \(Short Papers\)](#)

Hodgetts, T.E.

- ☐ [Theoretical Comparison of Six-Port Reflectometer Junction Designs](#)

Hoefer, W.J.R.

- ☐ [A New Class of Optimized Finline and E-Plane Metal Insert Filters with Improved Characteristics](#)
- ☐ [An Improved Model for Short- and Open-Circuited Series Stubs in Fin Lines](#)
- ☐ [Finline and Metal Insert Filters with Improved Passband Separation and Increased Stopband Attenuation](#)
- ☐ [Quarter Wave Transformers for Matching Transitions Between Waveguides and Fin Lines](#)

Click on title for a paper summary.



Papers by Author



Contents

Authors

- ❑ Quarter-Wave Matching of Waveguide-to-Finline Transitions (Short Papers)
- ❑ The Influence of Metallization Thickness and Mounting Grooves on the Characteristics of Finline
- ❑ The Simulation of Three-Dimensional Wave Propagation by a Scalar TLM Model
- ❑ The Transmission-Line Matrix Method--Theory and Applications

Hoer, C.A.

- ❑ A Dual Six-Port Network Analyzer Using Diode Detectors
- ❑ A High-Power Automatic Network Analyzer for Measuring the RF Power Absorbed by Biological Samples in a TEM Cell
- ❑ A Technique for Extending the Dynamic Range of the Dual Six-Port Network Analyzer

Hohenwarter, G.K.

- ❑ MESFET Distributed Amplifier Design Guidelines

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Holme, S.C.

- ☐ [A 12 GHz 12 Channel Contiguous Multiplexer for Satellite Applications](#)

Honjo, K.

- ☐ [12-GHz-Band GaAs Dual-Gate MESFET Monolithic Mixers](#)
- ☐ [On Temperature Characteristics for a GaAs Monolithic Broad-Band Amplifier Having Resistive Loads \(Short Papers\)](#)
- ☐ [X-Band Low-Noise GaAs Monolithic Frequency Converter \(Short Papers\)](#)

Honma, K.

- ☐ [Low Noise Amplifiers Using Two Dimensional Electron Gas FETs](#)

Hori, S.

- ☐ [Broadband HEMT and GaAs FET Amplifiers for 18 - 26.5 GHz](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Horine, B.H.

- ☐ [SAW Resonator Filters: Applications and Capabilities](#)

Horita, A.

- ☐ [Microwave-Induced Post-Exposure Hyperthermia: Involvement of Endogenous Opioids and Serotonin](#)

Horn, R.E.

- ☐ [Integrated Tunable Cavity Gunn Oscillator for 60-GHz Operation in Image Line Waveguide](#)

Horno, M.

- ☐ [A New Recurrence Method for Determining the Green's Function of Planar Structures with Arbitrary Anisotropic Layers \(Short Papers\)](#)
- ☐ [Coupled Microstrips on Double Anisotropic Layers \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author

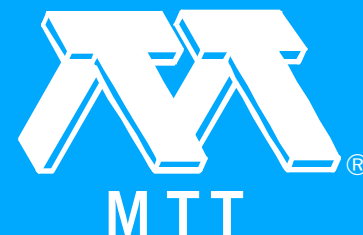
- ❑ Determination of Green's Function Matrix for Multiconductor and Anisotropic Multidielectric Planar Transmission Lines: A Variational Approach
- ❑ Propagation of Quasi-Static Modes in Anisotropic Transmission Lines: Application to MIC Lines

Horton, J.B.

- ❑ A Review of the Panel Discussion on Advances in Millimeter-Wave Subsystems
- ❑ Session 13 Introduction (1984 [MWSYM])
- ❑ Technology Summaries for Microwave Theory and Techniques--1983 (Corrections)

Hoshikawa, K.

- ❑ A 2 Gb/s Throughput GaAs Digital Time Switch LSI Using LSCFL (1985 [MCS])
- ❑ A 2 Gb/s Throughput GaAs Digital Time Switch LSI Using LSCFL (Dec. 1985 [T-MTT])



Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Hosono, Y.

- ☐ [X-Band Low-Noise GaAs Monolithic Frequency Converter \(Short Papers\)](#)

Hoss, W.

- ☐ [Effects of 2450-MHz Microwave Energy on the Blood-Brain Barrier: An Overview and Critique of Past and Present Research](#)

Howard, J.

- ☐ [An Evanescent Mode Waveguide Bandpass Filter at Q-Band \(Comments\)](#)

Howe, Jr., H.

- ☐ [Microwave Integrated Circuits--An Historical Perspective](#)

Howes, M.J.

- ☐ [Large-Signal Equivalent-Circuit Model of a GaAs Dual-Gate MESFET Mixer \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Hsu, T.-I.

- ☐ [A Wideband 60 GHz 16-Way Power Divider/Combiner Network](#)

Hu, C.-L.J.

- ☐ [Microwave Automatic Impedance Measuring Schemes Using Three Fixed Probes \(Correction\)](#)

Huang, C.C.

- ☐ [A 2--18-GHz Monolithic Distributed Amplifier Using Dual-Gate GaAs FET's](#)
- ☐ [A Monolithic Direct-Coupled GaAs Amplifier with 12-GHz Bandwidth](#)
- ☐ [Foreword \(Mar. 1984 \[T-MTT\]\)](#)

Huang, H.C.

- ☐ [High-Voltage FET Amplifiers for Satellite and Phased-Array Applications](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Huguenin, G.R.

- ☐ [A Continuous Comparison at 97 GHz Radiometer](#)
- ☐ [A Continuous Comparison Radiometer at 97 GHz \(Corrections\)](#)

Hung, H.-L.A.

- ☐ [High-Voltage FET Amplifiers for Satellite and Phased-Array Applications](#)

Hunter, J.D.

- ☐ [Accurate Six-Port Operation with Uncalibrated Nonlinear Diodes Digital \(Short Papers\)](#)
- ☐ [An Explicit Six-Port Calibration Method Using Five Standards \(Short Papers\)](#)
- ☐ [The Displaced Rectangular Waveguide Junction and Its Use as an Adjustable Reference Reflection](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Hutchings, J.L.

- ☐ Characterisation of Large-Signal Bipolar Transistors in L-Band

Hwan, E.J.

- ☐ Linearity Limits of the Varactor-Controlled Osc-Mod Circuits
- ☐ Q-Factor Measurement with Network Analyzer

Idda, M.

- ☐ A 2 Gb/s Throughput GaAs Digital Time Switch LSI Using LSCFL (1985 [MCS])
- ☐ A 2 Gb/s Throughput GaAs Digital Time Switch LSI Using LSCFL (Dec. 1985 [T-MTT])
- ☐ Analysis of High-Speed GaAs Source-Coupled FET Logic Circuits

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Igarashi, M.

- ☐ [A Packaged 20-GHz 1-W GaAs MESFET with a Novel Via-Hole Plated Heat Sink Structure](#)

Iida, A.

- ☐ [A 1 Watt 28 GHz Band Amplifier Using Clustered FETs](#)

Ikalainen, P.K.

- ☐ [Dielectric Waveguide Band-Pass Filters with Broad Stop Bands](#)

Ikeda, Y.

- ☐ [A 1.5 Watt 28 GHz Band FET Amplifier](#)

Ikenoue, J.-I.

- ☐ [Mathematical Expression of the Loading Characteristics of Microwave Oscillators and Injection-Locking Characteristics \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Imai, N.

- ☐ A 26-GHz High Performance MIC Transmitter/Receiver for Digital Radio Subscriber Systems (1984 [MWSYM])
- ☐ A 26-GHz High-Performance MIC Transmitter/Receiver for Digital Radio Subscriber Systems (Dec. 1984 [T-MTT])
- ☐ Design Consideration for Frequency-Stabilized MIC IMPATT Oscillators in the 26-GHz Band

Imai, Y.

- ☐ Design and Performance of Monolithic GaAs Direct-Coupled Preamplifiers and Main Amplifiers

Inoue, T.

- ☐ Short Millimeter Wave Region High Accuracy Power Meter with Self-Calibration Function

Irvin, J.C.

- ☐ A 6 Watt 6 GHz GaAsFET Power Module with GaAs Matching Circuits

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Ishihara, O.

- ☐ [A 1.5 Watt 28 GHz Band FET Amplifier](#)

Ishii, M.

- ☐ [A C-Band 10 Watt GaAs Power FET](#)

Ishii, T.K.

- ☐ [Field Distribution of Two Conducting Posts in a Waveguide](#)

Ishikawa, Y.

- ☐ [800 MHz Band Channel Dropping Filter Using TM/sub 010/ Mode Dielectric Resonator](#)
- ☐ [800 MHz Band Dielectric Channel Dropping Filter Using TM/sub 110/ Triple Mode Resonance](#)

Iskander, M.F.

- ☐ [Limitations of the Cubical Block Model of Man in Calculating SAR Distributions](#)

Click on title for a paper summary.



Papers by Author

- ❑ Radiometric Technique for Measuring Changes in Lung Water (Short Papers)

Itoh, M.

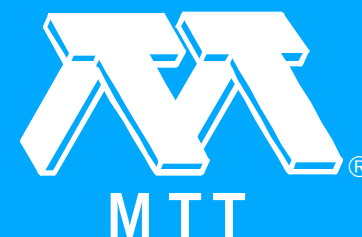
- ❑ High-Power and High-Efficiency Ion-Implanted Power GaAs FETs for C and X Bands

Itoh, S.

- ❑ A Bandpass Filter Using YIG Film Grown by LPE

Itoh, T.

- ❑ A Planar Quasi-Optical Subharmonically Pumped Mixer Characterized by Isotropic Conversion Loss
- ❑ A Planar Quasi-Optical Subharmonically Pumped Mixer Characterized by Isotropic Conversion Loss (Corrections)
- ❑ Analysis of Microstrip Step Discontinuity by the Modified Residue Calculus Technique
- ❑ Analysis of Multilayer Interconnection Lines for a High-Speed Digital Integrated Circuit



IEEE

Contents

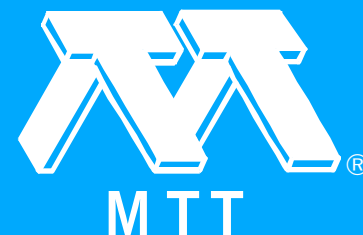
Authors

Click on title for a paper summary.



Papers by Author

- ❑ Broad-Band Millimeter-Wave E-Plane Bandpass Filters (Short Papers)
- ❑ Broadband Millimeter-Wave E-Plane Bandpass Filters
- ❑ Comparative Study of Mode Matching Formulations for Microstrip Discontinuity Problems (1985 [MWSYM])
- ❑ Comparative Study of Mode-Matching Formulations for Microstrip Discontinuity Problems (Oct. 1985 [T-MTT])
- ❑ Editorial (Apr. 1985 [T-MTT])
- ❑ Editorial (Jan. 1985 [T-MTT])
- ❑ Editorial (Sep. 1985 [T-MTT])
- ❑ Field Analysis of a Millimeter-Wave GaAs Double-Drift IMPATT Diode in the Traveling-Wave Mode
- ❑ Field Analysis of Millimeter-Wave GaAs Double-Drift IMPATT Diode in the Travelling-Wave Mode
- ❑ Millimeter-Wave Diplexers with Printed Circuit Elements (1985 [MWSYM])



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



Contents
Authors

- ❑ [Millimeter-Wave Diplexers with Printed Circuit Elements \(Dec. 1985 \[T-MTT\]\)](#)
- ❑ [Transverse Resonance Analysis Discontinuities of Finline](#)
- ❑ [Transverse Resonance Analysis of Finline Discontinuities](#)

Ittipiboon, A.

- ❑ [Probe Mutual Impedance in a Rectangular Waveguide \(Short Papers\)](#)

Ivanov, S.A.

- ❑ [Determination of the Characteristic Impedance by a Step Current Density Approximation \(Short Papers\)](#)

Iwakuni, M.

- ❑ [A 20 GHz Peltier-Cooled Low Noise HEMT Amplifier](#)

Izadnegahdar, A.

- ❑ [Microwave Diffraction Tomography for Biomedical Applications \(Further Comments\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Jablonski, D.G.

- ☐ [Power-Handling Capabilities of Circular Dielectric Waveguide at Millimeter Wavelengths](#)

Jacard, B.

- ☐ [Microwave Modeling of Rectangular Tunnels](#)

Jackson, D.R.

- ☐ [Fundamental Superstrate Effects on Printed Circuit Antenna Efficiency](#)

Jackson, K.P.

- ☐ [Optical Fiber Delay-Line Signal Processing](#)

Jackson, R.W.

- ☐ [Full-Wave Analysis of Microstrip Open-End and Gap Discontinuities](#)
- ☐ [Surface Wave Losses at Discontinuities in Millimeter Wave Integrated Transmission Lines](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Jacob, A.

- ☐ [Performance of Microwave FM Signal Frequency Division Circuits](#)

Jacobs, H.

- ☐ [Integrated Tunable Cavity Gunn Oscillator for 60-GHz Operation in Image Line Waveguide](#)

Jaeger, J.

- ☐ [A Vlasov Description of the Gridded Gap-Electron Flow Interaction](#)

Jager, D.

- ☐ [Nonlinear Slow-Wave Propagation on Periodic Schottky Coplanar Lines](#)

Jain, F.C.

- ☐ [Monolithic Antennas for Millimeter Wave GaAs Integrated Circuits](#)

Click on title for a paper summary.



Papers by Author

- ❑ Semiconductor Antenna: A New Device in Millimeter- and Submillimeter-Wave Integrated Circuits (Short Papers)

James, J.

- ❑ Computed Modal Field Distributions for Isolated Dielectric Resonators
- ❑ Computed Modal Field Distributions of Isolated Dielectric Resonators

Janaswamy, R.

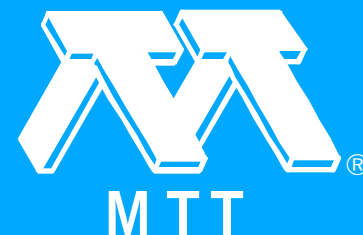
- ❑ Dispersion Characteristics for Wide Slotlines on Low-Permittivity Substrates (Short Papers)

Janiczak, B.J.

- ❑ Multiconductor Planar Transmission-Line Structures for High-Directivity Coupler Applications

Jansen, R.H.

- ❑ A Novel CAD Tool and Concept Compatible with the Requirements of Multilayer GaAs MMIC Technology



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ❑ [Accurate Wide-Range Design Equations for the Frequency-Dependent Characteristic of Parallel Coupled Microstrip Lines](#)
- ❑ [Accurate Wide-Range Design Equations for the Frequency-Dependent Characteristics of Parallel Coupled Microstrip Lines \(Corrections\)](#)
- ❑ [The Spectral-Domain Approach for Microwave Integrated Circuits](#)

Janton, W.M.

- ❑ [Millimeter Wave Silicon Device and Integrated Circuit Technology](#)

Jelenski, A.

- ❑ [Limitations of Microwave and Millimeter-Wave Mixers Due to Excess Noise \(1985 \[MWSYM\]\)](#)
- ❑ [Limitations of Microwave and Millimeter-Wave Mixers Due to Excess Noise \(Dec. 1985 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ Noise Measurements and Noise Mechanisms in Microwave Mixer Diodes

Jelsma, L.F.

- ❑ Fast Microwave Detectors Based on the Interaction of Holes with Phonons

Jenett, M.

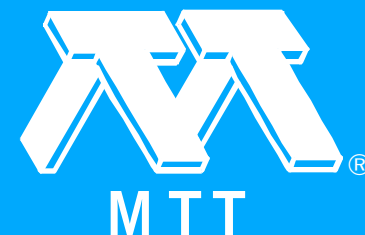
- ❑ Performance of Microwave FM Signal Frequency Division Circuits

Jeng, M.C.

- ❑ Direct DC to RF Conversion by Picosecond Optoelectronic Switching

Jennings, A.

- ❑ Extension of Levy's Large-Aperture Design Formulas to the Design of Circular Irises in Coupled-Resonator Waveguide Filters (Short Papers)



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Jofre, L.

- ☐ [Microwave Diffraction Tomography for Biomedical Applications \(Further Comments\)](#)

Johnson, H.C.

- ☐ [A Circularly Polarized Active Antenna Array Using Miniature GaAs FET Amplifiers](#)

Jones, K.E.

- ☐ [A 2 to 8 GHz Leveling Loop Using a GaAs MMIC Active Splitter and Attenuator](#)

Jones, M.H.

- ☐ [20 GHz GaAs IMPATT Diode Development for Solid State Transmitter](#)

Joseph, T.R.

- ☐ [Analog Microwave Fiber Optic Communications Links](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Juroshek, J.R.

- ☐ [A Dual Six-Port Network Analyzer Using Diode Detectors](#)
- ☐ [A High-Power Automatic Network Analyzer for Measuring the RF Power Absorbed by Biological Samples in a TEM Cell](#)
- ☐ [A Technique for Extending the Dynamic Range of the Dual Six-Port Network Analyzer](#)

Jyoshin, K.

- ☐ [A 20 GHz Peltier-Cooled Low Noise HEMT Amplifier](#)

Kabe, Y.

- ☐ [Influence of Conductor Shields on the Q-Factors of a TE /sub 0/ Dielectric Resonator](#)
- ☐ [Influence of Conductor Shields on the Q-Factors of a Te/sub 0/ Dielectric Resonator](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kacprzak, T.

- ☐ [Computer Calculation of Large-Signal GaAs FET Amplifier Characteristics](#)

Kadisch, G.

- ☐ [Optimized Microstrip Ring-Star 5-Ports for Broadband 6-Port Measurement Applications](#)

Kadziela, J.

- ☐ [Acoustooptic Interaction of Acoustic Surface Waves with Guided Optical Waves in Planar Tantalum-Pentoxide Waveguides](#)

Kagami, S.

- ☐ [Application of Boundary-Element Method to Electromagnetic Field Problems \(Short Papers\)](#)

Kagiwada, R.S.

- ☐ [Recent Developments in SAW Device Applications](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kahn, W.K.

- ☐ Stokes Vector Representation of the Six-Port Network Analyzer: Calibration and Measurement

Kaihara, Y.

- ☐ Analysis of Wave Propagation in Anisotropic Film Waveguides with Bent Optical Axes

Kaires, R.

- ☐ Direct Method of Obtaining Capacitance from Finite-Element Matrices (Clarification)

Kajfez, D.

- ☐ Computed Modal Field Distributions for Isolated Dielectric Resonators
- ☐ Computed Modal Field Distributions of Isolated Dielectric Resonators
- ☐ Incremental Frequency Rule for Computing the Q-Factor of a Shielded TE/sub omp/ Dielectric Resonator (Short Papers)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

- ☐ [Linearity Limits of the Varactor-Controlled Osc-Mod Circuits](#)
- ☐ [Q-Factor Measurement with Network Analyzer](#)
- ☐ [Session 22 Introduction \(1984 \[MWSYM\]\)](#)
- ☐ [The Use of Higher Resonant Modes in Measuring the Dielectric Constant of Dielectric Resonators](#)

Kak, A.C.

- ☐ [Limitations of Imaging with First-Order Diffraction Tomography](#)

Kal, S.

- ☐ [Normal-Mode Parameters of Microstrip Coupled Lines of Unequal Width \(Short Papers\)](#)

Kaliouby, L.

- ☐ [A New Method for Six-Port Swept Frequency Automatic Network Analysis \(Short Papers\)](#)
- ☐ [A New Real-Time Six-Port A N A Method](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kalivas, G.A.

- ☐ [A New Slotline-Microstrip Frequency Halver](#)
- ☐ [A Two-Frequency Method for Impedance Measurement in Microwave Frequency-Halving Networks](#)
- ☐ [Impedance Measurement in Frequency-Halving Networks Using a Two-Frequency Synthetic Loading Technique](#)

Kalra, S.P.

- ☐ [Microwave Characterization of Liquid Films](#)

Kamei, K.

- ☐ [Broadband HEMT and GaAs FET Amplifiers for 18 - 26.5 GHz](#)

Kammerer, E.

- ☐ [A Technique to Identify Electromagnetic Modes in Oversize Waveguides \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kanai, H.

- ☐ [Human Body Impedance for Electromagnetic Hazard Analysis in the VLF to MF Band](#)

Kanazawa, K.

- ☐ [A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications \(1985 \[MCS\]\)](#)
- ☐ [A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications \(1985 \[MWSYM\]\)](#)
- ☐ [A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications \(Dec. 1985 \[T-MTT\]\)](#)

Kanazawa, M.

- ☐ [Low Noise Microwave HIFET Using MOCVD](#)

Kaneko, Y.

- ☐ [A 6-GHz 80-W GaAs FET Amplifier with a TM-Mode Cavity Power Combiner](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kano, G.

- ☐ A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications (1985 [MCS])
- ☐ A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications (1985 [MWSYM])
- ☐ A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications (Dec. 1985 [T-MTT])

Karolkar, B.D.

- ☐ Biological Tissues Characterization at Microwave Frequencies (Short Papers)

Kasper, E.

- ☐ Silicon High Resistivity Substrate Millimeter-Wave Technology (1986 [MCS])

Katehi, P.B.

- ☐ Frequency-Dependent Characteristics of Microstrip Discontinuities in Millimeter-Wave Integrated Circuits

Click on title for a paper summary.



Papers by Author

- ❑ [Microstrip Discontinuity Modelling for Millimetric Integrated Circuits](#)

Kato, N.

- ❑ [A Low-Noise GaAs Monolithic Broad-Band Amplifier Using a Drain Current Saving Technique \(Short Papers\)](#)
- ❑ [Design and Performance of Monolithic GaAs Direct-Coupled Preamplifiers and Main Amplifiers](#)

Kato, Y.

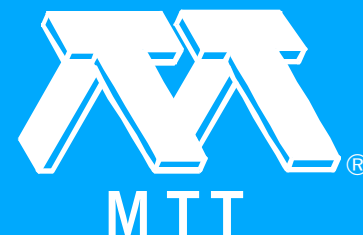
- ❑ [Low Noise Microwave HIFET Using MOCVD](#)

Kato, M.

- ❑ [Microwave Measurement of Dielectric Properties of Low-Loss Materials by the Dielectric Rod Resonator Method](#)

Kato, T.

- ❑ [Novel GaAs FET Phase Detector Operable to Ka Band](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Katsumata, T.

- ☐ [Direct Contact Applicator with Convergent Effect of EM Field for Microwave Hyperthermia](#)

Katz, A.

- ☐ [A Reflective Diode Linearize for Spacecraft Applications](#)

Kaufman, I.

- ☐ [Microwave Characterization of Liquid Films](#)

Kawabe, D.

- ☐ [Directly Connected Image Guide 3-dB Couplers with Very Flat Couplings](#)
- ☐ [Directly-Connected Image Guide 3dB Coupler with very Flat Coupling](#)

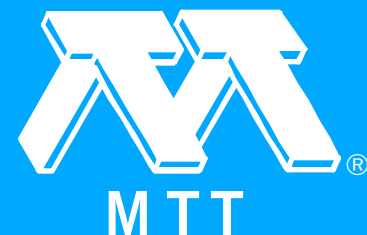
Kawakami, S.

- ☐ [Wave Propagation and Attenuation in the General Class of Circular Hollow Waveguides with Uniform Curvature](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kawamoto, K.

- ☐ [Small Size VCO Module for 900 MHz Band Using Coupled Microstrip-Coplanar Lines](#)

Kawano, K.

- ☐ [Hybrid-Mode Analysis of Coupled Microstrip-Slot Resonators](#)

Kawasaki, H.

- ☐ [Broadband HEMT and GaAs FET Amplifiers for 18 - 26.5 GHz](#)

Kazumura, M.

- ☐ [A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications \(1985 \[MCS\]\)](#)
- ☐ [A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications \(1985 \[MWSYM\]\)](#)
- ☐ [A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications \(Dec. 1985 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kellermann, W.

- ☐ [A Superlinearly Convergent Minimax Algorithm for Microwave Circuit Design \(1985 \[MWSYM\]\)](#)
- ☐ [A Superlinearly Convergent Minimax Algorithm for Microwave Circuit Design \(Dec. 1985 \[T-MTT\]\)](#)

Kennan, W.

- ☐ [A 2--18-GHz Monolithic Distributed Amplifier Using Dual-Gate GaAs FET's](#)
- ☐ [A Power Distributed Amplifier Using Constant-R Networks](#)

Kennis, P.

- ☐ [A Slot Antenna Radiating in Muscle](#)

Keogh, G.

- ☐ [A Solid State, X-Band, Exciter/Local Oscillator/Down Converter Subsystem for an Airborne, Coherent Radar Fire Control System](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kerr, A.R.

- ☐ [A Comparison of the Measured and Theoretical Performance of a 140-220 GHz Schottky Diode Mixer](#)
- ☐ [The Measured and Computed Performance of a 140--220 GHz Schottky Diode Mixer](#)

Kessler, J.R.

- ☐ [A 30 GHz Monolithic Receiver](#)

Ketcham, R.S.

- ☐ [Fundamental-Mode Pierce Oscillators Utilizing Bulk-Acoustic-Wave Resonators in the 250 - 300 MHz Range](#)
- ☐ [Fundamental-Mode Pierce Oscillators Utilizing Bulk-Acoustic-Wave Resonators in the 250--300-MHz Range \(Short Papers\)](#)

Khan, P.J.

- ☐ [Determination of the Admittance of a General Waveguide-Coaxial Line Junction \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ Large Signal Analysis of Nonlinear Microwave Systems
- ❑ Stability of Multifrequency Negative-Resistance Oscillators

Khana, A.P.S.

- ❑ Optically Controlled Microwave Devices and Circuits

Khanna, A.P.S.

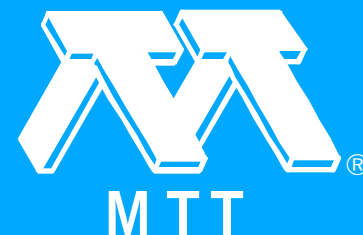
- ❑ Parallel Feedback FETDRO Design Using 3-Port S-Parameters

Kharadly, M.M.Z.

- ❑ Some Results on Low-Level Microwave Treatment of the Mountain Pine Beetle and the Darkling Beetle

Kheifets, S.A.

- ❑ A Vlasov Description of the Gridded Gap-Electron Flow Interaction



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kiang, Y.-W.

- ☐ Plasma-Dielectric Sandwich Structure Used as a Tunable Bandpass Microwave Filter (Short Papers)

Kiehne, R.

- ☐ Circuit Design to Reduce 3rd Order Intermodulation Distortion in FET Amplifiers

Kikuchi, M.

- ☐ Development and Testing of a 2450-MHz Lens Applicator for Localized Microwave Hyperthermia (Short Papers)
- ☐ Direct Contact Applicator with Convergent Effect of EM Field for Microwave Hypertrermia
- ☐ Microwave Heating System Using Lens Applicator for Localized Hyperthermia

Kikuchi, Y.

- ☐ Characteristic Impedance of the Slab Line with an Anisotropic Dielectric (Short Papers)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kim, B.

- ☐ [A GaAs FET Model for Large-Signal Applications](#)
- ☐ [GaAs Dual-Gate FET for Operation up to K-Band](#)
- ☐ [High Power Distributed Amplifier Using MBE Synthesized Material](#)
- ☐ [Monolithic GaAs Dual-Gate FET Variable Power Amplifier Module](#)

Kim, D.I.

- ☐ [Directly Connected Image Guide 3-dB Couplers with Very Flat Couplings](#)
- ☐ [Directly-Connected Image Guide 3dB Coupler with very Flat Coupling](#)
- ☐ [Properties of the Symmetrical Five-Port Circuit and Its Broad-Band Design](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kim, J.H.

- ☐ A Dual Six-Port Automatic Network Analyzer and its Performance (Short Papers)
- ☐ A Dual Six-Port Automatic Network Analyzer and its Performance Tests

Kinoshita, M.

- ☐ Measurement of TDC in Engine by Microwave Technique (1985 [MWSYM])
- ☐ Measurement of TDC in Engine by Microwave Technique (Dec. 1985 [T-MTT])

Kinoshita, Y.

- ☐ 800-MHz High-Performance SAW Filter Using New Resonant Configuration

Kinuhata, K.

- ☐ Fabrication of Low Power, High-Speed GaAs LSI On-Board Baseband Switching Matrix

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kirschning, M.

- ☐ [Accurate Wide-Range Design Equations for the Frequency-Dependent Characteristic of Parallel Coupled Microstrip Lines](#)
- ☐ [Accurate Wide-Range Design Equations for the Frequency-Dependent Characteristics of Parallel Coupled Microstrip Lines \(Corrections\)](#)

Kisliuk, M.

- ☐ [Experimental Study of the W-Band Dielectric-Guide Y-Branch Interferometer](#)
- ☐ [Theoretical and Experimental Study of a Novel H-Guide Transverse Slot Antenna \(Short Papers\)](#)

Kitazawa, T.

- ☐ [An Investigation of Striplines and Fin Lines with Periodic Stubs](#)
- ☐ [Analysis of Asymmetric Coupled Striplines \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

- ❑ [Analysis of Finline with Finite Metallization Thickness \(Short Papers\)](#)
- ❑ [Quasi-Static Characteristics of Asymmetrical and Coupled Coplanar-Type Transmission Lines](#)

Kline, M.D.

- ❑ [Investigation and Evaluation of Low Loss Interconnects on Soft Substrates Clad to Aluminum](#)

Klock, P.

- ❑ [Integral Transforms Useful for the Accelerated Summation of Periodic, Free-Space Green's Functions \(Short Papers\)](#)
- ❑ [Theory and Experiment Predicting the Cutoff Frequencies for a Rectangular Stripline](#)

Knorr, J.

- ❑ [Session 2 Introduction \(1984 \[MWSYM\]\)](#)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Knorr, J.B.

- ☐ [Scattering Analysis of a Millimeter-Wave Scalar Network Analyzer](#)
- ☐ [Scattering Coefficients of an Inductive Strip in a Finline: Theory and Experiment](#)

Kobayashi, K.

- ☐ [Graph Transformations of Nonuniform Coupled Transmission Line Networks and Their Application \(Short Papers\)](#)
- ☐ [Two-Port Equivalent Circuits of Two-Wire Parabolic Tapered Coupled Transmission Lines](#)

Kobayashi, M.

- ☐ [Longitudinal and Transverse Current Distributions on Microstriplines and Their Closed-Form Expression](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kobayashi, Y.

- ☐ Influence of Conductor Shields on the Q-Factors of a TE /sub 0/ Dielectric Resonator
- ☐ Influence of Conductor Shields on the Q-Factors of a Te/sub 0/ Dielectric Resonator
- ☐ Microwave Measurement of Dielectric Properties of Low-Loss Materials by the Dielectric Rod Resonator Method
- ☐ Optimum Design of Shielded Dielectric Rod and Ring Resonators for Obtaining the Best Mode Separation

Kobiki, M.

- ☐ A 1 Watt 28 GHz Band Amplifier Using Clustered FETs
- ☐ A Ka-Band GaAs Power MMIC

Koch, B.

- ☐ Field Theory Design of Rectangular Waveguide Broad-Wall Metal-Insert Slot Couplers for Millimeter-Wave Applications

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Koike, S.

- ☐ [Transient Analysis of Microstrip Gap in Three-Dimensional Space \(Short Papers\)](#)

Kojima, H.

- ☐ [800-MHz High-Performance SAW Filter Using New Resonant Configuration](#)

Kolan, M.

- ☐ [Millimeter Wave Silicon Device and Integrated Circuit Technology](#)

Kollberg, E.L.

- ☐ [A New Four-Port Automatic Network Analyzer: Part I--Description and Performance](#)

Kollberg, E.R.

- ☐ [Noise Measurements and Noise Mechanisms in Microwave Mixer Diodes](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Komaru, M.

- ☐ [A Ka-Band GaAs Power MMIC](#)

Komizo, H.

- ☐ [Novel GaAs FET Phase Detector Operable to Ka Band](#)

Konishi, Y.

- ☐ [Advances in Millimeter-Wave Systems in Japan](#)

Kopeika, N.S.

- ☐ [Microwave Point Contact Diode Responsivity Improvement through Surface Effects in Vacuum \(Short Papers\)](#)

Kosemura, K.

- ☐ [A Packaged 20-GHz 1-W GaAs MESFET with a Novel Via-Hole Plated Heat Sink Structure](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Koshiba, M.

- ❑ [Approximate Scalar Finite-Element Analysis of Anisotropic Optical Waveguides with Off-Diagonal Elements in a Permittivity Tensor](#)
- ❑ [Finite-Element Formulation in Terms of the Electric-Field Vector for Electromagnetic Waveguide Problems](#)
- ❑ [Improved Finite-Element Formulation in Terms of the Magnetic Field Vector for Dielectric Waveguides](#)

Koshiji, K.

- ❑ [Effect of Inner Conductor Offset in a Coplanar Waveguide \(Short Papers\)](#)

Kother, D.

- ❑ [Development of a Coupler in Finline Technique](#)

Kotzebue, K.L.

- ❑ [A Technique for the Design of Microwave Transistor Oscillators \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Koul, S.K.

- ❑ [An Analytical Method for the Capacitance of the Rectangular Inhomogeneous Coaxial Line Having Anisotropic Dielectrics \(Short Papers\)](#)
- ❑ [Equivalent Circuit of Broadside-Coupled Microstrip Open Ends](#)
- ❑ [Lumped Capacitance, Open-Circuit End Effects, and Edge-Capacitance of Microstrip-Like Transmission Lines for Microwave and Millimeter-Wave Applications](#)

Krafcsik, D.M.

- ❑ [A Closed-Form Expression for Representing the Distributed Nature of the Spiral Inductor](#)

Kraszewski, A.

- ❑ [Probing Electromagnetic Fields in Lossy Spheres and Cylinders](#)

Click on title for a paper summary.



Papers by Author

- ❑ Specific Absorption Rate Distribution in a Full-Scale Model of Man at 350 MHz
- ❑ Specific Absorption Rate Distribution in a Model of Man at Various Polarizations

Kreischer, K.E.

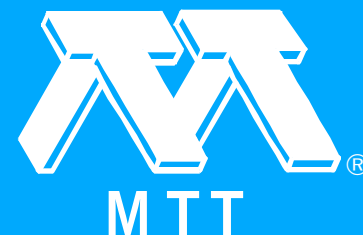
- ❑ Multimode Oscillation and Mode Competition in High-Frequency Gyrotrons

Kretch, B.

- ❑ A Perturbation Theory for Microstrip Propagation

Kriegsmann, G.A.

- ❑ High-Temperature Microwave Characterization of Dielectric Rods
- ❑ High-Temperature Microwave Characterization of Dielectric Rods (Corrections)



Contents

Authors

Click on title for a paper summary.



Papers by Author



Contents

Authors



Krishnaswamy, S.V.

- ❑ [UHF Film Resonator Evaluation and Resonator-Controlled Oscillator and Filter Design Using Computer-Aided Design Techniques](#)

Kritzer, T.R.

- ❑ [Wide-Band Limiting Amplifiers with Low Second Harmonic Distortion, Utilizing GaAs MMIC Limiters](#)

Krowne, C.M.

- ❑ [Fourier Transformed Matrix Method of Finding Propagation Characteristics of Complex Anisotropic Layered Media \(1984 \[MWSYM\]\)](#)
- ❑ [Fourier Transformed Matrix Method of Finding Propagation Characteristics of Complex Anisotropic Layered Media \(Dec. 1984 \[T-MTT\]\)](#)
- ❑ [Slow-Wave Propagation in Two Types of Cylindrical Waveguides Loaded with a Semiconductor \(Short Papers\)](#)

Click on title for a paper summary.

Papers by Author



IEEE

Contents

Authors

Krupka, J.

- ☐ Computations of Frequencies and Intrinsic Q Factors of TE/sub 0nm/ Modes of Dielectric Resonators (Short Papers)

Ku, J.

- ☐ Microwave Characterization of Liquid Films

Ku, W.H.

- ☐ Computer-Aided Synthesis of Lumped Lossy Matching Networks for Monolithic Microwave Integrated Circuits (MMIC's)

Kudoh, M.

- ☐ Fabrication of Low Power, High-Speed GaAs LSI On-Board Baseband Switching Matrix

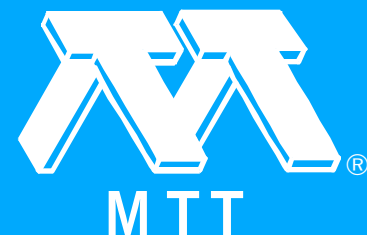
Kuester, E.F.

- ☐ Accurate Approximations for a Function Appearing in the Analysis of Microstrip (Short Papers)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kumagai, N.

- ☐ Bragg Interaction of Electromagnetic Waves in a Ferrite Slab Periodically Loaded with Metal Strips
- ☐ Magnetostatic Wave Delay Lines Using the Nonuniformly Magnetized YIG Film

Kumar, A.

- ☐ Modes in Anisotropic Rectangular Waveguides: An Accurate and Simple Perturbation Approach (Short Papers)

Kumar, M.

- ☐ Broadband and Broad Dynamic Range GaAs Dual-Gate MESFET Linearize for TWTA and SSPA Used in Satellite Transponder
- ☐ Session 18 Introduction (1984 [MWSYM])
- ☐ TWTA Linearize Using Dual-Gate MESFET

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kuno, H.J.

- ☐ [Solid-State Microwave and Millimeter-Wave Sources Development--A Personal Account](#)

Kurihara, H.

- ☐ [A 20 GHz Peltier-Cooled Low Noise HEMT Amplifier](#)

Kuroki, F.

- ☐ [Design of Nonradiative Dielectric Waveguide Filter](#)
- ☐ [Design of Nonradiative Dielectric Waveguide Filters \(Corrections\)](#)
- ☐ [Design of Nonradiative Dielectric Waveguide Filters \(Short Papers\)](#)

Kusama, N.

- ☐ [Si Monolithic Microwave Prescaler](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Kuttler, J.R.

- ☐ [A New Method for Calculating TE and TM Cutoff Frequencies of Uniform Waveguides with Lunar or Eccentric Annular Cross Section](#)

Labroo, S.

- ☐ [Scalar Variational Analysis of Single-Mode Waveguides with Rectangular Cross Section \(Short Papers\)](#)

Lacombe, J.

- ☐ [An Improved Method of Mixer Noise Figure Measurement As Applied to Beam Lead Schottky Diodes at 94 GHz.](#)

LaGrange, J.B.

- ☐ [Monolithic Microwave Integrated Circuits: An Historical Perspective](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Lai, H.

- ☐ [Microwave-Induced Post-Exposure Hyperthermia: Involvement of Endogenous Opioids and Serotonin](#)

Laing, J.

- ☐ [Enhancing the Efficacy of Localized Thermotherapy by Monitoring Changes in Tumor Blood Flow](#)

Lambrianou, G.

- ☐ [Power Characterisation of a MESFET Amplifier Using Small Signal Measurements and Volterra Series](#)

Lambrianou, G.M.

- ☐ [Optimization of Third-Order Intermodulation Product and Output Power from an X-Band MESFET Amplifier Using Volterra Series Analysis](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Lampariello, P.

- ☐ [Simple and Accurate Expression for the Dominant Mode Properties of Open Groove Guide](#)
- ☐ [The Dominant Mode Properties of Open Groove Guide: An Improved Solution](#)

Lampe, R.

- ☐ [Integral Transforms Useful for the Accelerated Summation of Periodic, Free-Space Green's Functions \(Short Papers\)](#)
- ☐ [Theory and Experiment Predicting the Cutoff Frequencies for a Rectangular Stripline](#)

Lan, G.

- ☐ [Miniature Ceramic Circuit Components for Ku Band Receivers](#)

Lan, G.-L.

- ☐ [Frequency Agile Circular Microstrip Antennas](#)

Click on title for a paper summary.



Papers by Author

Landt, D.L.

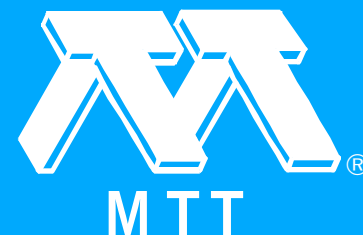
- ☐ [Pulse Network Analyzer](#)

Langmann, U.

- ☐ [2.24 Gbit/s Direct Modulation of Injection Laser by Monolithic Silicon Multiplexer](#)
- ☐ [Injection Laser Modulation at 2 Gbit/s by Monolithic Silicon Multiplexer \(Short Papers\)](#)

Larsen, L.E.

- ☐ [A Local Field Study of a Water-Immersed Microwave Antenna Array for Medical Imagery and Therapy](#)
- ☐ [Limitations of Imaging with First-Order Diffraction Tomography](#)
- ☐ [Microwave Diffraction Tomography for Biomedical Applications \(Comments\)](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author

- ❑ [Microwave-Induced Thermoacoustic Effect in Dielectrics and its Coupling to External Medium--A Thermodynamical Formulation](#)

Larson, W.

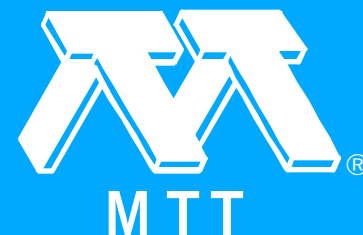
- ❑ [High Efficiency GaAs MBE Power FETs for Ka-Band \(1984 \[MWSYM\]\)](#)

LaRue, R.

- ❑ [A High Gain, Monolithic Distributed Amplifier Using Cascode Active Elements \(1986 \[MCS\]\)](#)
- ❑ [Distributed GaAs FET Circuit Model for Broadband and Millimeter Wave Applications](#)

Laton, R.W.

- ❑ [A Single-Resonator GaAs FET Oscillator with Noise Degeneration](#)
- ❑ [A Stable Broadband IMPATT Amplifier](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author

- ❑ Analysis and Design of a Single-Resonator GaAs FET Oscillator with Noise Degeneration
- ❑ Coherent Transmitter Considerations Utilizing Injection Locked Magnetrons

Lau, K.F.

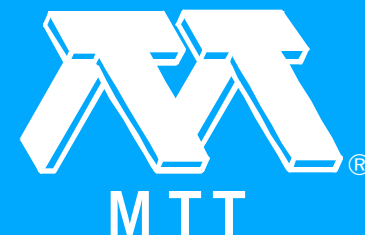
- ❑ Recent Developments in SAW Device Applications

Lau, K.M.

- ❑ The Relationship of Magnetotransconductance Mobility Profiles and RF Performance of GaAs FETs

Laura, P.A.A.

- ❑ A New Method for Calculating TE and TM Cutoff Frequencies of Uniform Waveguides with Lunar or Eccentric Annular Cross Section (Comments)
- ❑ The Dynamical Behavior of a Single-Mode Optical Fiber Strain Gage (Correction to Comments)



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Law, V.J.

- ☐ Planar Millimeter-Wave Diode Mixer (Short Papers)

Lazar, S.

- ☐ A Quasi-Optical Method for Measuring the Complex Permittivity of Materials
- ☐ Measurement of the Complex Dielectric Constant of Casting Resins at Millimeter Wavelengths Low-Loss

Lee, C.H.

- ☐ Direct DC to RF Conversion by Picosecond Optoelectronic Switching
- ☐ Optoelectronic Techniques for Microwave and Millimeter-Wave Applications

Lee, C.S.

- ☐ Plot of Modal Field Distribution in Rectangular and Circular Waveguides (Short Papers)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Lee, H.

- ☐ Generalized Spectral Domain Analysis of Planar Structures Having Semi-Infinite Ground Planes

Lee, J.

- ☐ Digital and Analog Frequency - Temperature Compensation of Dielectric Resonator Oscillators

Lee, K.W.

- ☐ Digital and Analog Frequency - Temperature Compensation of Dielectric Resonator Oscillators

Lee, S.W.

- ☐ Plot of Modal Field Distribution in Rectangular and Circular Waveguides (Short Papers)

Lehmann, R.E.

- ☐ X-Band Monolithic Series Feedback LNA (1985 [MCS])
- ☐ X-band Monolithic Series Feedback LNA (1985 [MWSYM])

Click on title for a paper summary.



Papers by Author

- ❑ X-Band Monolithic Series Feedback LNA (Dec. 1985 [T-MTT])

Leighton, W.H.

- ❑ EHF Solid State Amplifier

Leung, C.C.

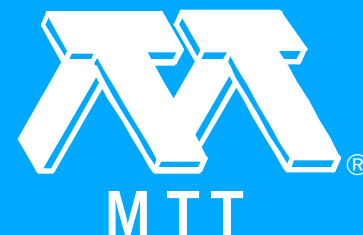
- ❑ A 0.5 μm Silicon Bipolar Transistor for Low Phase Noise Oscillator Applications Up to 20 GHz

Leuzzi, G.

- ❑ Characteristics of Metal-Insulator-Semiconductor Coplanar Waveguides for Monolithic Microwave Circuits

Leviatan, Y.

- ❑ Multiple-Post Inductive Obstacles in Rectangular Waveguide
- ❑ Numerical Study of the Current Distribution on a Post in a Rectangular Waveguide (Short Papers)



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author

- ❑ [Single-Post Inductive Obstacle in Rectangular Waveguide \(Reply to Comments\)](#)

Levin, R.L.

- ❑ [Convergence of Local and Average Values in Three-Dimensional Moment-Method Solutions \(Short Papers\)](#)

Levush, B.

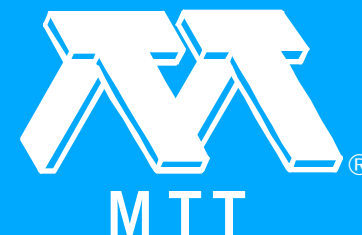
- ❑ [Generation of High-Frequency Radiation by Quasi-Optical Gyrotron at Harmonics of the Cyclotron Frequency \(Short Papers\)](#)

Levy, J.

- ❑ [Millimeter Wave Multiplexer with Printed Circuit Elements for the 88 to 100 GHz Frequency Range](#)

Levy, R.

- ❑ [A History of Microwave Filter Research, Design, and Development](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author

- History of Microwave Passive Components with Particular Attention to Directional Couplers

Lewin, L.

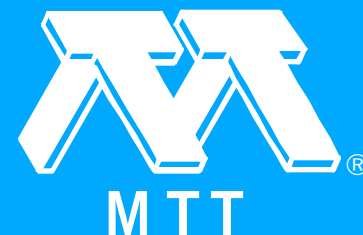
- A Method of Avoiding the Edge Current Divergence in Perturbation Loss Calculations (Short Papers)
- Coupling of Degenerate Modes on Curved Dielectric Slab Sections and Application to Directional Couplers (Corrections)
- Theory and Application of Coupling Between Curved Transmission Lines (Corrections)

Lewin, P.T.

- Noise Due to Pulse-to-Pulse Incoherence in Injection-Locked Pulsed-Microwave Oscillators. Part II-Effects of Phase-Locking Dynamics

Li, Da.

- A W-Band Monolithic GaAs PIN Diode Switch



Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Li, K.R.

- ☐ Effects of Side-Wall Grooves on Transmission Characteristics of Suspended Striplines (Dec. 1985 [T-MTT])

Li, M.G.

- ☐ Optoelectronic Techniques for Microwave and Millimeter-Wave Applications

Li, P.G.

- ☐ Lossy Inductive-Post Obstacles in Lossy Waveguide
- ☐ Multiple-Post Inductive Obstacles in Rectangular Waveguide
- ☐ Single-Post Inductive Obstacle in Rectangular Waveguide (Reply to Comments)

Li, S.-F.

- ☐ W-band GaAs Gunn Diode Harmonic Power Combiners

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Liles, B.

- ☐ [A 1-Watt, 8-17 GHz FET Power Amplifier](#)

Lilonga, D.

- ☐ [Amplification by Interdigital Excitation of Space-Charge Waves in Semiconductors](#)

Lin, J.C.

- ☐ [Microwave Thermoelastic Tissue Imaging--System Design](#)

Lin, W.

- ☐ [A New Transmission Line of Round Conductor and Parallel Plane with Symmetrically Placed Slit \(Short Papers\)](#)
- ☐ [Computation of the Parallel-Plate Capacitor with Symmetrically Placed Unequal Plates](#)
- ☐ [Polygonal Coaxial Line with Round Center Conductor \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author

Lin, Z.-Q.

- ☐ [Field in Single-Mode Helically-Wound Optical Fibers](#)

Lindell, I.V.

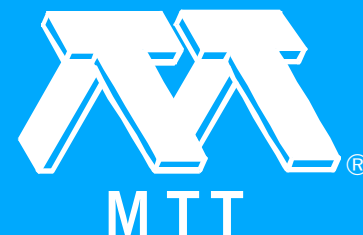
- ☐ [Exact Image Theory for Field Calculation in Layered Biological Medium](#)

Lingemann, Ch.

- ☐ [E-Plane Integrated Parallel-Strip Screen Waveguide Filters \(Short Papers\)](#)

Lipparini, A.

- ☐ [A CAD Solution to the Generalized Problem of Noise Figure Calculation](#)
- ☐ [Computer-Aided Noise Analysis of Linear Multiport Networks of Arbitrary Topology](#)
- ☐ [General Stability Analysis of Periodic Steady-State Regimes in Nonlinear Microwave Circuits](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

[Contents](#)

[Authors](#)

Lisak, M.

- ☐ [Noise Due to Pulse-to-Pulse Incoherence in Injection-Locked Pulsed-Microwave Oscillators. Part II-Effects of Phase-Locking Dynamics](#)

Liu, C.S.

- ☐ [A 30 GHz Monolithic Receiver](#)

Liu, L.C.T.

- ☐ [A 30 GHz Monolithic Receiver](#)
- ☐ [A 69 GHz Monolithic FET Oscillator \(1984 \[MWSYM\]\)](#)
- ☐ [Computer-Aided Synthesis of Lumped Lossy Matching Networks for Monolithic Microwave Integrated Circuits \(MMIC's\)](#)
- ☐ [Cost-Effective High Performance Monolithic X-Band Low Noise Amplifiers \(1986 \[MCS\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ Production Technology Development for High Yield, High Performance X-Band Monolithic Power and Low Noise Amplifiers
- ❑ Production Technology for High-Yield, High-Performance GaAs Monolithic Amplifiers

Lloyd, F.L.

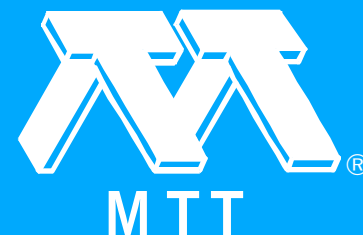
- ❑ A Simple Integrated Matching Element for SIS Quasiparticle Mixers
- ❑ Broad-Band RF Match to a Millimeter-Wave SIS Quasiparticle Mixer

Lopuch, S.L.

- ❑ Field Distribution of Two Conducting Posts in a Waveguide

Losch, I.E.

- ❑ A Transition from Rectangular to Nonradiating Dielectric Waveguide (Short Papers)
- ❑ A Transition to Non-Radiating Dielectric Waveguide



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Loser, E.

- ☐ [Transfer Properties of the Upper-Sideband Varactor Upconverter](#)

Loser, E.H.

- ☐ [An Experimental Linearized Power Upconverter for SSB Signals](#)

Loukas, S.

- ☐ [Changes in Liposomes Permeability Induced by Gramicidin D After Microwave Irradiation \(Short Papers\)](#)

Lovisolo, G.A.

- ☐ [A Multifrequency Water-Filled Waveguide Applicator: Thermal Dosimetry in Vivo \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Lu, S.-T.

- ❑ Effects of 2450-MHz Microwave Energy on the Blood-Brain Barrier: An Overview and Critique of Past and Present Research
- ❑ Exposure of Human Mononuclear Leukocytes to Microwave Energy Pulse-Modulated at 16 or 60 Hz

Luhmann, Jr., N.C.

- ❑ High-Harmonic Gyrotron Oscillators and Gyro-Klystron Amplifiers
- ❑ Imaging Polarimeter Arrays for Near-Millimeter Waves
- ❑ Polarization-Sensitive Imaging Arrays

Luk, K.M.

- ❑ Field Patterns and Resonant Frequencies of High-Order Modes in an Open Resonator (Short Papers)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Lukaszek, T.

- ☐ [Session 3 Introduction \(1984 \[MWSYM\]\)](#)

Lunden, H.B.

- ☐ [Analysis and Design of Branch-Line Hybrids with Coupled Lines](#)

Ma, J.Y.L.

- ☐ [A 125--260-GHz Gyrotron](#)
- ☐ [A New Cylindrical Electron Gun for Low-Power Tunable Gyrotrons with High Magnetic Compression Ratios \(Short Papers\)](#)

Ma, Y.E.

- ☐ [V-Band Double-Drift Read Silicon IMPATTs](#)

Maas, S.A.

- ☐ [Analysis and Design of GaAs MESFET Mixers](#)

Click on title for a paper summary.



Papers by Author

- ❑ [Theory and Analysis of GaAs MESFET Mixers \(Short Papers\)](#)

Mack, R.B.

- ❑ [The Inverse Problem for Biaxial Materials](#)

Macksey, H.M.

- ❑ [A 2-W Ku-Band Monolithic GaAs FET Amplifier](#)

MaClean, D.J.H.

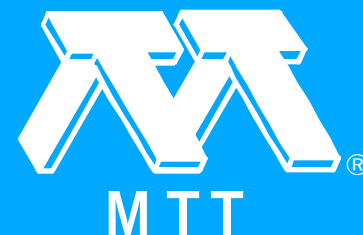
- ❑ [Stability Margins in Microwave Amplifiers](#)

MacMaster, G.

- ❑ [500 MHz, 100 W X-Band Solid State Amplifier](#)

MacPhie, R.H.

- ❑ [On the Graphical Representation of Electric Field Lines in Waveguide](#)
- ❑ [Scattering at an N-Furcated Parallel-Plate Waveguide Junction \(Short Papers\)](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Madjar, A.

- ☐ [A Novel Method for the Analysis of Microwave Two-Port Active Mixers \(Short Papers\)](#)
- ☐ [Large-Signal Microwave Performance Prediction of Dual-Gate GaAs MESFET Using an Efficient and Accurate Model \(Short Papers\)](#)

Madni, A.M.

- ☐ [A Solid State, X-Band, Exciter/Local Oscillator/Down Converter Subsystem for an Airborne, Coherent Radar Fire Control System](#)
- ☐ [Sensitivity Analysis of a 15.0 GHz Monopulse Radar Receiver Using a Logarithmic Amplifier Detector Scheme](#)

Madsen, K.

- ☐ [A Superlinearly Convergent Minimax Algorithm for Microwave Circuit Design \(1985 \[MWSYM\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ [A Superlinearly Convergent Minimax Algorithm for Microwave Circuit Design \(Dec. 1985 \[T-MTT\]\)](#)

Maffett, A.L.

- ❑ [The Inverse Problem for Biaxial Materials](#)

Magalhaes, F.M.

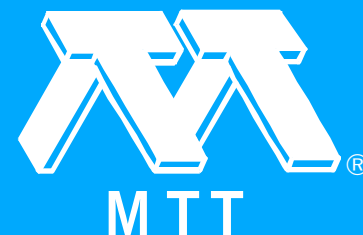
- ❑ [A 6 Watt 6 GHz GaAsFET Power Module with GaAs Matching Circuits](#)

Magarshack, J.

- ❑ [Highly Accurate Design of Spiral Inductors for MMIC's with Small Size and High Cut-Off Frequency Characteristics \(1984 \[MWSYM\]\)](#)

Magid, M.

- ❑ [Characteristic Impedance of Rectangular Coaxial Transmission Lines \(Correction\)](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Magni, P.

- ☐ [Temperature Controlled Predistortion Circuits for 64 QAM Microwave Power Amplifiers](#)

Mahesh, K.

- ☐ [Predistortion Linearize Using GaAs Dual-Gate MESFET for TWTA and SSPA Used in Satellite Transponders](#)

Mahoney, L.J.

- ☐ [Dual Function Mixer Circuit for Millimeter Wave Transceiver Applications \(1985 \[MCS\]\)](#)
- ☐ [Dual Function Mixer Circuit for Millimeter Wave Transceiver Applications \(1985 \[MWSYM\]\)](#)
- ☐ [GaAs Monolithic Frequency Doublers with Series Connected Varactor Diodes \(1984 \[MWSYM\]\)](#)

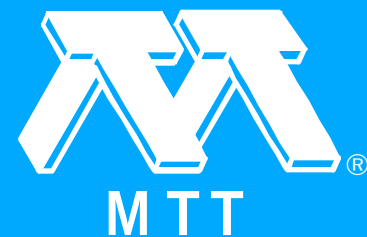
Mains, R.K.

- ☐ [Dynamic Behavior of Pulsed-IMPATT Oscillators \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ❑ Effect of Doping Profile Variation on GaAs Hybrid and Double-Read IMPATT Diode Performance at 60 and 94 GHz
- ❑ Effects of Doping Profile on GaAs, Double-Drift IMPATT Diodes at 33 and 44 GHz Using the Energy-Momentum Transport Model

Maj, S.

- ❑ A Composite, Multilayered Cylindrical Dielectric Resonator
- ❑ Application of a Dielectric Resonator on Microstrip Line for a Measurement of Complex Permittivity

Maki, D.W.

- ❑ A 69 GHz Monolithic FET Oscillator (1984 [MWSYM])

Makimoto, M.

- ❑ A Design Method of Bandpass Filters Using Dielectric-Filled Coaxial Resonators (Short Papers)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Maldonado, O.

- ☐ [Microwave Modeling of Rectangular Tunnels](#)

Malherbe, J.A.G.

- ☐ [A Transition from Rectangular to Nonradiating Dielectric Waveguide \(Short Papers\)](#)
- ☐ [A Transition to Non-Radiating Dielectric Waveguide](#)
- ☐ [Design Curves for -3-dB Branchline Couplers \(Short Paper\)](#)

Malkomes, M.

- ☐ [Optimized Microstrip Ring-Star 5-Ports for Broadband 6-Port Measurement Applications](#)

Mallavarpu, R.

- ☐ [500 MHz, 100 W X-Band Solid State Amplifier](#)

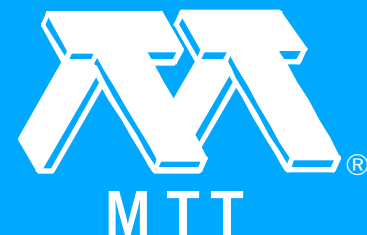
Mallick, A.K.

- ☐ [An Analysis of a Width-Modulated Microstrip Periodic Structure \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Manfra, M.J.

- ☐ Dual Function Mixer Circuit for Millimeter Wave Transceiver Applications (1985 [MCS])
- ☐ Dual Function Mixer Circuit for Millimeter Wave Transceiver Applications (1985 [MWSYM])

Manheim, W.M.

- ☐ Generation of High-Frequency Radiation by Quasi-Optical Gyrotron at Harmonics of the Cyclotron Frequency (Short Papers)

Mann, A.G.

- ☐ Active Stabilization of Crystal Oscillator FM Noise at UHF Using a Dielectric Resonator (Short Papers)

Mansour, R.R.

- ☐ Scattering at an N-Furcated Parallel-Plate Waveguide Junction (Short Papers)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

March, S.L.

- ☐ [Analyzing Lossy Radial-Line Stubs \(Short Papers\)](#)

Mariki, G.E.

- ☐ [Dynamic Three-Dimensional TLM Analysis of Microstriplines on Anisotropic Substrate](#)

Marques, R.

- ☐ [A New Recurrence Method for Determining the Green's Function of Planar Structures with Arbitrary Anisotropic Layers \(Short Papers\)](#)
- ☐ [Coupled Microstrips on Double Anisotropic Layers \(Short Papers\)](#)
- ☐ [Propagation of Quasi-Static Modes in Anisotropic Transmission Lines: Application to MIC Lines](#)

Marrero, J.L.R.

- ☐ [A Broad-Band, Ultra-Low-Noise Schottky Diode Receiver from 80 to 115 GHz Diode](#)

Click on title for a paper summary.



Papers by Author



Contents
Authors

Martinelli, M.

- ☐ [A Method for Dielectric Loss Measurements by a Microwave Cavity in Fixed Resonance Condition](#)

Martines, G.

- ☐ [Characterization of GaAs FET's in Terms of Noise, Gain, and Scattering Parameters through a Noise Parameter Test Set](#)

Martinez, J.P.

- ☐ [Analysis of Dielectric Resonators with Tuning Screw and Supporting Structure \(Dec. 1985 \[T-MTT\]\)](#)

Marx, R.E.

- ☐ [A Circularly Polarized Active Antenna Array Using Miniature GaAs FET Amplifiers](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Massoudi, H.

- ☐ [Limitations of the Cubical Block Model of Man in Calculating SAR Distributions](#)

Materka, A.

- ☐ [Computer Calculation of Large-Signal GaAs FET Amplifier Characteristics](#)

Matsumoto, M.

- ☐ [A C-Band 10 Watt GaAs Power FET](#)

Mattauch, R.J.

- ☐ [A Comparison of the Measured and Theoretical Performance of a 140-220 GHz Schottky Diode Mixer](#)
- ☐ [A High Efficiency Frequency Doubler for 100 GHz](#)
- ☐ [A Very Low-Noise, Fixed-Tuned Mixer for 240-270 GHz](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Matthaei, G.L.

- ☐ [Bandstop Filter Design Using a Dielectric Waveguide Grating](#)
- ☐ [Dielectric Waveguide Band-Pass Filters with Broad Stop Bands](#)
- ☐ [Dielectric Waveguide Grating Design for Bandstop and Bandpass Filter Applications](#)

Mauro, F.

- ☐ [A Multifrequency Water-Filled Waveguide Applicator: Thermal Dosimetry in Vivo \(Short Papers\)](#)

Mautz, J.R.

- ☐ [Characteristic Modes for Aperture Problems](#)
- ☐ [Multiconductor Transmission Lines In Multilayered Dielectric Media](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Mayaram, K.

- ☐ [A Complete GaAs MESFET Computer Model for SPICE \(Short Papers\)](#)

Mayes, P.

- ☐ [Integral Transforms Useful for the Accelerated Summation of Periodic, Free-Space Green's Functions \(Short Papers\)](#)
- ☐ [Theory and Experiment Predicting the Cutoff Frequencies for a Rectangular Stripline](#)

Mayes, P.E.

- ☐ [Analysis and Synthesis of Guides with Closely Spaced Discontinuities](#)

Maynard, Jr., E.D.

- ☐ [Microwave/Millimeter Wave Monolithic Integrated Circuits \(MIMIC\) Program \(1986 \[MCS\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Mazumder, G.G.

- ☐ [A Novel Rectangular Waveguide with Double T-Septums \(Short Papers\)](#)

McAvoy, B.R.

- ☐ [Stable Microwave Source Using High Overtone Bulk Resonators](#)

McCarter, S.D.

- ☐ [A 6.5--16-GHz Monolithic Power Amplifier Module](#)
- ☐ [A Miniaturized 6.5 - 16 GHz Monolithic Power Amplifier Module](#)

McClelland, R.W.

- ☐ [GaAs Monolithic Frequency Doublers with Series Connected Varactor Diodes \(1984 \[MWSYM\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

McDermott, D.B.

- ☐ [High-Harmonic Gyrotron Oscillators and Gyro-Klystron Amplifiers](#)

McDermott, G.

- ☐ [A Novel MMIC X-Band Phase Shifter](#)
- ☐ [A Novel MMIC, X-Band, Phase Shifter](#)

McDonald, N.A.

- ☐ [Polynomial Approximations for the Electric Polarizabilities of Some Small Apertures](#)

McEuen, A.H.

- ☐ [Microstrip Spiral Antenna for Local Hyperthermia](#)

McGrath, W.R.

- ☐ [A Simple Integrated Matching Element for SIS Quasiparticle Mixers](#)

Click on title for a paper summary.



Papers by Author

- ❑ [Broad-Band RF Match to a Millimeter-Wave SIS Quasi-Particle Mixer](#)

McHenry, M.A.

- ❑ [Coupled-Mode Theory of Two Nonparallel Dielectric Waveguides](#)

McKay, T.

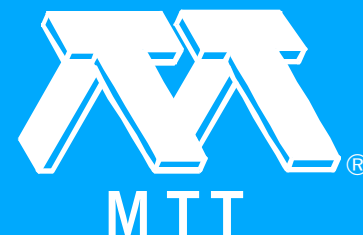
- ❑ [A High Performance 2-18.5 GHz Distributed Amplifier, Theory and Experiment \(1986 \[MCS\]\)](#)

McQuiddy, Jr., D.N.

- ❑ [Monolithic Microwave Integrated Circuits: An Historical Perspective](#)

Medina, F.

- ❑ [A New Recurrence Method for Determining the Green's Function of Planar Structures with Arbitrary Anisotropic Layers \(Short Papers\)](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author

- ❑ [Determination of Green's Function Matrix for Multiconductor and Anisotropic Multidielectric Planar Transmission Lines: A Variational Approach](#)

Mehdizadeh, M.

- ❑ [High Speed Varactor Tuned Notch Filter](#)

Meier, P.J.

- ❑ [Integrated Ka-Band Front End with Monolithic Mixer](#)

Meierer, R.

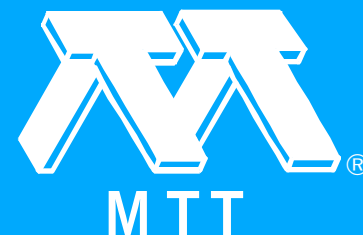
- ❑ [Dual-Gate MESFET Mixers](#)

Meinel, H.

- ❑ [Integrated Millimeter-Wave Systems and Subsystems Using Finline and Related E-Plane Technologies](#)

Mendecki, J.

- ❑ [A Microwave Apparatus for Producing Uniform Hyperthermic Temperatures Over Large Surfaces](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author

- ❑ [Enhancing the Efficacy of Localized Thermotherapy by Monitoring Changes in Tumor Blood Flow](#)

Menzel, W.

- ❑ [140-GHz Finline Components \(Short Papers\)](#)
- ❑ [GaAs Gunn Oscillators Reach the 140 GHz Range](#)

Mezger, P.G.

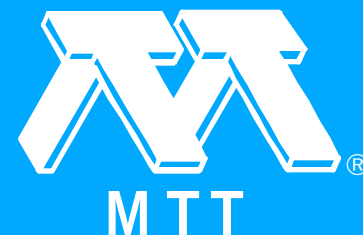
- ❑ [50 Years of Radio Astronomy](#)

Miazga, P.

- ❑ [Multi-Octave Phase Modulators](#)

Michaelson, S.M.

- ❑ [Effects of 2450-MHz Microwave Energy on the Blood-Brain Barrier: An Overview and Critique of Past and Present Research](#)
- ❑ [Exposure of Human Mononuclear Leukocytes to Microwave Energy Pulse-Modulated at 16 or 60 Hz](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Michaud, A.

- ☐ [R.F. Spectrum of Thermal Noise and Stability of a Microwave Cavity Oscillator](#)
- ☐ [RF Spectrum of Thermal Noise and Frequency Stability of a Microwave Cavity-Oscillator](#)

Mikuni, M.

- ☐ [A 20 GHz Peltier-Cooled Low Noise HEMT Amplifier](#)

Miles, R.E.

- ☐ [Large-Signal Equivalent-Circuit Model of a GaAs Dual-Gate MESFET Mixer \(Short Papers\)](#)

Miller, P.D.

- ☐ [Design of Broad-Band Power GaAs FET Amplifiers](#)

Miller, R.E.

- ☐ [85--115-GHz Receivers for Radio Astronomy](#)

Click on title for a paper summary.



Papers by Author

Miller, S.W.

- ❑ [Capacitively Coupled Traveling-Wave Power Amplifier \(Dec. 1984 \[T-MTT\]\)](#)
- ❑ [Wide-Band Monolithic Phase Shifter](#)

Milnes, A.G.

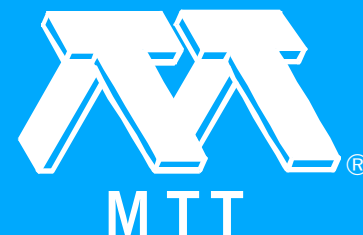
- ❑ [Phase Shifts in Single- and Dual-Gate GaAs MESFET's for 2-4-GHz Quadrature Phase Shifters](#)

Minasian, R.A.

- ❑ [A Simplified Microwave Model of the GaAs Dual-Gate MESFET](#)

Miner, Jr., W.H.

- ❑ [Theory and Numerical Simulation of a TE/sub 111/ Gyroresonant Accelerator](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Miner, W.H.

- ☐ [Theory and Numerical Modeling of a Compact Low-Field High-Frequency Gyrotron](#)

Mink, J.W.

- ☐ [Foreword \(Oct. 1985 \[T-MTT\]\)](#)

Mishra, P.K.

- ☐ [Scalar Variational Analysis of Single-Mode Waveguides with Rectangular Cross Section \(Short Papers\)](#)

Mishra, U.K.

- ☐ [A 30 GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element \(1985 \[MCS\]\)](#)
- ☐ [A 30 GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element \(1985 \[MWSYM\]\)](#)
- ☐ [A 30-GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Misra, D.

- ☐ Responses of Electric-Field Probes Near a Cylindrical Model of the Human Body

Mitchell, B.K.

- ☐ A 30-GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element

Mitsui, Y.

- ☐ A 1 Watt 28 GHz Band Amplifier Using Clustered FETs
- ☐ A Ka-Band GaAs Power MMIC

Mitra, R.

- ☐ An Investigation of Striplines and Fin Lines with Periodic Stubs
- ☐ An Iterative Moment Method for Analyzing the Electromagnetic Field Distribution Inside Inhomogeneous Lossy Dielectric Objects (Short Papers)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ☐ Analysis of Asymmetric Coupled Striplines (Short Papers)
- ☐ Analysis of Finline with Finite Metallization Thickness (Short Papers)
- ☐ Quasi-Static Characteristics of Asymmetrical and Coupled Coplanar-Type Transmission Lines
- ☐ Solution of the Finline Step-Discontinuity Problem Using the Generalized Variational Technique
- ☐ Spectral Iterative Technique for Analyzing Multiconductor Microstrip Lines

Miura, M.

- ☐ Optimum Design of Shielded Dielectric Rod and Ring Resonators for Obtaining the Best Mode Separation

Miyagi, M.

- ☐ Complex Propagation Constants of Bent Hollow Waveguides with Arbitrary Cross Section
- ☐ Vector Analyses of Propagation Constants in Dielectric Optical Waveguides with Perturbed Refractive-Index Profile

Click on title for a paper summary.



Papers by Author

- ❑ Wave Propagation and Attenuation in the General Class of Circular Hollow Waveguides with Uniform Curvature

Miyamoto, H.

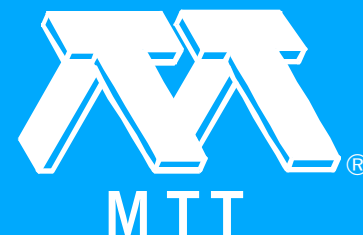
- ❑ A Low Noise AlGaAs/GaAs FET with P/sup +/-Gate and Selectively Doped Structure

Miyazaki, M.

- ❑ Boundary Element Method Approach Magnetostatic Wave Problems
- ❑ Edge-Guided Magnetostatic Mode in a Ridged-Type Waveguide (Short Papers)

Miyazaki, S.-I.

- ❑ 0.5-2.6GHz Si-Monolithic Wideband Amplifier IC (1985 [MCS])
- ❑ 0.5-2.6GHz Si-Monolithic Wideband Amplifier IC (1985 [MWSYM])
- ❑ Si Monolithic Microwave Prescaler



IEEE

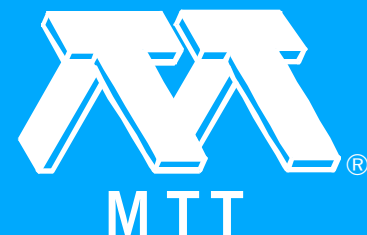
Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Mizumoto, T.

- ☐ [Phase-Matched Waveguide Using the Artificial Anisotropic Structure and its Application to a Mode Converter \(Short Papers\)](#)
- ☐ [Phase-Matched Waveguide Using the Artificial Anisotropic Structure and its Application to Mode Converter](#)

Mizuno, H.

- ☐ [Propagation in Broadside-Coupled Suspended-Substrate Stripline in E-Plane](#)

Mizushina, S.

- ☐ [A Three-Band Microwave Radiometer for Noninvasive Temperature Measurement](#)

Mizutani, T.

- ☐ [A Low Noise \$\text{AlGaAs/GaAs}\$ FET with \$\text{P}^{\pm}\$ -Gate and Selectively Doped Structure](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Mochizuki, T.

- ☐ [Low Noise Amplifiers Using Two Dimensional Electron Gas FETs](#)

Modelski, J.W.

- ☐ [Application of a Dielectric Resonator on Microstrip Line for a Measurement of Complex Permittivity](#)

Moghe, S.B.

- ☐ [A Low Cost, 3-7 GHz, 1/2 Watt MMIC GaAs Amplifier](#)
- ☐ [A Monolithic Direct-Coupled GaAs Amplifier with 12-GHz Bandwidth](#)

Mohsenian, N.

- ☐ [Finite Element Analysis Applied to Gyroelectrically Loaded Waveguiding Structures](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Molin, G.

- ☐ [MIC Assembly for 12-GHz Direct Broadcast Satellite Receiver](#)

Moller, P.E.

- ☐ [On the Graphical Representation of Electric Field Lines in Waveguide](#)

Mollier, J.-C.

- ☐ [Microwave Helix Waveguide Absorption Cell for Passive Frequency Standard \(Short Papers\)](#)

Mondal, J.P.

- ☐ [Phase Shifts in Single- and Dual-Gate GaAs MESFET's for 2-4-GHz Quadrature Phase Shifters](#)

Mongiardo, M.

- ☐ [Inversion of Microwave Thermographic Data by the Singular Function Method](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Montrosset, I.

- ☐ [Scattering at a Junction of Two Waveguides with Different Surface Impedances \(Comments\)](#)

Moore, R.A.

- ☐ [Stable Microwave Source Using High Overtone Bulk Resonators](#)
- ☐ [UHF Film Resonator Evaluation and Resonator-Controlled Oscillator and Filter Design Using Computer-Aided Design Techniques](#)

Morawski, T.

- ☐ [Multi-Octave Phase Modulators](#)

Mori, S.

- ☐ [Development and Testing of a 2450-MHz Lens Applicator for Localized Microwave Hyperthermia \(Short Papers\)](#)
- ☐ [Direct Contact Applicator with Convergent Effect of EM Field for Microwave Hypertrermia](#)

Click on title for a paper summary.



Papers by Author

- ❑ [Microwave Heating System Using Lens Applicator for Localized Hyperthermia](#)

Morimura, T.

- ❑ [Fabrication of Low Power, High-Speed GaAs LSI On-Board Baseband Switching Matrix](#)

Morita, N.

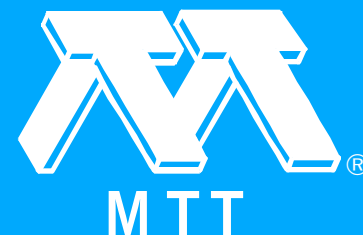
- ❑ [Application of Boundary-Element Method to Electromagnetic Field Problems \(Comments\)](#)
- ❑ [Scattering of Guided Modes Caused by an Arbitrarily Shaped Broken End in a Dielectric Slab Waveguide \(Correction\)](#)

Moschuring, H.

- ❑ [Inhomogeneous Open-Ended Resonators as Microwave Sensor Elements](#)

Moslehi, B.

- ❑ [Optical Fiber Delay-Line Signal Processing](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Mourier, G.

- ☐ [A Technique to Identify Electromagnetic Modes in Oversize Waveguides \(Short Papers\)](#)

Mozzi, R.

- ☐ [Capacitively Coupled Traveling-Wave Power Amplifier \(Dec. 1984 \[T-MTT\]\)](#)
- ☐ [Wide-Band Monolithic Phase Shifter](#)

Mozzi, R.L.

- ☐ [2--20-GHz GaAs Traveling-Wave Power Amplifier \(Mar. 1984 \[T-MTT\]\)](#)

Muller, M.W.

- ☐ [Editor's Overview \(Dec. 1985 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Muller-Gronau, W.

- ☐ [A Computer-Controlled Integrated Microwave Measurement System in Finline Technique for Automatic Material Parameter Measurements](#)

Mulligan, W.J.

- ☐ [Multimode Oscillation and Mode Competition in High-Frequency Gyrotrons](#)

Murakami, Y.

- ☐ [A Bandpass Filter Using YIG Film Grown by LPE](#)

Mushiake, Y.

- ☐ [An Analysis of a Hybrid-Mode in a Twisted Rectangular Waveguide](#)
- ☐ [Dispersion Characteristics of Twisted Rectangular Waveguides](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Mykietyn, E.

- ☐ [A Circularly Polarized Active Antenna Array Using Miniature GaAs FET Amplifiers](#)

Myung, J.-S.

- ☐ [A Novel Cavity Resonator Measurement Method for Leaky Waveguides](#)

Nachman, M.

- ☐ [Heating Pattern in a Multi-Layered Material Exposed to Microwaves \(Short Papers\)](#)

Nagao, H.

- ☐ [Fabrication of Low Power, High-Speed GaAs LSI On-Board Baseband Switching Matrix](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Naiheng, Y.

- ❑ [Analysis of Arbitrarily Oriented Microstrip Transmission Lines in Arbitrarily Shaped Dielectric Media Over a Finite Ground Plane](#)

Nair, N.V.

- ❑ [An Analysis of a Width-Modulated Microstrip Periodic Structure \(Short Papers\)](#)

Naito, Y.

- ❑ [Directly Connected Image Guide 3-dB Couplers with Very Flat Couplings](#)
- ❑ [Directly-Connected Image Guide 3dB Coupler with very Flat Coupling](#)
- ❑ [Phase-Matched Waveguide Using the Artificial Anisotropic Structure and its Application to a Mode Converter \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author

- ☐ Phase-Matched Waveguide Using the Artificial Anisotropic Structure and its Application to Mode Converter
- ☐ Properties of the Symmetrical Five-Port Circuit and Its Broad-Band Design

Nakagawa, M.

- ☐ Direct Contact Applicator with Convergent Effect of EM Field for Microwave Hyperthermia

Nakaji, E.M.

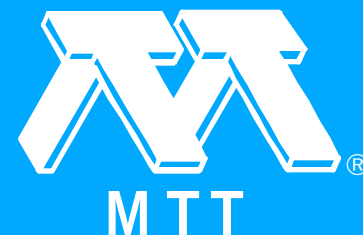
- ☐ V-Band Double-Drift Read Silicon IMPATTs

Nakajima, M.

- ☐ Mathematical Expression of the Loading Characteristics of Microwave Oscillators and Injection-Locking Characteristics (Short Papers)

Nakano, K.

- ☐ 36.0 - 40.0 GHz HEMT Low Noise Amplifier



Contents

Authors

Click on title for a paper summary.



Papers by Author

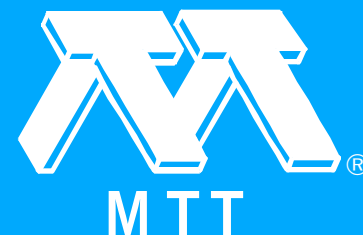
- ❑ Low Noise High Electron Mobility Transistors (1984 [MWSYM])

Nakata, T.-a.

- ❑ 0.5-2.6GHz Si-Monolithic Wideband Amplifier IC (1985 [MCS])
- ❑ 0.5-2.6GHz Si-Monolithic Wideband Amplifier IC (1985 [MWSYM])
- ❑ Si Monolithic Microwave Prescaler

Nakatani, A.

- ❑ A Generalized Algorithm for the Modeling of the Dispersive Characteristics of Microstrip, Inverted Microstrip, Stripline, Slotline, Finline, and Coplanar Waveguide Circuits on Anisotropic Substrates
- ❑ Toward a Generalized Algorithm for the Modeling of the Dispersive Properties of Integrated Circuit Structures on Anisotropic Substrates



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Nambu, S.

- ☐ A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications (1985 [MCS])
- ☐ A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications (1985 [MWSYM])
- ☐ A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications (Dec. 1985 [T-MTT])

Namordi, M.R.

- ☐ A 3-Bit GaAs Analog-to-Digital Converter

Nannicini, M.

- ☐ Temperature Controlled Predistortion Circuits for 64 QAM Microwave Power Amplifiers

Narasimhan, S.

- ☐ A Complete GaAs MESFET Computer Model for SPICE (Short Papers)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Neikirk, D.P.

- ☐ Analysis of Multilayer Interconnection Lines for a High-Speed Digital Integrated Circuit
- ☐ Imaging Polarimeter Arrays for Near-Millimeter Waves
- ☐ Polarization-Sensitive Imaging Arrays

Nelson, S.R.

- ☐ Design and Process Sensitivity of a Two Stage 6-18 GHz Monolithic Feedback Amplifier (1985 [MCS])
- ☐ Design and Process Sensitivity of a Two-Stage 6--18-GHz Monolithic Feedback Amplifier (Dec. 1985 [T-MTT])

Nelson, T.M.

- ☐ Investigation and Evaluation of Low Loss Interconnects on Soft Substrates Clad to Aluminum

Nelson, W.W.

- ☐ High Volume, Low Cost, MMIC Receiver Front End

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Nemoto, Y.

- ☐ Graph Transformations of Nonuniform Coupled Transmission Line Networks and Their Application (Short Papers)
- ☐ Impedance Transformation and Matching for Lumped Complex Load with Nonuniform Transmission Line
- ☐ Two-Port Equivalent Circuits of Two-Wire Parabolic Tapered Coupled Transmission Lines

Nesbit, G.H.

- ☐ A W-Band Monolithic GaAs PIN Diode Switch
- ☐ EHF Solid State Amplifier

Ness, J.

- ☐ Broad-Band Permittivity Measurements Using the Semi-Automatic Network Analyzer (Short Papers)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Neuhaus, B.

- ☐ [Average SAR and SAR Distributions in Man Exposed to 450-MHz Radiofrequency Radiation](#)

Nevels, R.D.

- ☐ [The Annular Slot Antenna in a Lossy Biological Medium \(Short Papers\)](#)

Newman, P.F.

- ☐ [A 3-Bit GaAs Analog-to-Digital Converter](#)

Newton, S.A.

- ☐ [Optical Fiber Delay-Line Signal Processing](#)

Ney, M.M.

- ☐ [Method of Moments as Applied to Electromagnetic Problems](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Nguyen, C.

- ☐ [Analysis and Design of Spurline Bandstop Filters](#)
- ☐ [Design and Performance of a W-Band Broadband Finline Diplexer with Over 20 GHz Bandwidth](#)
- ☐ [On the Analysis and Design of Spurline Bandstop Filters](#)

Nicholas, J.M.C.

- ☐ [A Novel MMIC X-Band Phase Shifter](#)
- ☐ [A Novel MMIC, X-Band, Phase Shifter](#)

Nichols, A.

- ☐ [36.0 - 40.0 GHz HEMT Low Noise Amplifier](#)

Nicholson, D.

- ☐ [A High Performance Hexagonal Ferrite Tunable Bandpass Filter for the 40-60 GHz Region](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Niclas, K.B.

- ☐ [Active Matching with Common-Gate MESFET's](#)
- ☐ [Multi-Octave Performance of Single-Ended Microwave Solid-State Amplifiers](#)
- ☐ [Reflective Match, Lossy Match, Feedback and Distributed Amplifiers: A Comparison of Multi-Octave Performance Characteristics](#)
- ☐ [The Microstrip Open-Ring Resonator \(Comments\)](#)

Niehenke, E.C.

- ☐ [Linear Analog Hyperabrupt Varactor Diode Phase Shifters](#)

Nightingale, S.J.

- ☐ [A 30 GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element \(1985 \[MCS\]\)](#)
- ☐ [A 30 GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element \(1985 \[MWSYM\]\)](#)

Click on title for a paper summary.



Papers by Author

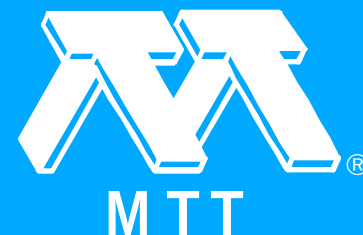
- ❑ [A 30-GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element](#)
- ❑ [The Design and Performance of a Double Balanced Mixer Using FETs](#)

Niizaki, N.

- ❑ [Small Size VCO Module for 900 MHz Band Using Coupled Microstrip-Coplanar Lines](#)

Nikawa, Y.

- ❑ [Development and Testing of a 2450-MHz Lens Applicator for Localized Microwave Hyperthermia \(Short Papers\)](#)
- ❑ [Direct Contact Applicator with Convergent Effect of EM Field for Microwave Hypertrermia](#)
- ❑ [Microwave Heating System Using Lens Applicator for Localized Hyperthermia](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Nimtz, G.

- ☐ [On the Nonthermal Microwave Response of Drosophila Melanogaster \(Short Papers\)](#)

Niori, M.

- ☐ [A 20 GHz Peltier-Cooled Low Noise HEMT Amplifier](#)

Nishida, S.

- ☐ [Design of Nonradiative Dielectric Waveguide Filter](#)
- ☐ [Design of Nonradiative Dielectric Waveguide Filters \(Corrections\)](#)
- ☐ [Design of Nonradiative Dielectric Waveguide Filters \(Short Papers\)](#)
- ☐ [Loss Measurements of Nonradiative Dielectric Waveguide \(Special Papers\)](#)
- ☐ [Nonradiative Dielectric Waveguide T-Junctions for Millimeter-Wave Applications \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

- ☐ [Vector Analyses of Propagation Constants in Dielectric Optical Waveguides with Perturbed Refractive-Index Profile](#)

Nishikawa, T.

- ☐ [800 MHz Band Channel Dropping Filter Using TM/sub 010/ Mode Dielectric Resonator](#)
- ☐ [800 MHz Band Dielectric Channel Dropping Filter Using TM/sub 110/ Triple Mode Resonance](#)

Nishio, K.

- ☐ [Dispersion Characteristics of Twisted Rectangular Waveguides](#)

Nogi, S.

- ☐ [Locking Behavior of a Microwave Multiple-Device Ladder Oscillator](#)

Nordman, J.E.

- ☐ [MESFET Distributed Amplifier Design Guidelines](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Norris, C.S.

- ☐ [Microstrip Spiral Antenna for Local Hyperthermia](#)

Nunotani, T.

- ☐ [Short Millimeter Wave Region High Accuracy Power Meter with Self-Calibration Function](#)

Nuspl, P.

- ☐ [Fabrication of Low Power, High-Speed GaAs LSI On-Board Baseband Switching Matrix](#)

Nyquist, D.P.

- ☐ [Integral Formulation for Analysis of Integrated Dielectric Waveguides](#)

O'Connell, M.R.

- ☐ [A 3-Bit GaAs Analog-to-Digital Converter](#)

Click on title for a paper summary.



Papers by Author



Contents

Authors

Oakes, J.G.

- ❑ [Phase Shifts in Single- and Dual-Gate GaAs MESFET's for 2-4-GHz Quadrature Phase Shifters](#)

Obregon, J.

- ❑ [Definition of Nonlinear Reflection Coefficient of a Microwave Device Using Describing Function Formalism \(Short Papers\)](#)

Ogawa, H.

- ❑ [A 26-GHz High Performance MIC Transmitter/Receiver for Digital Radio Subscriber Systems \(1984 \[MWSYM\]\)](#)
- ❑ [A 26-GHz High-Performance MIC Transmitter/Receiver for Digital Radio Subscriber Systems \(Dec. 1984 \[T-MTT\]\)](#)
- ❑ [A Novel K-Band Balanced FET Up-Converter](#)
- ❑ [New MIC Power Dividers Using Coupled Microstrip-Slot Lines: Two-Sided MIC Power Dividers](#)
- ❑ [Planar MMIC Hybrid Circuit and Frequency Converter](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Ogawa, M.

- ☐ [A Low Noise AiGaAs/GaAs FET with P/sup +/-Gate and Selectively Doped Structure](#)

Oggionni, F.

- ☐ [Temperature Controlled Predistortion Circuits for 64 QAM Microwave Power Amplifiers](#)

Ogusu, K.

- ☐ [Dielectric Waveguide Corner and Power Divider with a Metallic Reflector \(Short Papers\)](#)
- ☐ [Experimental Study of Dielectric Waveguide Y-Junctions for Millimeter-Wave Integrated Circuits](#)

Oh-ishi, H.

- ☐ [A Three-Band Microwave Radiometer for Noninvasive Temperature Measurement](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Ohata, K.

- ☐ A Low Noise AlGaAs/GaAs FET with P/sup +/-Gate and Selectively Doped Structure
- ☐ Low Noise Amplifiers Using Two Dimensional Electron Gas FETs

Ohkawa, S.

- ☐ Boundary Element Method Approach Magnetostatic Wave Problems
- ☐ Edge-Guided Magnetostatic Mode in a Ridged-Type Waveguide (Short Papers)

Ohke, H.

- ☐ Low Noise Microwave HIFET Using MOCVD

Ohnishi, H.

- ☐ S- and X-Band GaAs FET Mixers with Thin-Film Lumped Elements (Short Papers)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Ohwada, K.

- ❑ Design and Performance of Monolithic GaAs Direct-Coupled Preamplifiers and Main Amplifiers
- ❑ GaAs Ultra High Frequency Dividers with Advanced SAINT FETs (1986 [MCS])

Oishi, T.

- ❑ Stokes Vector Representation of the Six-Port Network Analyzer: Calibration and Measurement

Okubo, N.

- ❑ A 6-GHz 80-W GaAs FET Amplifier with a TM-Mode Cavity Power Combiner

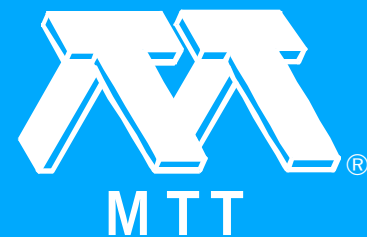
Okwit, S.

- ❑ An Historical View of the Evolution of Low-Noise Concepts and Techniques

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Oliner, A.A.

- ☐ [A Novel Cavity Resonator Measurement Method for Leaky Waveguides](#)
- ☐ [Historical Perspectives on Microwave Field Theory](#)
- ☐ [Leakage from a Gap in NRD Guide](#)
- ☐ [Microwave Network Analysis of a Leaky-Wave Structure in Non-Radiative Dielectric Waveguide](#)
- ☐ [Simple and Accurate Expression for the Dominant Mode Properties of Open Groove Guide](#)
- ☐ [The Dominant Mode Properties of Open Groove Guide: An Improved Solution](#)

Ollivon, M.R.

- ☐ [Dynamic Measurements of Complex Permittivity and Temperature During Microwave Heating](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Omar, A.S.

- ☐ Formulation of the Singular Integral Equation Technique for General Planar Transmission Lines
- ☐ Formulation of the Singular Integral Equation Technique for Planar Transmission Lines
- ☐ Scattering by Dielectric Obstacles Inside Guiding Structures
- ☐ Space Domain Decoupling of LSE and LSM Fields in Generalized Planar Guiding Structures
- ☐ Space-Domain Decoupling of LSE and LSM Fields in Generalized Planar Guiding Structures
- ☐ Transmission Matrix Representation of Finline Discontinuities
- ☐ Transmission-Matrix Representation of Fin-Line Discontinuities

Ondria, J.

- ☐ Wideband Electronically Tunable GaAs Gunn VCO's at W-Band (75-110GHz)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Orlok, H.-J.

- ❑ [Field Theory Design of Rectangular Waveguide Broad-Wall Metal-Insert Slot Couplers for Millimeter-Wave Applications](#)

Orr, J.

- ❑ [A Stable 2-26.5 GHz Two-Stage Dual-Gate Distributed MMIC Amplifier](#)

Osafune, K.

- ❑ [A Low-Noise GaAs Monolithic Broad-Band Amplifier Using a Drain Current Saving Technique \(Short Papers\)](#)
- ❑ [GaAs Ultra High Frequency Dividers with Advanced SAINT FETs \(1986 \[MCS\]\)](#)

Osepchuk, J.M.

- ❑ [A History of Microwave Heating Applications](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Overfelt, P.L.

- ☐ [Integration Method of Measuring Q of the Microwave Resonators \(Further Comments\)](#)

Owada, K.

- ☐ [Planar MMIC Hybrid Circuit and Frequency Converter](#)

Owens, J.M.

- ☐ [Passive Magnetostatic Wave Pulse Compression Loop](#)
- ☐ [Session 20 Introduction \(1984 \[MWSYM\]\)](#)
- ☐ [YIG Oscillators: Is a Planar Geometry Better?](#)
- ☐ [YIG Oscillators: Is a Planar Geometry Better? \(Short Papers\)](#)

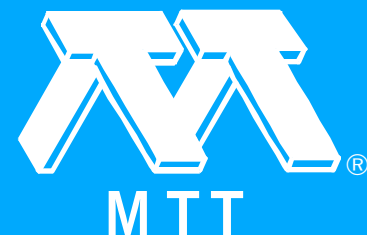
Oxley, T.H.

- ☐ [A Review of the Panel Discussion on Advances in Millimeter-Wave Subsystems](#)
- ☐ [Millimeter-Wave Hybrid Microstrip Subsystems](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Ozeki, S.

- ☐ [A New Method for the Modal Analysis Having Symmetrically Distributed of Optical Fibers Multiple Cores](#)

Packard, K.S.

- ☐ [The Origin of Waveguides: A Case of Multiple Rediscovery](#)

Paglione, R.W.

- ☐ [A Microwave Apparatus for Producing Uniform Hyperthermic Temperatures Over Large Surfaces](#)
- ☐ [Enhancing the Efficacy of Localized Thermotherapy by Monitoring Changes in Tumor Blood Flow](#)

Pal, B.B.

- ☐ [Optimum Design of a Potentially Dispersion-Free Helical Slow-Wave Circuit of a Broad-Band TWT \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Palamateer, S.C.

- ☐ [A 30-GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element](#)

Palmateer, S.C.

- ☐ [A 30 GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element \(1985 \[MCS\]\)](#)
- ☐ [A 30 GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element \(1985 \[MWSYM\]\)](#)

Panasik, C.M.

- ☐ [A 16 Tap Hybrid Programmable Transversal Filter Using Monolithic GaAs Dual-Gate FET Array](#)

Pantoja, F.R.

- ☐ [Homodyne and Heterodyne Studies of GaAs and InP Millimeter-Wave Gunn Mixers \(Short Papers\)](#)
- ☐ [Theoretical and Experimental Studies of Gain Compression of Millimeter-Wave Self-Oscillating Mixers](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Parisot, M.

- ❑ [Highly Accurate Design of Spiral Inductors for MMIC's with Small Size and High Cut-Off Frequency Characteristics \(1984 \[MWSYM\]\)](#)

Park, D.C.

- ❑ [Bandstop Filter Design Using a Dielectric Waveguide Grating](#)
- ❑ [Dielectric Waveguide Band-Pass Filters with Broad Stop Bands](#)
- ❑ [Dielectric Waveguide Grating Design for Bandstop and Bandpass Filter Applications](#)

Parmon, W.

- ❑ [The Inverse Problem for Biaxial Materials](#)

Pasquet, D.

- ❑ [Optical Effects on the Static and Dynamic Characteristics of a GaAs MESFET \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Patela, S.

- ❑ [Acoustooptic Interaction of Acoustic Surface Waves with Guided Optical Waves in Planar Tantalum-Pentoxide Waveguides](#)

Paul, D.K.

- ❑ [Optimum Noise Measure Terminations for Microwave Transistor Amplifiers \(Short Papers\)](#)

Pauley, R.G.

- ❑ [Cost-Effective High Performance Monolithic X-Band Low Noise Amplifiers \(1986 \[MCS\]\)](#)
- ❑ [Production Technology for High-Yield, High-Performance GaAs Monolithic Amplifiers](#)

Pavio, A.M.

- ❑ [A 20--40-GHz Push--Push Dielectric Resonator Oscillator](#)
- ❑ [A 6.5--16-GHz Monolithic Power Amplifier Module](#)

Click on title for a paper summary.



Papers by Author

- ❑ A Miniaturized 6.5 - 16 GHz Monolithic Power Amplifier Module
- ❑ A Solid-State 2-10 GHz 1 Watt TWT Replacement Amplifier
- ❑ An 18-40 GHz Double Balanced Microstrip Mixer
- ❑ Push-Push Dielectric Resonator Oscillator

Pavio, Jr., A.M.

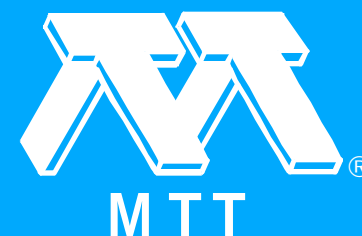
- ❑ A GaAs FET Model for Large-Signal Applications

Pavlasek, T.J.F.

- ❑ Measurements of the Photo-Induced Complex Permittivity of Si, Ge, and Te at 9 GHz

Pavlidis, D.

- ❑ Highly Accurate Design of Spiral Inductors for MMIC's with Small Size and High Cut-Off Frequency Characteristics (1984 [MWSYM])



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Peebles, W.A.

- ☐ [Imaging Polarimeter Arrays for Near-Millimeter Waves](#)
- ☐ [Polarization-Sensitive Imaging Arrays](#)

Pelka, P.

- ☐ [Miniature Ceramic Circuit Components for Ku Band Receivers](#)

Peng, S.T.

- ☐ [Leakage from a Gap in NRD Guide](#)
- ☐ [Scattering of Surface Waves by Nonuniform Waveguides](#)
- ☐ [Wave Interaction in Doubly Periodic Structures](#)

Perelli, S.J.

- ☐ [A 6 Watt 6 GHz GaAsFET Power Module with GaAs Matching Circuits](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Perez, F.

- ☐ [Graphic Design of Matching and Interstage Lossy Networks for Microwave Transistor Amplifier](#)

Perez, J.

- ☐ [Analysis of Dielectric Resonators with Tuning Screw and Supporting Structure \(1985 \[MWSYM\]\)](#)

Perini, J.

- ☐ [Multiple-Post Inductive Obstacles in Rectangular Waveguide](#)
- ☐ [Single-Post Inductive Obstacle in Rectangular Waveguide \(Reply to Comments\)](#)

Perkins, III, T.O.

- ☐ [A Low Cost, Accurate, Target Detecting Device for Altimetry and Fuzing](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Perks, G.

- ☐ [Quasi-Optical Slot Ring Mixer Noise Figure Measurements](#)

Perlman, B.S.

- ☐ [Session 23 Introduction \(1984 \[MWSYM\]\)](#)

Perlow, S.

- ☐ [MIDAS a New Microwave/RF CAD Program](#)

Perlow, S.M.

- ☐ [The Interdigitated Three-Strip Coupler \(Short Papers\)](#)

Peronnet, G.

- ☐ [Microwave Diffraction Tomography for Biomedical Applications \(Further Comments\)](#)

Peterson, D.F.

- ☐ [Efficient, Broadband Circuit Performance of Millimeter-Wave IMPATT-Diode Power Amplifiers](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Peterson, D.L.

- ☐ [A GaAs FET Model for Large-Signal Applications](#)

Pham, T.

- ☐ [W-Band \(75 to 110 GHz\) Microstrip Components \(1985 \[MWSYM\]\)](#)
- ☐ [W-Band \(75-110 GHz\) Microstrip Components \(Dec. 1985 \[T-MTT\]\)](#)
- ☐ [W-Band Broadband Integrated Circuit Receiver](#)

Pic, E.

- ☐ [New Analysis of Semiconductor Isolators: The Modified Spectral Domain Analysis \(Short Papers\)](#)

Pichot, C.

- ☐ [Microwave Diffraction Tomography for Biomedical Applications \(Further Comments\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Pickard, W.F.

- ☐ [The Absence of Significant Short-Term Electromagnetic Bioeffects in Giant Algal Cells Exposed to CW and Pulse-Modulated X-Band Bursts](#)

Pickett, H.M.

- ☐ [Characterization of a Dual-Mode Horn for Submillimeter Wavelengths \(Short Papers\)](#)

Picon, O.

- ☐ [Theoretical of and Experimental Investigation Finline Discontinuities](#)

Pierro, J.

- ☐ [A 22--24-GHz Cryogenically Cooled GaAs FET Amplifier](#)

Pierzina, R.

- ☐ [Power Increase of Pulsed Millimeter-Wave IMPATT Diodes \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Pinto, I.

- ☐ [Cell Membrane Nonlinear Response to an Applied Electromagnetic Field](#)

Piotrowski, J.K.

- ☐ [Accurate and Simple Formulas for Dispersion in Fin-Lines](#)
- ☐ [Synthesis of Optimum Finline Tapers Using Dispersion Formulas for Arbitrary Slot Widths and Locations](#)

Piotrowski, W.

- ☐ [W-Band \(75 to 110 GHz\) Microstrip Components \(1985 \[MWSYM\]\)](#)

Piotrowski, W.S.

- ☐ [W-Band \(75-110 GHz\) Microstrip Components \(Dec. 1985 \[T-MTT\]\)](#)

Plambeck, R.L.

- ☐ [A Continuously Tunable 65--115-GHz Gunn Oscillator](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Pley, M.

- ☐ [A Ku-Band Contiguous Multiplexer Employing Low-Loss, Odd-Order, Mixed Dual-Triple Mode Cavity Filters](#)

Podcameni, A.

- ☐ [A New Approach for the Design of Microwave and Filters Using Dielectric Oscillators Resonators](#)
- ☐ [Design of Microwave Oscillators and Filters Using Transmission-Mode Dielectric Resonators Coupled to Microstrip Lines](#)

Podell, A.F.

- ☐ [High Volume, Low Cost, MMIC Receiver Front End](#)

Pombo, J.L.

- ☐ [The Dynamical Behavior of a Single-Mode Optical Fiber Strain Gage \(Correction to Comments\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Pomian, R.J.

- ☐ [Integrated Ka-Band Front End with Monolithic Mixer](#)

Ponchak, G.E.

- ☐ [An Experimental Investigation of Microstrip Properties on Soft Substrates from 2 to 40 GHz](#)

Poole, C.R.

- ☐ [Optimum Noise Measure Terminations for Microwave Transistor Amplifiers \(Short Papers\)](#)

Pospieszalski, M.

- ☐ [A Composite, Multilayered Cylindrical Dielectric Resonator](#)
- ☐ [X-Band Noise Parameters of HEMT Devices at 300K and 12.5K](#)

Pouvil, P.

- ☐ [Optical Effects on the Static and Dynamic Characteristics of a GaAs MESFET \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Powell, W.

- ☐ [A High Speed GaAs Monolithic Transimpedance Amplifier](#)

Pozar, D.M.

- ☐ [Full-Wave Analysis of Microstrip Open-End and Gap Discontinuities](#)
- ☐ [Surface Wave Losses at Discontinuities in Millimeter Wave Integrated Transmission Lines](#)

Pramanick, P.

- ☐ [A New Microstrip Dispersion Model \(Short Papers\)](#)
- ☐ [Accurate Analysis Equations and Synthesis Technique for Unilateral Fines](#)
- ☐ [Analysis and Synthesis of Tapered Fin-Lines](#)
- ☐ [CAD Models for Millimeter-Wave Suspended Substrate Microstrip Lines and Fin-Lines](#)
- ☐ [Computer-Aided Design Models for Millimeter-Wave Fines and Suspended-Substrate Microstrip Lines](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Prasad, K.V.S.V.R.

- ☐ [Even- and Odd-Mode Impedances of Coupled Elliptic Arc Strips \(Short Papers\)](#)

Prasad, S.N.

- ☐ [MESFET Distributed Amplifier Design Guidelines](#)

Prata, Jr., A.

- ☐ [A High Performance - Wide Band - Diplexing - Tracking - Depolarization Correcting Satellite Communication Antenna Feed](#)

Predmore, C.R.

- ☐ [A Broad-Band, Ultra-Low-Noise Schottky Diode Receiver from 80 to 115 GHz Diode](#)
- ☐ [A Continuous Comparison at 97 GHz Radiometer](#)
- ☐ [A Continuous Comparison Radiometer at 97 GHz \(Corrections\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Pregla, R.

- ☐ [Hybrid-Mode Analysis of Arbitrarily Shaped Planar Microwave Structures by the Method of Lines](#)
- ☐ [The Method of Lines for the Analysis of Planar Waveguides with Magnetized Ferrite Substrate](#)

Presser, A.

- ☐ [A FET L-Band Phase/Amplitude Control Module](#)
- ☐ [The Interdigitated Three-Strip Coupler \(Short Papers\)](#)

Pribetich, P.

- ☐ [A Slot Antenna Radiating in Muscle](#)

Prim, A.

- ☐ [Biological Tissues Characterization at Microwave Frequencies \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Qian, J.-R.

- ☐ [New Narrow-Band Dual-Mode Bandstop Waveguide Filters \(Corrections\)](#)

Qiang, X.

- ☐ [MIC Assembly for 12-GHz Direct Broadcast Satellite Receiver](#)

Rabel, J.A.

- ☐ [140 and 220 GHz Ferrite Components](#)

Rademeyer, P.

- ☐ [A Method for Evaluating and the Evaluation of the Influence of the Reverse Transfer Gain on the Transducer Power Gain of Some Microwave Transistors \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Radojewski, J.

- ❑ [Acoustooptic Interaction of Acoustic Surface Waves with Guided Optical Waves in Planar Tantalum-Pentoxide Waveguides](#)

Ragonese, L.J.

- ❑ [GaAs Phase-Coherent Microwave Multiple-Signal Generation Using All-Pass Networks](#)

Rahman, B.M.A.

- ❑ [Finite-Element Analysis of Optical and Microwave Waveguide Problems](#)
- ❑ [Penalty Function Improvement of Waveguide Solution by Finite Elements](#)

Raisanen, A.V.

- ❑ [A Broad-Band, Ultra-Low-Noise Schottky Diode Receiver from 80 to 115 GHz Diode](#)

Click on title for a paper summary.



Papers by Author

- ❑ [A Simple Integrated Matching Element for SIS Quasiparticle Mixers](#)
- ❑ [Broad-Band RF Match to a Millimeter-Wave SIS Quasiparticle Mixer](#)

Ramadan, M.

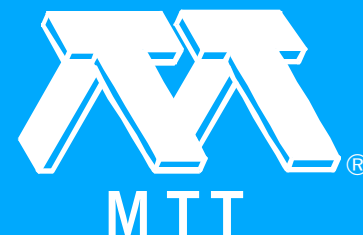
- ❑ [Analog Signals Transmission Over Optical Fiber Systems](#)

Rao, K.V.S.

- ❑ [Impedance of an Elliptic Conductor Arbitrarily Located Between Ground Planes Filled with Two Dielectric Media \(Short Papers\)](#)

Rao, S.M.

- ❑ [Analysis of Arbitrarily Oriented Microstrip Transmission Lines in Arbitrarily Shaped Dielectric Media Over a Finite Ground Plane](#)
- ❑ [Analysis of Finite Conductivity Cylindrical Conductors Excited by Axially-Independent TM Electromagnetic Field](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author

- ☐ [The Electrostatic Field of Conducting Bodies in Multiple Dielectric Media](#)

Raskmark, P.

- ☐ [Focused Electromagnetic Heating of Muscle Tissue \(Short Papers\)](#)

Raue, J.E.

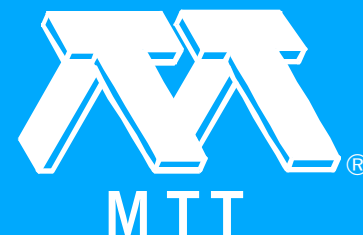
- ☐ [Session 16 Introduction \(1984 \[MWSYM\]\)](#)

Rauscher, C.

- ☐ [Distributed Microwave Active Filters with GaAs FETs](#)
- ☐ [Microwave Active Filters Based on Transversal and Recursive Principles](#)
- ☐ [Regenerative Frequency Division with a GaAs FET](#)

Ravfogel, M.

- ☐ [Microwave Point Contact Diode Responsivity Improvement through Surface Effects in Vacuum \(Short Papers\)](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Ravichandran, M.S.

- ☐ [Up/Down Converter for SCPC Applications](#)

Ray, S.

- ☐ [Monolithic Optoelectronic Receiver for Gbit Operation](#)

Read, M.E.

- ☐ [A Technique to Identify Electromagnetic Modes in Oversize Waveguides \(Short Papers\)](#)

Rebollar, J.M.

- ☐ [Convergence of Numerical Solutions of Open-Ended Waveguide by Modal Analysis and Hybrid Modal-Spectral Techniques \(1985 \[MWSYM\]\)](#)

Redd, J.

- ☐ [Miniature Band Reject Filters Applications for Satellite](#)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Reddy, A.K.

- ☐ [Collinearly Excited Edge Coupled Resonators](#)

Reed, K.W.

- ☐ [Collinearly Excited Edge Coupled Resonators](#)

Rettig, J.B.

- ☐ [A SPICE Model for Multiple Coupled Microstrips and Other Transmission Lines \(1985 \[MWSYM\]\)](#)
- ☐ [A SPICE Model for Multiple Coupled Microstrips and Other Transmission Lines \(Dec. 1985 \[T-MTT\]\)](#)

Reynolds, Jr., L.D.

- ☐ [2--20-GHz GaAs Traveling-Wave Amplifier](#)

Reynolds, L.D.

- ☐ [2--20-GHz GaAs Traveling-Wave Power Amplifier \(Mar. 1984 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Rhee, M.J.

- ☐ [Direct DC to RF Conversion by Picosecond Optoelectronic Switching](#)
- ☐ [Optoelectronic Techniques for Microwave and Millimeter-Wave Applications](#)

Rhodes, D.

- ☐ [MIDAS a New Microwave/RF CAD Program](#)

Rhyne, G.W.

- ☐ [A New Frequency Domain Approach to the Analysis of Nonlinear Microwave Circuits](#)

Riaziat, M.

- ☐ [Waveguide Star Junction Used in Ka Band Dual Six Port Measurements](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Riblet, G.P.

- ☐ [Some Properties of the Matched, Symmetrical Six-Port Junction](#)
- ☐ [Use of the FFT to Speed Analysis of Planar Symmetrical 3- and 5-Ports by the Integral Equation Method](#)

Richards, P.L.

- ☐ [A Simple Integrated Matching Element for SIS Quasiparticle Mixers](#)
- ☐ [Broad-Band RF Match to a Millimeter-Wave SIS Quasiparticle Mixer](#)

Richmond, M.R.

- ☐ [A Low Cost, Accurate, Target Detecting Device for Altimetry and Fuzing](#)

Riddle, A.N.

- ☐ [A New Method of Reducing Phase Noise in GaAs FET Oscillators](#)

Click on title for a paper summary.



Papers by Author

- ❑ [A Novel GaAs FET Oscillator with Low Phase Noise](#)

Ring, C.

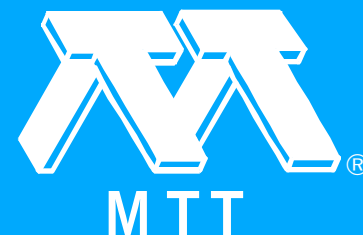
- ❑ [A High Speed GaAs Monolithic Transimpedance Amplifier](#)

Rizzoli, V.

- ❑ [A CAD Solution to the Generalized Problem of Noise Figure Calculation](#)
- ❑ [Computer-Aided Noise Analysis of Linear Multiport Networks of Arbitrary Topology](#)
- ❑ [General Stability Analysis of Periodic Steady-State Regimes in Nonlinear Microwave Circuits](#)

Roberts, Jr., N.J.

- ❑ [Exposure of Human Mononuclear Leukocytes to Microwave Energy Pulse-Modulated at 16 or 60 Hz](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Robertson, R.S.

- ☐ [Controlled Bias Preheating for Variable Duty Factor IMPATT Transmitter](#)

Robinson, L.C.

- ☐ [A 125--260-GHz Gyrotron](#)

Rodrigue, G.P.

- ☐ [The Application of Planar Anisotropy to Millimeter-Wave Ferrite Phase Shifters](#)

Rohdin, H.

- ☐ [A Study of the Relation Between Device Low-Frequency Noise and Oscillator Phase Noise for GaAs MESFETs](#)

Rolla, P.A.

- ☐ [A Method for Dielectric Loss Measurements by a Microwave Cavity in Fixed Resonance Condition](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Rolland, P.A.

- ☐ [GaAs Monolithic Transferred-Electron Devices for Millimeter Wave Applications](#)

Romanofsky, R.R.

- ☐ [An Experimental Investigation of Microstrip Properties on Soft Substrates from 2 to 40 GHz](#)

Rosen, A.

- ☐ [Direct DC to RF Conversion by Picosecond Optoelectronic Switching](#)
- ☐ [Millimeter Wave Silicon Device and Integrated Circuit Technology](#)
- ☐ [Optically Controlled Microwave Devices and Circuits](#)
- ☐ [Optoelectronic Techniques for Microwave and Millimeter-Wave Applications](#)
- ☐ [Session 6 Introduction \(1984 \[MWSYM\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Rosenbaum, F.J.

- ☐ [Circuit Design to Reduce 3rd Order Intermodulation Distortion in FET Amplifiers](#)
- ☐ [Modeling of Nonlinear Distortion in GaAs MESFETs](#)
- ☐ [Nonreciprocal Effects in Semiconductor Loaded Waveguide at Millimeter Wavelengths](#)
- ☐ [The 1985 MTT-S International Microwave Symposium \(Dec. 1985 \[T-MTT\]\)](#)

Roy, R.P.

- ☐ [Microwave Characterization of Liquid Films](#)

Rubin, B.J.

- ☐ [The Propagation Characteristics of Signal Lines in a Mesh-Plane Environment](#)

Click on title for a paper summary.



Papers by Author



IEEE

[Contents](#)

[Authors](#)

Russer, P.

- ☐ [Silicon High Resistivity Substrate Millimeter-Wave Technology \(1986 \[MCS\]\)](#)

Ruth, B.

- ☐ [Calculation of TM/sub 0n/ Dispersion Relations in a Corrugated Cylindrical Waveguide](#)

Rutledge, D.B.

- ☐ [Approximation Techniques for Planar Periodic Structures](#)
- ☐ [Imaging Polarimeter Arrays for Near-Millimeter Waves](#)
- ☐ [Polarization-Sensitive Imaging Arrays](#)

Saad, A.M.K.

- ☐ [Novel Lowpass Harmonic Filters for Satellite Application](#)
- ☐ [Planar Integrated Microwave Components for Terrestrial and Satellite Application](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Saad, S.M.

- ☐ [On the Higher Order Modes of Elliptical Optical Fibers](#)
- ☐ [Review of Numerical Methods for the Analysis of Arbitrarily-Shaped Microwave and Optical Dielectric Waveguides](#)

Saad, T.S.

- ☐ [History of the Administrative Committee of the Microwave Theory and Techniques Society](#)
- ☐ [Introduction \(Sep. 1984 \[T-MTT\]\)](#)

Sagawa, M.

- ☐ [A Design Method of Bandpass Filters Using Dielectric-Filled Coaxial Resonators \(Short Papers\)](#)

Saha, P.K.

- ☐ [A Novel Rectangular Waveguide with Double T-Septums \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Sahalos, J.N.

- ☐ [On the Narrow-Band Microwave Filter Design Using a Dielectric Rod](#)

Saito, T.

- ☐ [A 20 GHz Peltier-Cooled Low Noise HEMT Amplifier](#)
- ☐ [A 6-GHz 80-W GaAs FET Amplifier with a TM-Mode Cavity Power Combiner](#)

Sakurai, T.

- ☐ [Magnetostatic Wave Delay Lines Using the Nonuniformly Magnetized YIG Film](#)

Salama, A.E.

- ☐ [Functional Approach to Microwave Postproduction Tuning](#)

Saleh, A.A.M.

- ☐ [Efficient, Linear Amplification of Varying-Envelope Signals Using FET's with Parabolic Transfer Characteristics](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Salmer, G.

- ☐ [Circuit Analysis and Design of Radial Pretuned Modules Used for Millimeter-Wave Oscillators](#)

Salvo, H.L.

- ☐ [Stable Microwave Source Using High Overtone Bulk Resonators](#)

Samulski, T.V.

- ☐ [Microstrip Spiral Antenna for Local Hyperthermia](#)

Sanchez, A.

- ☐ [A Circularly Polarized Active Antenna Array Using Miniature GaAs FET Amplifiers](#)
- ☐ [Microwave Network Analysis of a Leaky-Wave Structure in Non-Radiative Dielectric Waveguide](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Sannino, M.

- ❑ [Characterization of GaAs FET's in Terms of Noise, Gain, and Scattering Parameters through a Noise Parameter Test Set](#)

Sarkar, S.

- ❑ [On the Graceful Degradation Performance of Multiple-Device Oscillators \(Short Papers\)](#)

Sarkar, T.K.

- ❑ [Analysis of Arbitrarily Oriented Microstrip Transmission Lines in Arbitrarily Shaped Dielectric Media Over a Finite Ground Plane](#)
- ❑ [Analysis of Finite Conductivity Cylindrical Conductors Excited by Axially-Independent TM Electromagnetic Field](#)
- ❑ [Computation of Inductance of Simple Vias Between Two Striplines Above a Ground Plane \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ☐ Multiconductor Transmission Lines In Multilayered Dielectric Media
- ☐ The Electrostatic Field of Conducting Bodies in Multiple Dielectric Media

Sasaki, M.

- ☐ Short Millimeter Wave Region High Accuracy Power Meter with Self-Calibration Function

Sasaki, Y.

- ☐ A Ka-Band GaAs Power MMIC

Sato, R.

- ☐ Graph Transformations of Nonuniform Coupled Transmission Line Networks and Their Application (Short Papers)
- ☐ Impedance Transformation and Matching for Lumped Complex Load with Nonuniform Transmission Line

Click on title for a paper summary.



Papers by Author

- ❑ [Two-Port Equivalent Circuits of Two-Wire Parabolic Tapered Coupled Transmission Lines](#)

Saunier, P.

- ❑ [GaAs Dual-Gate FET for Operation up to K-Band](#)
- ❑ [Monolithic GaAs Dual-Gate FET Variable Power Amplifier Module](#)

Sawa, S.

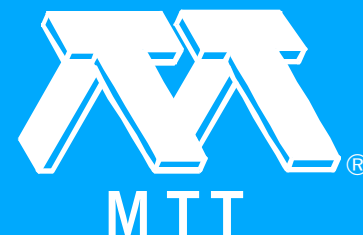
- ❑ [Analysis of Wave Propagation in Anisotropic Film Waveguides with Bent Optical Axes](#)

Sawires, R.

- ❑ [36.0 - 40.0 GHz HEMT Low Noise Amplifier](#)

Saylor, J.D.

- ❑ [A Feasibility Study to Monitor Using Microwave Soil Moisture Content Signals](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Schaller, G.

- ☐ [Microwave and Infrared Thermograms of Hot Spots in Tissue](#)

Schaubert, H.D.

- ☐ [Dispersion Characteristics for Wide Slotlines on Low-Permittivity Substrates \(Short Papers\)](#)

Scheitlin, D.

- ☐ [Single-Stage GaAs Monolithic Feedback Amplifiers \(Short Papers\)](#)

Schell, S.W.

- ☐ [140 and 220 GHz Ferrite Components](#)

Schellenberg, J.M.

- ☐ [A 30 GHz Low Noise FET Amplifier](#)
- ☐ [A 69 GHz Monolithic FET Oscillator \(1984 \[MWSYM\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ Production Technology Development for High Yield, High Performance X-Band Monolithic Power and Low Noise Amplifiers

Schieblich, C.

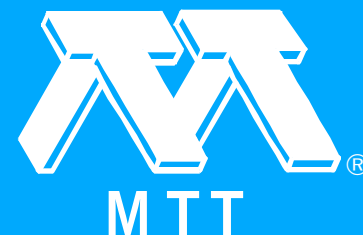
- ❑ Complete Determination of Circulator Eigenvalues With-Out Transmission Phase Measurement
- ❑ Synthesis of Optimum Fin-Line Tapers
- ❑ Synthesis of Optimum Finline Tapers Using Dispersion Formulas for Arbitrary Slot Widths and Locations

Schiebold, C.F.

- ❑ An Approach to Realizing Multi-Octave Performance in GaAs-FET YIG-Tuned Oscillators

Schiek, B.

- ❑ A Broadband Homodyne Network Analyser with Binary Phase Modulation



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author

- ❑ Analysis of Noise Upconversion in Microwave FET Oscillators

Schlosser, W.O.

- ❑ A 6 Watt 6 GHz GaAsFET Power Module with GaAs Matching Circuits

Schlosser, W.O.W.

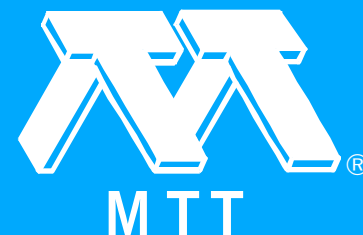
- ❑ Third-Order Nonlinearity of GaAs MESFET's

Schmitt, H.J.

- ❑ Optimized Microstrip Ring-Star 5-Ports for Broadband 6-Port Measurement Applications

Schneider, M.V.

- ❑ Noise Measurements and Noise Mechanisms in Microwave Mixer Diodes



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Schroder, N.

- ☐ Field Theory Design of Rectangular Waveguide Broad-Wall Metal-Insert Slot Couplers for Millimeter-Wave Applications

Schunemann, K.

- ☐ Formulation of the Singular Integral Equation Technique for General Planar Transmission Lines
- ☐ Formulation of the Singular Integral Equation Technique for Planar Transmission Lines
- ☐ Scattering by Dielectric Obstacles Inside Guiding Structures
- ☐ Space Domain Decoupling of LSE and LSM Fields in Generalized Planar Guiding Structures
- ☐ Space-Domain Decoupling of LSE and LSM Fields in Generalized Planar Guiding Structures
- ☐ Transmission Matrix Representation of Finline Discontinuities
- ☐ Transmission-Matrix Representation of Fin-Line Discontinuities

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Schwarz, S.E.

- ☐ [Reduction of Propagation Losses in Coplanar Waveguide](#)

Schweig, E.

- ☐ [Computer Analysis of Dielectric Waveguides: A Finite-Difference Method](#)

Schwelb, O.

- ☐ [Conservation Laws for Distributed Four-Ports \(Short Papers\)](#)

Schwering, F.K.

- ☐ [Foreword \(Oct. 1985 \[T-MTT\]\)](#)
- ☐ [Scattering of Surface Waves by Nonuniform Waveguides](#)

Scott, J.R.

- ☐ [A Simplified Microwave Model of the GaAs Dual-Gate MESFET](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Seashore, C.

- ☐ [94 GHz Planar GaAs Monolithic Balanced Mixer \(1984 \[MWSYM\]\)](#)

Sechi, F.

- ☐ [Miniature Ceramic Circuit Components for Ku Band Receivers](#)

Sechi, F.N.

- ☐ [Session 11 Introduction \(1984 \[MWSYM\]\)](#)

Seeds, A.J.

- ☐ [Optical Injection Locking of BARITT Oscillators \(Comments\)](#)

Seehausen, G.

- ☐ [24-GHz-FM-CW-Radar for Detection of Information for Traffic Purposes](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Sega, R.M.

- ☐ [Optimizing an Electromagnetic Field Sensor for Microwave Amplitude and Phase Detection via Fiber Optic Transmission Link](#)

Seguinot, C.

- ☐ [A Slot Antenna Radiating in Muscle](#)

Seino, K.

- ☐ [A 1 Watt 28 GHz Band Amplifier Using Clustered FETs](#)
- ☐ [A 1.5 Watt 28 GHz Band FET Amplifier](#)
- ☐ [A Ka-Band GaAs Power MMIC](#)

Seki, S.

- ☐ [Analysis of Crosstalk in Very High-Speed LSI/VLSI's Using a Coupled Multiconductor MIS Microstrip Line Model](#)
- ☐ [Analysis of Interconnection Delay on Very High-Speed LSI/VLSI Chips Using an MIS Microstrip Line Model](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Sekiguchi, T.

- ☐ [Attenuation Constants of UHF Radio Waves in Arched Tunnels \(Short Papers\)](#)

Sengupta, D.L.

- ☐ [Frequency Agile Circular Microstrip Antennas](#)

Sequeira, H.B.

- ☐ [Approach for Evaluating Effects of Wall Losses on Quarter-Wave Short-Circuit Impedance Standards](#)

Sethares, J.C.

- ☐ [Magnetostatic Forward Volume Wave Propagation--Finite Width \(Short Papers\)](#)

Sferrazza, J.

- ☐ [Dielectric Resonator Output Multiplexer for C-Band Satellite Applications](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Shaeffer, J.

- ☐ [Microwave Radiometric Detection of Thermal Asymmetry of Varicocele](#)

Shafai, L.

- ☐ [A Calibration Method for a Six-Port Reflectometer Which the Effect of Power Measurement Errors Minimizes](#)
- ☐ [Probe Mutual Impedance in a Rectangular Waveguide \(Short Papers\)](#)

Shah, A.V.

- ☐ [Step Response of Lossless Nonuniform Transmission Lines with Power-Law Characteristic Impedance Function \(Short Papers\)](#)

Shaoshi, Z.

- ☐ [MIC Assembly for 12-GHz Direct Broadcast Satellite Receiver](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Sharma, A.

- ☐ [Scalar Variational Analysis of Single-Mode Waveguides with Rectangular Cross Section \(Short Papers\)](#)

Sharma, A.K.

- ☐ [Spectral Domain Analysis of an Elliptic Microstrip Ring Resonator \(Short Papers\)](#)

Sharma, P.C.

- ☐ [An Alternative Procedure for Implementing the Desegmentation Method](#)

Sharp, J.

- ☐ [Adjustment of In-Phase Mode in Circulators Using Turnstile Junctions \(Short Papers\)](#)

Shau, D.-H.

- ☐ [Numerical Study of the Current Distribution on a Post in a Rectangular Waveguide \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Shaw, H.J.

- ☐ [Optical Fiber Delay-Line Signal Processing](#)

Sheng, K.M.

- ☐ [Leakage from a Gap in NRD Guide](#)

Shenggen, P.

- ☐ [On the Question of the Dyadic Operation of Dyadic Green's Functions at the Source Region](#)

Shenoy, M.R.

- ☐ [Modes in Anisotropic Rectangular Waveguides: An Accurate and Simple Perturbation Approach \(Short Papers\)](#)

Shepherd, P.R.

- ☐ [Modeling and Measurement of Microstrip Transmission-Line Structures](#)
- ☐ [Modelling and Measurement of Microstrip Transmission Line Structures](#)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Shepherd, S.G.

- ☐ [Stable Microwave Source Using High Overtone Bulk Resonators](#)

Shibata, H.

- ☐ [Characteristic Impedance of the Slab Line with an Anisotropic Dielectric \(Short Papers\)](#)
- ☐ [Characteristics of Transmission Lines with a Single Wire for a Multiwire Circuit Board](#)

Shibata, K.

- ☐ [Broadband HEMT and GaAs FET Amplifiers for 18 - 26.5 GHz](#)

Shigesawa, H.

- ☐ [Analytical and Experimental Investigations on Several Resonant Modes in Open Dielectric Resonators](#)

Click on title for a paper summary.

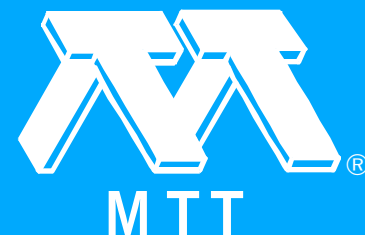


Papers by Author

- ❑ Microwave Network Representation of Discontinuity in Open Dielectric Waveguides and its Applications to Periodic Structures
- ❑ Mode Propagation through a Step Discontinuity in Dielectric Planar Waveguide (1984 [MWSYM])
- ❑ Two-Path Cutoff Waveguide Dielectric Resonator Filters (1985 [MWSYM])

Shih, H.D.

- ❑ A 2-W Ku-Band Monolithic GaAs FET Amplifier
- ❑ High Efficiency Millimeter Wave Monolithic IMPATT Oscillators (1985 [MCS])
- ❑ High Efficiency Millimeter Wave Monolithic IMPATT Oscillators (1985 [MWSYM])
- ❑ High Power Distributed Amplifier Using MBE Synthesized Material



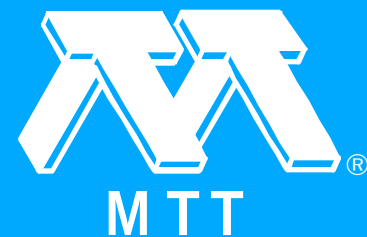
Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Shih, I.

- ❑ [Measurements of the Photo-Induced Complex Permittivity of Si, Ge, and Te at 9 GHz](#)

Shih, Y.-C.

- ❑ [Comparative Study of Mode-Matching Formulations for Microstrip Discontinuity Problems \(Oct. 1985 \[T-MTT\]\)](#)
- ❑ [Design of Waveguide E-Plane Filters with All-Metal Inserts](#)
- ❑ [Millimeter-Wave Diplexers with Printed Circuit Elements \(Dec. 1985 \[T-MTT\]\)](#)
- ❑ [Scattering Parameters of Axial Inductive Strips in Rectangular Waveguide](#)

Shih, Y.C.

- ❑ [Analysis and Design of Evanescent-Mode Waveguide Dielectric Resonator Filters](#)
- ❑ [Comparative Study of Mode Matching Formulations for Microstrip Discontinuity Problems \(1985 \[MWSYM\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ Millimeter-Wave Diplexers with Printed Circuit Elements (1985 [MWSYM])

Shima, T.

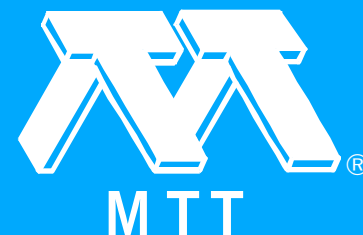
- ❑ Novel GaAs FET Phase Detector Operable to Ka Band

Shimabukuro, F.I.

- ❑ A Quasi-Optical Method for Measuring the Complex Permittivity of Materials
- ❑ Measurement of the Complex Dielectric Constant of Casting Resins at Millimeter Wavelengths Low-Loss
- ❑ Quasi-Optical Method for Measuring the Complex Permittivity of Materials (Corrections)

Shimazu, Y.

- ❑ A 2 Gb/s Throughput GaAs Digital Time Switch LSI Using LSCFL (1985 [MCS])
- ❑ A 2 Gb/s Throughput GaAs Digital Time Switch LSI Using LSCFL (Dec. 1985 [T-MTT])



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Shin, J.

- ☐ [A Dual Six-Port Automatic Network Analyzer and its Performance \(Short Papers\)](#)
- ☐ [A Dual Six-Port Automatic Network Analyzer and its Performance Tests](#)

Shinozaki, S.

- ☐ [Si Monolithic Microwave Prescaler](#)

Shirotori, K.

- ☐ [0.5-2.6GHz Si-Monolithic Wideband Amplifier IC \(1985 \[MCS\]\)](#)
- ☐ [0.5-2.6GHz Si-Monolithic Wideband Amplifier IC \(1985 \[MWSYM\]\)](#)

Sholley, M.

- ☐ [36.0 - 40.0 GHz HEMT Low Noise Amplifier](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Shu, E.

- ❑ [Effect of Inner Conductor Offset in a Coplanar Waveguide \(Short Papers\)](#)

Siegel, P.H.

- ❑ [A Comparison of the Measured and Theoretical Performance of a 140-220 GHz Schottky Diode Mixer](#)
- ❑ [The Measured and Computed Performance of a 140--220 GHz Schottky Diode Mixer](#)

Silbermann, A.

- ❑ [Characteristics of Metal-Insulator-Semiconductor Coplanar Waveguides for Monolithic Microwave Circuits](#)

Sillars, D.B.

- ❑ [Millimetric Non-Reciprocal Coupled-Slot Fin-Line Components](#)

Click on title for a paper summary.



Papers by Author

Simons, R.N.

- ☐ [Broadside-Coupled Slot-Line Field Components \(Short Papers\)](#)

Simonutti, M.D.

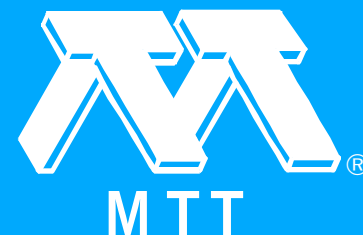
- ☐ [A Wideband 60 GHz 16-Way Power Divider/Combiner Network](#)

Singh, V.N.

- ☐ [Optimum Design of a Potentially Dispersion-Free Helical Slow-Wave Circuit of a Broad-Band TWT \(Short Papers\)](#)

Sipila, M.T.A.

- ☐ [Double-Plane Steps in Rectangular Waveguides and Their Application for Transformers, Irises, and Filters \(Comments\)](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Siracusa, M.

- ☐ [Production Technology Development for High Yield, High Performance X-Band Monolithic Power and Low Noise Amplifiers](#)
- ☐ [Production Technology for High-Yield, High-Performance GaAs Monolithic Amplifiers](#)

Siu, D.

- ☐ [Dielectric Resonator Output Multiplexer for C-Band Satellite Applications](#)

Siweris, H.J.

- ☐ [Analysis of Noise Upconversion in Microwave FET Oscillators](#)

Slaney, M.

- ☐ [Limitations of Imaging with First-Order Diffraction Tomography](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Smilowitz, B.

- ☐ [High Speed Varactor Tuned Notch Filter](#)
- ☐ [Octave-Band High Precision Balanced Modulator](#)

Smith, C.E.

- ☐ [Microstrip Transmission Line with Finite-Width Dielectric and Ground Plane \(Short Papers\)](#)

Smith, C.S.

- ☐ [Radiometric Technique for Measuring Changes in Lung Water \(Short Papers\)](#)

Smith, D.

- ☐ [A 12-Channel Contiguous Band Multiplexer for Satellite Application](#)

Smith, G.S.

- ☐ [Limitations on the Size of Miniature Electric-Field Probes](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Smith, M.A.

- ☐ [A 20--40-GHz Push--Push Dielectric Resonator Oscillator](#)
- ☐ [An 18-40 GHz Double Balanced Microstrip Mixer](#)
- ☐ [Push-Push Dielectric Resonator Oscillator](#)

Smith, P.M.

- ☐ [A 30 GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element \(1985 \[MCS\]\)](#)
- ☐ [A 30 GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element \(1985 \[MWSYM\]\)](#)
- ☐ [A 30-GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element](#)

Smith, V.H.

- ☐ [Coherent Transmitter Considerations Utilizing Injection Locked Magnetrons](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Snapp, C.P.

- ☐ [A 0.5 \$\mu\text{m}\$ Silicon Bipolar Transistor for Low Phase Noise Oscillator Applications Up to 20 GHz](#)

Snyder, R.V.

- ☐ [Lossy, Hybrid Coupled Amplitude Equalizers for Narrow Band Filters](#)
- ☐ [New Narrow-Band Dual-Mode Bandstop Waveguide Filters \(Comments\)](#)
- ☐ [Session 9 Introduction \(1984 \[MWSYM\]\)](#)

Sobhy, M.I.

- ☐ [Tolerance Analysis of Shielded Microstrip Lines \(Short Papers\)](#)

Sobol, H.

- ☐ [Microwave Communications--An Historical Perspective](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Sokolich, M.

- ❑ [Production Technology for High-Yield, High-Performance GaAs Monolithic Amplifiers](#)

Sokolov, V.

- ❑ [30 GHz Monolithic Balanced Mixers Using an Ion-Implanted FET-Compatible 3-Inch GaAs Wafer Process Technology](#)
- ❑ [30 GHz Multi-Bit Monolithic Phase Shifters](#)
- ❑ [High Efficiency GaAs MBE Power FETs for Ka-Band \(1984 \[MWSYM\]\)](#)

Solaimani, M.

- ❑ [Microwave Diffraction Tomography for Biomedical Applications \(Further Comments\)](#)

Solbach, K.

- ❑ [94-GHz 4-Port E-Plane Junction Circulator \(Short Paper\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Solimini, D.

- ☐ [Inversion of Microwave Thermographic Data by the Singular Function Method](#)

Somlo, P.I.

- ☐ [Accurate Six-Port Operation with Uncalibrated Nonlinear Diodes Digital \(Short Papers\)](#)
- ☐ [An Explicit Six-Port Calibration Method Using Five Standards \(Short Papers\)](#)
- ☐ [Radar-Echo Location of Conducting Spheres in Waveguide \(Short Papers\)](#)

Sorrentino, R.

- ☐ [Characteristics of Metal-Insulator-Semiconductor Coplanar Waveguides for Monolithic Microwave Circuits](#)
- ☐ [Planar Circuit Analysis of Microstrip Radial Stub](#)
- ☐ [Planar Circuit Analysis of Microstrip Radial Stub \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ Planar Circuits, Waveguide Models, and Segmentation Method
- ❑ Transverse Resonance Analysis Discontinuities of Finline
- ❑ Transverse Resonance Analysis of Finline Discontinuities

Sovero, E.A.

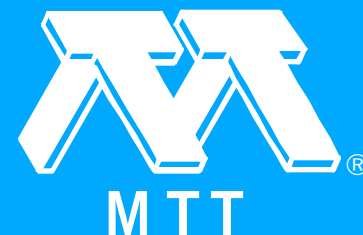
- ❑ Power Saturation Characteristics of GaAs/AlGaAs High Electron Mobility Transistors

Spada, J.A.

- ❑ A Stable Broadband IMPATT Amplifier

Sphicopoulos, T.

- ❑ The Reflection from an Open-Ended Rectangular Waveguide Terminated by a Layered Dielectric Medium



Contents

Authors

Click on title for a paper summary.



Papers by Author



Contents

Authors

Spiegel, R.J.

- ☐ [A Review of Numerical Models for Predicting the Energy Deposition and Resultant Thermal Response of Humans Exposed to Electromagnetic Fields](#)

Spielman, B.E.

- ☐ [Session 1 Introduction \(1984 \[MWSYM\]\)](#)
- ☐ [Technology Summaries for Microwave Theory and Techniques--1983](#)

Stabile, P.J.

- ☐ [Millimeter Wave Silicon Device and Integrated Circuit Technology](#)

Stahlmann, R.

- ☐ [Dual-Gate MESFET Mixers](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Stancil, D.D.

- ☐ [Magnetostatic Surface-Wave Propagation in Ferrite Thin Films with Arbitrary Variations of the Magnetization Through the Film Thickness](#)
- ☐ [Magnetostatic Volume Modes of Ferrite Thin Films with Magnetization Inhomogeneities through the Film Thickness](#)

Starski, J.P.

- ☐ [Analysis and Design of Branch-Line Hybrids with Coupled Lines](#)

Stecker, Jr., J.F.

- ☐ [Microwave Radiometric Detection of Thermal Asymmetry of Varicocele](#)

Steer, M.B.

- ☐ [A New Frequency Domain Approach to the Analysis of Nonlinear Microwave Circuits](#)
- ☐ [Gain Saturation in Circulator-Coupled Reflection Amplifiers](#)

Click on title for a paper summary.



Papers by Author

- ❑ Large Signal Analysis of Nonlinear Microwave Systems

Stephan, K.D.

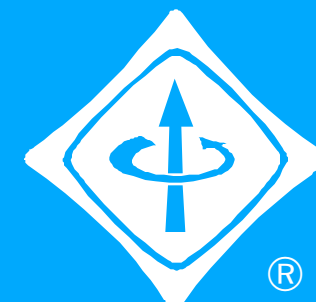
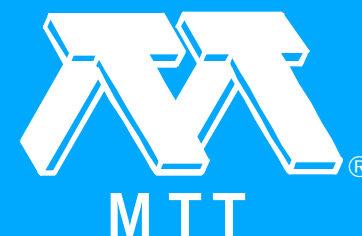
- ❑ A Planar Quasi-Optical Subharmonically Pumped Mixer Characterized by Isotropic Conversion Loss
- ❑ A Planar Quasi-Optical Subharmonically Pumped Mixer Characterized by Isotropic Conversion Loss (Corrections)
- ❑ Quasi-Optical Slot Ring Mixer Noise Figure Measurements

Stephens, W.E.

- ❑ Analog Microwave Fiber Optic Communications Links

Sterzer, F.

- ❑ A Microwave Apparatus for Producing Uniform Hyperthermic Temperatures Over Large Surfaces
- ❑ Enhancing the Efficacy of Localized Thermotherapy by Monitoring Changes in Tumor Blood Flow



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Stilwell, G.W.

- ❑ [Sensitivity Analysis of a 15.0 GHz Monopulse Radar Receiver Using a Logarithmic Amplifier Detector Scheme](#)

Stokes, R.B.

- ❑ [Recent Developments in SAW Device Applications](#)

Stolte, C.

- ❑ [A Study of the Relation Between Device Low-Frequency Noise and Oscillator Phase Noise for GaAs MESFETs](#)

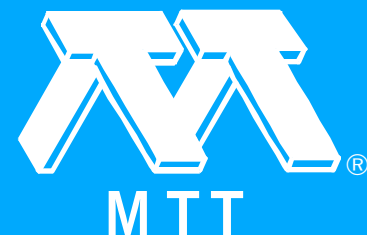
Strid, E.W.

- ❑ [A 2 to 8 GHz Leveling Loop Using a GaAs MMIC Active Splitter and Attenuator](#)
- ❑ [Calibration Methods for Microwave Wafer Probing \(1984 \[MWSYM\]\)](#)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

Strohm, K.M.

- ☐ [Silicon High Resistivity Substrate Millimeter-Wave Technology \(1986 \[MCS\]\)](#)

Strube, J.

- ☐ [Rigorous Hybrid-Mode Analysis of the Transition from Rectangular Waveguide to Shielded Dielectric Image Guide](#)

Stubbs, M.G.

- ☐ [Propagation in Broadside-Coupled Suspended-Substrate Stripline in E-Plane](#)

Stuchly, M.A.

- ☐ [Probing Electromagnetic Fields in Lossy Spheres and Cylinders](#)
- ☐ [Specific Absorption Rate Distribution in a Full-Scale Model of Man at 350 MHz](#)
- ☐ [Specific Absorption Rate Distribution in a Model of Man at Various Polarizations](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Stuchly, S.S.

- ☐ [Probing Electromagnetic Fields in Lossy Spheres and Cylinders](#)
- ☐ [Specific Absorption Rate Distribution in a Full-Scale Model of Man at 350 MHz](#)
- ☐ [Specific Absorption Rate Distribution in a Model of Man at Various Polarizations](#)

Su, C.-C.

- ☐ [A Surface Integral Equations Method for Homogeneous Optical Fibers and Coupled Image Lines of Arbitrary Cross Sections](#)
- ☐ [Cutoff Frequency of a Homogeneous Optical Fiber with Arbitrary Cross Section](#)

Su, C.-Y.

- ☐ [A Study of the Relation Between Device Low-Frequency Noise and Oscillator Phase Noise for GaAs MESFETs](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Sudarsanam, R.

- ☐ [17/12 GHz Communication Receiver for Direct Broadcast Satellites](#)
- ☐ [A Reflective Diode Linearize for Spacecraft Applications](#)

Sudbury, R.W.

- ☐ [Foreword \(Dec. 1985 \[T-MTT\]\)](#)
- ☐ [Session 1 Introduction \(1984 \[MWSYM\]\)](#)

Sudo, T.

- ☐ [Analysis of High-Speed GaAs Source-Coupled FET Logic Circuits](#)

Sugeta, T.

- ☐ [A Low-Noise GaAs Monolithic Broad-Band Amplifier Using a Drain Current Saving Technique \(Short Papers\)](#)
- ☐ [Design and Performance of Monolithic GaAs Direct-Coupled Preamplifiers and Main Amplifiers](#)

Click on title for a paper summary.



Papers by Author

- ❑ [GaAs Monolithic Low-Power Amplifiers with RC Parallel Feedback \(Short Papers\)](#)

Sugiura, T.

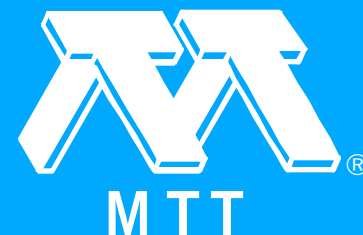
- ❑ [12-GHz-Band GaAs Dual-Gate MESFET Monolithic Mixers](#)
- ❑ [X-Band Low-Noise GaAs Monolithic Frequency Converter \(Short Papers\)](#)

Sultan, M.F.

- ❑ [An Iterative Moment Method for Analyzing the Electromagnetic Field Distribution Inside Inhomogeneous Lossy Dielectric Objects \(Short Papers\)](#)

Sun, C.

- ❑ [20 GHz GaAs IMPATT Diode Development for Solid State Transmitter](#)
- ❑ [W-Band \(75 to 110 GHz\) Microstrip Components \(1985 \[MWSYM\]\)](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author

- ❑ [W-Band \(75-110 GHz\) Microstrip Components \(Dec. 1985 \[T-MTT\]\)](#)
- ❑ [W-Band Broadband Integrated Circuit Receiver](#)

Sun, H.-J.

- ❑ [A Monolithic Direct-Coupled GaAs Amplifier with 12-GHz Bandwidth](#)

Sun, Z.-L.

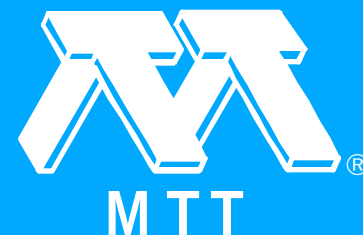
- ❑ [W-band GaAs Gunn Diode Harmonic Power Combiners](#)

Surawatpunya, C.

- ❑ [Bragg Interaction of Electromagnetic Waves in a Ferrite Slab Periodically Loaded with Metal Strips](#)

Sussman-Fort, S.E.

- ❑ [A Complete GaAs MESFET Computer Model for SPICE \(Short Papers\)](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Suzuki, M.

- ❑ [Approximate Scalar Finite-Element Analysis of Anisotropic Optical Waveguides with Off-Diagonal Elements in a Permittivity Tensor](#)
- ❑ [Finite-Element Formulation in Terms of the Electric-Field Vector for Electromagnetic Waveguide Problems](#)
- ❑ [Improved Finite-Element Formulation in Terms of the Magnetic Field Vector for Dielectric Waveguides](#)

Szedon, J.R.

- ❑ [UHF Film Resonator Evaluation and Resonator-Controlled Oscillator and Filter Design Using Computer-Aided Design Techniques](#)

Tabuchi, T.

- ❑ [800-MHz High-Performance SAW Filter Using New Resonant Configuration](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Taflove, A.

- ☐ [Fast-Fourier-Transform Method for Calculation of SAR Distributions in Finely Discretized Inhomogeneous Models of Biological Bodies \(Comments\)](#)

Tahim, R.

- ☐ [W-Band \(75 to 110 GHz\) Microstrip Components \(1985 \[MWSYM\]\)](#)

Tahim, R.S.

- ☐ [Miniature Millimeter-Wave Integrated Circuit Wideband Downconverters](#)
- ☐ [W-Band \(75-110 GHz\) Microstrip Components \(Dec. 1985 \[T-MTT\]\)](#)
- ☐ [W-Band Broadband Integrated Circuit Receiver](#)

Tai, G.-C.

- ☐ [Plasma-Dielectric Sandwich Structure Used as a Tunable Bandpass Microwave Filter \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Tajima, J.

- ☐ [GaAs Monolithic Low-Power Amplifiers with RC Parallel Feedback \(Short Papers\)](#)

Tajima, Y.

- ☐ [Design of Broad-Band Power GaAs FET Amplifiers](#)

Takada, T.

- ☐ [A 2 Gb/s Throughput GaAs Digital Time Switch LSI Using LSCFL \(1985 \[MCS\]\)](#)
- ☐ [A 2 Gb/s Throughput GaAs Digital Time Switch LSI Using LSCFL \(Dec. 1985 \[T-MTT\]\)](#)
- ☐ [Analysis of High-Speed GaAs Source-Coupled FET Logic Circuits](#)

Takagi, T.

- ☐ [A 1 Watt 28 GHz Band Amplifier Using Clustered FETs](#)
- ☐ [A 1.5 Watt 28 GHz Band FET Amplifier](#)

Click on title for a paper summary.



Papers by Author

- ❑ [A Ka-Band GaAs Power MMIC](#)

Takahashi, Y.

- ❑ [Direct Contact Applicator with Convergent Effect of EM Field for Microwave Hyperthermia](#)
- ❑ [Microwave Heating System Using Lens Applicator for Localized Hyperthermia](#)

Takakuwa, H.

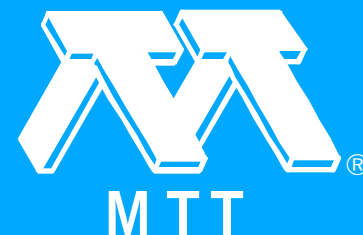
- ❑ [Low Noise Microwave HIFET Using MOCVD](#)

Takano, T.

- ❑ [Novel GaAs FET Phase Detector Operable to Ka Band](#)

Takeda, F.

- ❑ [A 1 Watt 28 GHz Band Amplifier Using Clustered FETs](#)
- ❑ [A 1.5 Watt 28 GHz Band FET Amplifier](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Takeuchi, Y.

- ☐ [A Packaged 20-GHz 1-W GaAs MESFET with a Novel Via-Hole Plated Heat Sink Structure](#)

Takiyama, K.

- ☐ [Analytical and Experimental Investigations on Several Resonant Modes in Open Dielectric Resonators](#)
- ☐ [Microwave Network Representation of Discontinuity in Open Dielectric Waveguides and its Applications to Periodic Structures](#)
- ☐ [Mode Propagation through a Step Discontinuity in Dielectric Planar Waveguide \(1984 \[MWSYM\]\)](#)
- ☐ [Two-Path Cutoff Waveguide Dielectric Resonator Filters \(1985 \[MWSYM\]\)](#)

Talisa, S.H.

- ☐ [Application of Davidenko's Method to the Solution of Dispersion Relations in Lossy Waveguiding Systems](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Talwar, A.K.

- ☐ [Ka-Band FET Oscillator \(Short Papers\)](#)

Tanabe, E.

- ☐ [Microstrip Spiral Antenna for Local Hyperthermia](#)

Tanaka, K.

- ☐ [Low Noise Microwave HIFET Using MOCVD](#)

Tang, O.S.A.

- ☐ [A Practical Microwave Travelling-Wave MESFET Gate Mixer](#)
- ☐ [A Very Wide-Band Microwave MESFET Mixer Using the Distributed Mixing Principle](#)

Tang, W.-C.

- ☐ [A True Elliptic-Function Filter Using Triple-Mode Degenerate Cavities](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Tang, W.C.

- ☐ [A Ku-Band Contiguous Multiplexer Employing Low-Loss, Odd-Order, Mixed Dual-Triple Mode Cavity Filters](#)
- ☐ [Dielectric Resonator Output Multiplexer for C-Band Satellite Applications](#)

Tanner, D.

- ☐ [Theory and Experiment Predicting the Cutoff Frequencies for a Rectangular Stripline](#)

Tarusawa, Y.

- ☐ [Planar MMIC Hybrid Circuit and Frequency Converter](#)

Tatomir, P.J.

- ☐ [Self Equalized, Equiripple Microwave Filter](#)

Tedjini, S.

- ☐ [New Analysis of Semiconductor Isolators: The Modified Spectral Domain Analysis \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Temkin, R.J.

- ❑ [Multimode Oscillation and Mode Competition in High-Frequency Gyrotrons](#)

Temmyo, J.

- ❑ [Characteristic Impedance Design Considerations for a High-Speed Superconducting Packaging System \(Short Papers\)](#)

Temple, S.

- ❑ [Session 8 Introduction \(1984 \[MWSYM\]\)](#)

Teodoridis, V.

- ❑ [The Reflection from an Open-Ended Rectangular Waveguide Terminated by a Layered Dielectric Medium](#)

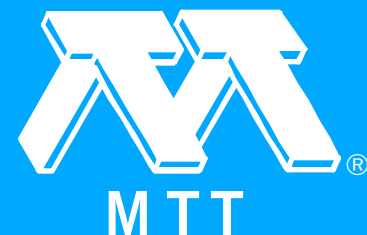
Terakado, R.

- ❑ [Characteristic Impedance of the Slab Line with an Anisotropic Dielectric \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



Contents

Authors

- ❑ Characteristics of Transmission Lines with a Single Wire for a Multiwire Circuit Board
- ❑ Exact Wave Resistance of Coaxial Regular Polygonal Conductors (Short Papers)

Teramoto, I.

- ❑ A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications (1985 [MCS])
- ❑ A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications (1985 [MWSYM])
- ❑ A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications (Dec. 1985 [T-MTT])

Tetu, M.

- ❑ R.F. Spectrum of Thermal Noise and Stability of a Microwave Cavity Oscillator
- ❑ RF Spectrum of Thermal Noise and Frequency Stability of a Microwave Cavity-Oscillator

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Teunas, J.A.

- ☐ [A Low Cost, Accurate, Target Detecting Device for Altimetry and Fuzing](#)

Thebault, D.

- ☐ [Theoretical and Experimental Investigation of Asymmetric Coplanar Waveguide](#)
- ☐ [Theoretical and Experimental Investigation of Asymmetric Coplanar Waveguides \(Short Papers\)](#)

Thompson, S.B.

- ☐ [The Application of Planar Anisotropy to Millimeter-Wave Ferrite Phase Shifters](#)

Thompson, S.D.

- ☐ [A Solid-State 2-10 GHz 1 Watt TWT Replacement Amplifier](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Thompson, W.J.

- ☐ [Vector Method of Characterizing Nonlinearity in Microwave Power Devices](#)

Thomsen, F.

- ☐ [On the Resolution of Dicke-Type Radiometers](#)

Thornber, K.K.

- ☐ [Contiguous-Domain Transferred-Electron Oscillators](#)

Thornton, D.D.

- ☐ [A Continuously Tunable 65--115-GHz Gunn Oscillator](#)

Thrower, W.F.

- ☐ [V-Band Double-Drift Read Silicon IMPATTs](#)

Thyagarajan, K.

- ☐ [Modes in Anisotropic Rectangular Waveguides: An Accurate and Simple Perturbation Approach \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Tiwari, A.K.

- ☐ [Analysis of Low-Loss Broadside-Coupled Dielectric Image Guide Using the Mode-Matching Technique \(Short Papers\)](#)

Tiwari, S.C.

- ☐ [Theory and Measurement of Back Bias Voltage in IMPATT Diodes \(Comments\)](#)

Togashi, K.

- ☐ [Low Noise Microwave HIFET Using MOCVD](#)

Togashi, M.

- ☐ [A 2 Gb/s Throughput GaAs Digital Time Switch LSI Using LSCFL \(1985 \[MCS\]\)](#)
- ☐ [A 2 Gb/s Throughput GaAs Digital Time Switch LSI Using LSCFL \(Dec. 1985 \[T-MTT\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Tokumitsu, Y.

- ☐ [A 6-GHz 80-W GaAs FET Amplifier with a TM-Mode Cavity Power Combiner](#)

Toler, J.C.

- ☐ [Editorial \(Aug. 1984 \[T-MTT\]\)](#)

Tomar, R.S.

- ☐ [A Useful Equivalence for the Input Reactance Seen by the Coaxial Line in a Broadwall Coaxial-Microstrip Launcher](#)

Tombari, E.

- ☐ [A Method for Dielectric Loss Measurements by a Microwave Cavity in Fixed Resonance Condition](#)

Tomita, N.

- ☐ [High-Power and High-Efficiency Ion-Implanted Power GaAs FETs for C and X Bands](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Ton, N.

- ☐ [A D-Band Millimeter-Wave Crossbar Mixer](#)

Tong, P.P.

- ☐ [Imaging Polarimeter Arrays for Near-Millimeter Waves](#)
- ☐ [Polarization-Sensitive Imaging Arrays](#)

Tong, R.

- ☐ [A 12-Channel Contiguous Band Multiplexer for Satellite Application](#)

Toutain, S.

- ☐ [A Slot Antenna Radiating in Muscle](#)

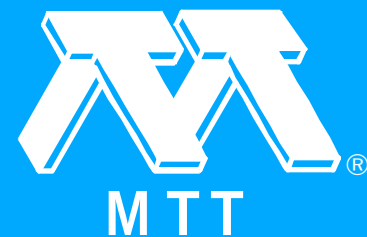
Tozawa, N.

- ☐ [Loss Measurements of Nonradiative Dielectric Waveguide \(Special Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Tozawa, Y.

- ☐ [Novel GaAs FET Phase Detector Operable to Ka Band](#)

Tremblay, P.

- ☐ [R.F. Spectrum of Thermal Noise and Stability of a Microwave Cavity Oscillator](#)
- ☐ [RF Spectrum of Thermal Noise and Frequency Stability of a Microwave Cavity-Oscillator](#)

Trew, R.J.

- ☐ [A New Method of Reducing Phase Noise in GaAs FET Oscillators](#)
- ☐ [A Novel GaAs FET Oscillator with Low Phase Noise](#)

Tripathi, V.K.

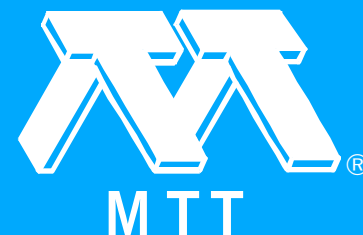
- ☐ [A Simple Network Analog Approach for the Quasi-Static Characteristics of General Lossy, Anisotropic, Layered Structures \(1985 \[MWSYM\]\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ A Simple Network Analog Approach for the Quasi-Static Characteristics of General Lossy, Anisotropic, Layered Structures (Dec. 1985 [T-MTT])
- ❑ A SPICE Model for Multiple Coupled Microstrips and Other Transmission Lines (1985 [MWSYM])
- ❑ A SPICE Model for Multiple Coupled Microstrips and Other Transmission Lines (Dec. 1985 [T-MTT])
- ❑ Analysis and Design of Branch-Line Hybrids with Coupled Lines
- ❑ Generalized Spectral Domain Analysis of Planar Structures Having Semi-Infinite Ground Planes
- ❑ Perturbation Analysis and Design Equations for Open- and Closed-Ring Microstrip Resonators
- ❑ The Design Parameters of Nonsymmetrical Coupled Microstrips (Comments)
- ❑ The Microstrip Open-Ring Resonator



IEEE

Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Tsai, W.C.

- ☐ [A 1-Watt, 8-17 GHz FET Power Amplifier](#)

Tsalamengas, J.L.

- ☐ [Propagation Characteristics of a Microstrip Line Printed on a General Anisotropic Substrate](#)

Tserng, H.Q.

- ☐ [A 2-W Ku-Band Monolithic GaAs FET Amplifier](#)
- ☐ [Foreword \(Mar. 1984 \[T-MTT\]\)](#)
- ☐ [GaAs Dual-Gate FET for Operation up to K-Band](#)
- ☐ [High Power Distributed Amplifier Using MBE Synthesized Material](#)
- ☐ [Monolithic GaAs Dual-Gate FET Variable Power Amplifier Module](#)

Tsironis, C.

- ☐ [Dual-Gate MESFET Mixers](#)

Click on title for a paper summary.



Papers by Author

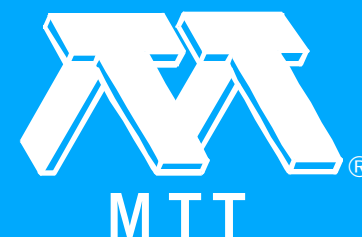
- ❑ Highly Stable Dielectric Resonator FET Oscillators (Short Papers)

Tsuji, M.

- ❑ Analytical and Experimental Investigations on Several Resonant Modes in Open Dielectric Resonators
- ❑ Microwave Network Representation of Discontinuity in Open Dielectric Waveguides and its Applications to Periodic Structures
- ❑ Mode Propagation through a Step Discontinuity in Dielectric Planar Waveguide (1984 [MWSYM])
- ❑ Two-Path Cutoff Waveguide Dielectric Resonator Filters (1985 [MWSYM])

Tsuji, T.

- ❑ 12-GHz-Band GaAs Dual-Gate MESFET Monolithic Mixers



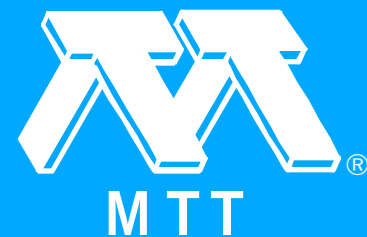
Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Tsutsumi, M.

- ☐ Bragg Interaction of Electromagnetic Waves in a Ferrite Slab Periodically Loaded with Metal Strips
- ☐ Magnetostatic Wave Delay Lines Using the Nonuniformly Magnetized YIG Film

Tuholke, U.

- ☐ Computer-Optimized Multisection Transformers Between Rectangular Waveguides of Adjacent Frequency Bands (Short Papers)

Tucker, B.A.

- ☐ Wide-Band Limiting Amplifiers with Low Second Harmonic Distortion, Utilizing GaAs MMIC Limiters

Tucker, R.S.

- ☐ Computer-Aided Error Correction of Large-Signal Load-Pull Measurements

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Tur, M.

- ☐ [Optical Fiber Delay-Line Signal Processing](#)

Turgeon, G.

- ☐ [Heating Pattern in a Multi-Layered Material Exposed to Microwaves \(Short Papers\)](#)

Turner, P.F.

- ☐ [Hyperthermia and Inhomogeneous Tissue Effects Using an Annular Phased Array](#)

Turski, Z.

- ☐ [Optically Controlled Microwave Devices and Circuits](#)

Uchida, K.

- ☐ [Scattering of Surface Waves on Transverse Discontinuities in Symmetrical Three-Layer Dielectric Waveguides](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Ueda, K.

- ❑ Fabrication of Low Power, High-Speed GaAs LSI On-Board Baseband Switching Matrix

Ueki, K.

- ❑ Small Size VCO Module for 900 MHz Band Using Coupled Microstrip-Coplanar Lines

Umashankar, K.R.

- ❑ Fast-Fourier-Transform Method for Calculation of SAR Distributions in Finely Discretized Inhomogeneous Models of Biological Bodies (Comments)

Upton, M.A.G.

- ❑ A 30 GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element (1985 [MCS])
- ❑ A 30 GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element (1985 [MWSYM])

Click on title for a paper summary.



Papers by Author

- ❑ [A 30-GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element](#)
- ❑ [The Design and Performance of a Double Balanced Mixer Using FETs](#)

Uslenghi, P.L.E.

- ❑ [The Inverse Problem for Biaxial Materials](#)

Utsumi, Y.

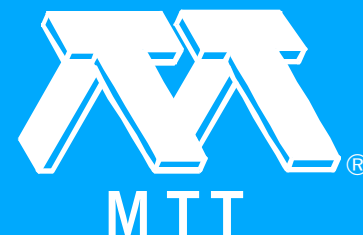
- ❑ [Variational Analysis of Ridged Waveguide Modes](#)

Uzunoglu, N.K.

- ❑ [Propagation Characteristics of a Microstrip Line Printed on a General Anisotropic Substrate](#)

Vafiadis, E.

- ❑ [On the Narrow-Band Microwave Filter Design Using a Dielectric Rod](#)



[Contents](#)

[Authors](#)

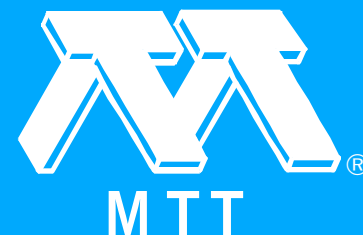
Click on title for a paper summary.



Papers by Author

Vahldieck, R.

- ❑ [A Modified Mode-Matching Technique and its Application to a Class of Quasi-Planar Transmission Lines](#)
- ❑ [A New Class of Optimized Finline and E-Plane Metal Insert Filters with Improved Characteristics](#)
- ❑ [Accurate Hybrid-Mode Finline Configurations Including Analysis of Various Multilayered Dielectrics, Finite Metallization Thickness, and Substrate Holding Grooves](#)
- ❑ [Design of Multisection Impedance-Matched Dielectric-Slab Filled Waveguide Phase Shifters](#)
- ❑ [E-Plane Integrated Circuit Filters with Improved Stopband Attenuation \(Comments\)](#)
- ❑ [E-Plane Integrated Circuit Filters with Improved Stopband Attenuation \(Short Papers\)](#)
- ❑ [Finline and Metal Insert Filters with Improved Passband Separation and Increased Stopband Attenuation](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author

- ☐ [The Influence of Metallization Thickness and Mounting Grooves on the Characteristics of Finlines](#)
- ☐ [W-Band Low-Insertion-Loss E-Plane Filter \(Short Papers\)](#)

Vaidya, N.C.

- ☐ [Optimum Design of a Potentially Dispersion-Free Helical Slow-Wave Circuit of a Broad-Band TWT \(Short Papers\)](#)

Valentin, M.

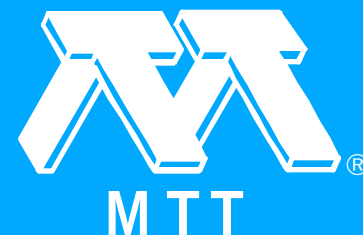
- ☐ [Microwave Helix Waveguide Absorption Cell for Passive Frequency Standard \(Short Papers\)](#)

Valerio, Jr., C.V.

- ☐ [Semiconductor Antenna: A New Device in Millimeter- and Submillimeter-Wave Integrated Circuits \(Short Papers\)](#)

van den Berg, P.M.

- ☐ [The Electric-Field Problem of an Interdigital Transducer in a Multilayered Structure](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Van Lil, E.

- ❑ [A Rigorous Technique for Measuring the Scattering Matrix of a Multiport Device with a Two-Port Network Analyzer \(Comments\) \(Mar. 1985 \[T-MTT\]\)](#)

Varian, D.

- ❑ [From the Inventor and the Pilot Russell and Sigurd Varian](#)

Venema, A.

- ❑ [The Electric-Field Problem of an Interdigital Transducer in a Multilayered Structure](#)

Venkataraman, J.

- ❑ [Analysis of Arbitrarily Oriented Microstrip Transmission Lines in Arbitrarily Shaped Dielectric Media Over a Finite Ground Plane](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Versfeld, L.R.G.

- ☐ [Constant-Frequency Synthesis of Lossy Microwave Two-Ports \(Short Papers\)](#)

Verver, C.J.

- ☐ [Propagation in Broadside-Coupled Suspended-Substrate Stripline in E-Plane](#)
- ☐ [Quarter Wave Transformers for Matching Transitions Between Waveguides and Fin Lines](#)
- ☐ [Quarter-Wave Matching of Waveguide-to-Finline Transitions \(Short Papers\)](#)

Villar, J.C.

- ☐ [Graphic Design of Matching and Interstage Lossy Networks for Microwave Transistor Amplifier](#)

Villeneuve, A.T.

- ☐ [Analysis of Slotted, Dielectrically Loaded, Ridged Waveguide](#)

Click on title for a paper summary.



Papers by Author

- ❑ Equivalent Circuits of Junctions of Slab-Loaded Rectangular Waveguides

Villeneuve, B.

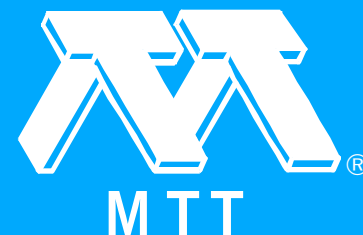
- ❑ R.F. Spectrum of Thermal Noise and Stability of a Microwave Cavity Oscillator
- ❑ RF Spectrum of Thermal Noise and Frequency Stability of a Microwave Cavity-Oscillator

Vitello, P.

- ❑ Cyclotron Maser and Peniotron-Like Instabilities in a Whispering Gallery Mode Gyrotron
- ❑ Theory and Numerical Modeling of a Compact Low-Field High-Frequency Gyrotron
- ❑ Theory and Numerical Simulation of a TE/sub 111/ Gyroresonant Accelerator

Vorhaus, J.L.

- ❑ 2--20-GHz GaAs Traveling-Wave Amplifier



Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Vrba, J.

- ☐ [Planar Circuit Analysis of Microstrip Radial Stub](#)
- ☐ [Planar Circuit Analysis of Microstrip Radial Stub \(Short Papers\)](#)

Vuong, J.B.

- ☐ [A Solid State, X-Band, Exciter/Local Oscillator/Down Converter Subsystem for an Airborne, Coherent Radar Fire Control System](#)

Wachtel, H.

- ☐ [An Exposure System for Variable Electromagnetic-Field Orientation Electrophysiological Studies](#)

Wada, H.

- ☐ [800 MHz Band Dielectric Channel Dropping Filter Using TM/sub 110/ Triple Mode Resonance](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Wagen, J.-F.

- ☐ [Edge-Guided Magnetoplasmons on Curved Interfaces in Submillimeter Wave Devices](#)

Wahi, P.K.

- ☐ [Optics for Microwave Applications](#)

Wait, J.R.

- ☐ [Focused Heating in Cylindrical Targets: Part I \(Short Papers\)](#)

Wakino, K.

- ☐ [800 MHz Band Channel Dropping Filter Using TM/sub 010/ Mode Dielectric Resonator](#)
- ☐ [800 MHz Band Dielectric Channel Dropping Filter Using TM/sub 110/ Triple Mode Resonance](#)

Waldow, P.

- ☐ [The Skin-Effect at High Frequencies](#)

Click on title for a paper summary.



Papers by Author

Walker, J.L.B.

- ☐ [Analysis of a J-Band Pulsed Read IMPATT Oscillator](#)

Walton, M.P.

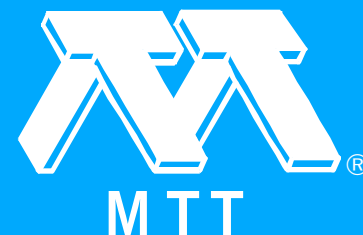
- ☐ [Monolithic Optoelectronic Receiver for Gbit Operation](#)

Wan, L.A.

- ☐ [A Solid State, X-Band, Exciter/Local Oscillator/Down Converter Subsystem for an Airborne, Coherent Radar Fire Control System](#)
- ☐ [Sensitivity Analysis of a 15.0 GHz Monopulse Radar Receiver Using a Logarithmic Amplifier Detector Scheme](#)

Wang, B.Y.

- ☐ [Effects of Side-Wall Grooves on Transmission Characteristics of Suspended Strip Lines \(1985 \[MWSYM\]\)](#)
- ☐ [Effects of Side-Wall Grooves on Transmission Characteristics of Suspended Striplines \(Dec. 1985 \[T-MTT\]\)](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Wang, D.C.

- ☐ Cost-Effective High Performance Monolithic X-Band Low Noise Amplifiers (1986 [MCS])

Wang, K.G.

- ☐ High Performance Monolithic Power Amplifier Using a Unique Ion Implantation Process (1986 [MCS])

Wang, L.M.

- ☐ Wave Interaction in Doubly Periodic Structures

Wang, S.-K.

- ☐ Phase Shifts in Single- and Dual-Gate GaAs MESFET's for 2-4-GHz Quadrature Phase Shifters
- ☐ Production Technology for High-Yield, High-Performance GaAs Monolithic Amplifiers

Wang, S.K.

- ☐ A 30 GHz Monolithic Receiver

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

- ❑ Cost-Effective High Performance Monolithic X-Band Low Noise Amplifiers (1986 [MCS])
- ❑ High Performance Monolithic Power Amplifier Using a Unique Ion Implantation Process (1986 [MCS])
- ❑ Production Technology Development for High Yield, High Performance X-Band Monolithic Power and Low Noise Amplifiers

Wang, Y.X.

- ❑ Coplanar Waveguide Short Gap Resonator for Medical Applications
- ❑ Coplanar Waveguide Short-Gap Resonator for Medical Applications

Ward, C.S.

- ❑ A Stable Broadband IMPATT Amplifier

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Wassel, J.W.

- ☐ [Monolithic Microwave Integrated Circuits: An Historical Perspective](#)

Watanabe, H.

- ☐ [Microwave Heating System Using Lens Applicator for Localized Hyperthermia](#)

Watanabe, S.

- ☐ [Si Monolithic Microwave Prescaler](#)

Waterman, Jr., R.C.

- ☐ [A Single-Resonator GaAs FET Oscillator with Noise Degeneration](#)
- ☐ [Analysis and Design of a Single-Resonator GaAs FET Oscillator with Noise Degeneration](#)

Watkins, E.T.

- ☐ [A 30 GHz Low Noise FET Amplifier](#)

Click on title for a paper summary.



Papers by Author

Wazowicz, M.F.

- ☐ [Efficient, Linear Amplification of Varying-Envelope Signals Using FET's with Parabolic Transfer Characteristics](#)

Webb, J.

- ☐ [Finite-Element Analysis of Dielectric Waveguides with Curved Boundaries](#)

Webb, J.P.

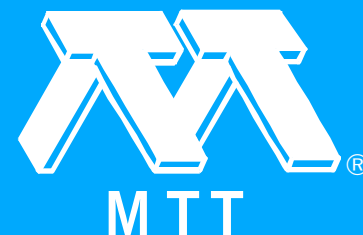
- ☐ [The Finite-Element Method for Finding Modes of Dielectric-Loaded Cavities \(Short Papers\)](#)

Webb, K.J.

- ☐ [Solution of the Finline Step-Discontinuity Problem Using the Generalized Variational Technique](#)

Weber, R.J.

- ☐ [Large Signal Pulsed Network Analyzer Operation](#)
- ☐ [Pulse Network Analyzer](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Webster, R.T.

- ☐ [1.5-GHz GaAs Surface Acoustic Wave Delay Lines \(Short Papers\)](#)

Wei, C.

- ☐ [Multiconductor Transmission Lines In Multilayered Dielectric Media](#)

Wei, M.S.

- ☐ [Bandstop Filter Design Using a Dielectric Waveguide Grating](#)
- ☐ [Dielectric Waveguide Band-Pass Filters with Broad Stop Bands](#)
- ☐ [Dielectric Waveguide Grating Design for Bandstop and Bandpass Filter Applications](#)

Weil, C.M.

- ☐ [High-Order Mode Cutoff In Rectangular Striplines \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Weinberg, I.J.

- ☐ [Magnetostatic Forward Volume Wave Propagation--Finite Width \(Short Papers\)](#)

Weinreb, S.

- ☐ [X-Band Noise Parameters of HEMT Devices at 300K and 12.5K](#)

Weitzel, C.E.

- ☐ [Single-Stage GaAs Monolithic Feedback Amplifiers \(Short Papers\)](#)

Weller, K.P.

- ☐ [Low Noise High Electron Mobility Transistors \(1984 \[MWSYM\]\)](#)

Wellnitz, M.

- ☐ [Double Dielectric-Slab-Filled Waveguide Phase Shifter](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Welt, D.

- ☐ [Finite-Element Analysis of Dielectric Waveguides with Curved Boundaries](#)

Wemple, S.H.

- ☐ [Third-Order Nonlinearity of GaAs MESFET's](#)

Wengler, M.J.

- ☐ [85--115-GHz Receivers for Radio Astronomy](#)

Westphal, G.H.

- ☐ [Monolithic GaAs Dual-Gate FET Variable Power Amplifier Module](#)

Whartenby, J.C.

- ☐ [Broadband and Broad Dynamic Range GaAs Dual-Gate MESFET Linearize for TWTA and SSPA Used in Satellite Transponder](#)

Click on title for a paper summary.



Papers by Author

- ❑ [Predistortion Linearize Using GaAs Dual-Gate MESFET for TWTA and SSPA Used in Satellite Transponders](#)
- ❑ [TWTA Linearize Using Dual-Gate MESFET](#)

Wheeler, D.E.

- ❑ [High Power Broadband, 35 GHz Waveguide Switch Using a Monolithic Diode Array](#)

Wheeler, H.A.

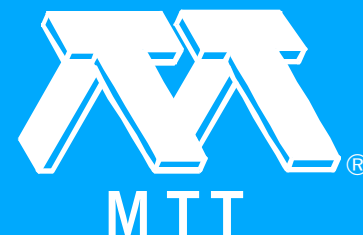
- ❑ [Reflection Charts Relating to Impedance Matching](#)

Wheless, Jr., P.

- ❑ [The Use of Higher Resonant Modes in Measuring the Dielectric Constant of Dielectric Resonators](#)

White, D.J.

- ❑ [Integration Method of Measuring Q of the Microwave Resonators \(Further Comments\)](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

White, D.W.

- ☐ [An Ultra Low Transient GaAs FET VHF Switch](#)

White, J.F.

- ☐ [Origins of High-Power Diode Switching](#)
- ☐ [Session 15 Introduction \(1984 \[MWSYM\]\)](#)

White, P.M.

- ☐ [The Relationship of Magnetotransconductance Mobility Profiles and RF Performance of GaAs FETs](#)

Whitney, H.S.

- ☐ [Some Results on Low-Level Microwave Treatment of the Mountain Pine Beetle and the Darkling Beetle](#)

Williams, A.E.

- ☐ [Narrow Bandpass Filters Using the High-Q Cylindrical TE/sub 0ml/ Resonator Modes](#)
- ☐ [Predistortion Techniques for Multicoupled Resonator Filters](#)

Click on title for a paper summary.



Papers by Author

- ❑ [Predistortion Techniques for Multicoupled Resonator Filters \(Short Papers\)](#)

Williams, D.A.

- ❑ [Millimeter-Wave Hybrid Microstrip Subsystems](#)

Williams, D.F.

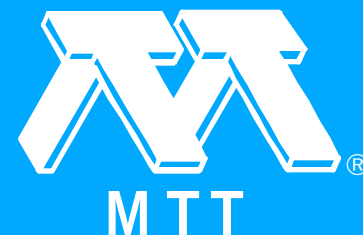
- ❑ [Reduction of Propagation Losses in Coplanar Waveguide](#)

Williams, R.

- ❑ [A High Performance 2-18.5 GHz Distributed Amplifier, Theory and Experiment \(1986 \[MCS\]\)](#)

Williams, R.E.

- ❑ [Design and Process Sensitivity of a Two Stage 6-18 GHz Monolithic Feedback Amplifier \(1985 \[MCS\]\)](#)
- ❑ [Design and Process Sensitivity of a Two-Stage 6--18-GHz Monolithic Feedback Amplifier \(Dec. 1985 \[T-MTT\]\)](#)



[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Williams, W.M.

- ❑ [Effects of 2450-MHz Microwave Energy on the Blood-Brain Barrier: An Overview and Critique of Past and Present Research](#)

Williamson, A.G.

- ❑ [Cross-Coupled Coaxial-Line/Rectangular-Waveguide Junction \(Short Papers\)](#)
- ❑ [Radial-Line/Coaxial-Line Stepped Junction \(Short Papers\)](#)

Wilson, K.

- ❑ [A Novel MMIC X-Band Phase Shifter](#)
- ❑ [A Novel MMIC, X-Band, Phase Shifter](#)

Wilson, P.F.

- ❑ [Mode Coupling by a Longitudinal Slot for a Class of Planar Waveguiding Structures: Part I--Theory](#)

Click on title for a paper summary.



Papers by Author

- ❑ [Mode Coupling by a Longitudinal Slot for a Class of Planar Waveguiding Structures: Part II--Applications](#)

Wiltse, J.C.

- ❑ [History of Millimeter and Submillimeter Waves](#)

Winter, A.

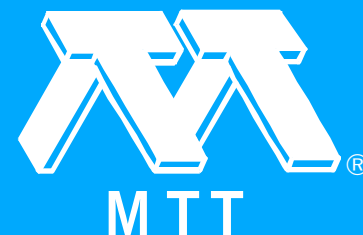
- ❑ [Enhancing the Efficacy of Localized Thermotherapy by Monitoring Changes in Tumor Blood Flow](#)

Wirsing, R.

- ❑ [Double Dielectric-Slab-Filled Waveguide Phase Shifter](#)

Wisseman, W.R.

- ❑ [Foreword \(Dec. 1984 \[T-MTT\]\)](#)
- ❑ [Monolithic Microwave Integrated Circuits: An Historical Perspective](#)



[Contents](#)

[Authors](#)

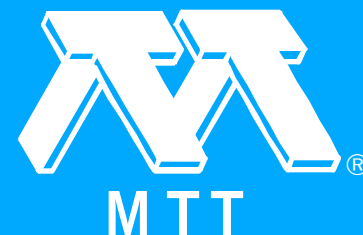
Click on title for a paper summary.



Papers by Author

Wolff, I.

- ❑ [A Computer-Controlled Integrated Microwave Measurement System in Finline Technique for Automatic Material Parameter Measurements](#)
- ❑ [A Spectral Domain Hybrid Field Analysis of Periodically Inhomogeneous Microstrip Lines](#)
- ❑ [Development of a Coupler in Finline Technique](#)
- ❑ [Finline Taper Design Made Easy](#)
- ❑ [Inhomogeneous Open-Ended Resonators as Microwave Sensor Elements](#)
- ❑ [Perturbation Analysis and Design Equations for Open- and Closed-Ring Microstrip Resonators](#)
- ❑ [Power Density Distribution Analysis of Ferrite Loaded Finline for the Development of Integrated Nonreciprocal Millimeter Wave Elements](#)
- ❑ [The Microstrip Open-Ring Resonator](#)
- ❑ [The Skin-Effect at High Frequencies](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Wolkstein, H.J.

- ❑ Broadband and Broad Dynamic Range GaAs Dual-Gate MESFET Linearize for TWTA and SSPA Used in Satellite Transponder
- ❑ Predistortion Linearize Using GaAs Dual-Gate MESFET for TWTA and SSPA Used in Satellite Transponders

Wong, D.W.

- ❑ A W-Band Monolithic GaAs PIN Diode Switch

Wong, G.H.

- ❑ Probing Electromagnetic Fields in Lossy Spheres and Cylinders

Woods, G.S.

- ❑ Calibrating a Six-Port Reflectometer Using Three Known Loads

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Woody, D.P.

- ☐ [85--115-GHz Receivers for Radio Astronomy](#)

Worm, S.B.

- ☐ [Analysis of Hybrid Field Problems by the Method of Lines with Nonequidistant Discretization](#)
- ☐ [Hybrid-Mode Analysis of Arbitrarily Shaped Planar Microwave Structures by the Method of Lines](#)
- ☐ [The Method of Lines for the Analysis of Planar Waveguides with Magnetized Ferrite Substrate](#)

Worontzoff, N.

- ☐ [Millimeter Wave Multiplexer with Printed Circuit Elements for the 88 to 100 GHz Frequency Range](#)

Wriedt, T.

- ☐ [Computer-Optimized Multisection Transformers Between Rectangular Waveguides of Adjacent Frequency Bands \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Wu, R.-B.

- ☐ [A Variational Analysis of Dielectric Waveguides by the Conformal Mapping Technique](#)
- ☐ [On the Variational Reaction Theory for Dielectric Waveguides](#)

Xu, S.J.

- ☐ [Scattering of Surface Waves by Nonuniform Waveguides](#)

Yabe, H.

- ☐ [An Analysis of a Hybrid-Mode in a Twisted Rectangular Waveguide](#)
- ☐ [Dispersion Characteristics of Twisted Rectangular Waveguides](#)

Yablon, W.

- ☐ [The Annular Slot Antenna in a Lossy Biological Medium \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Yamada, Y.

- ☐ [High-Power and High-Efficiency Ion-Implanted Power GaAs FETs for C and X Bands](#)

Yamaguchi, Y.

- ☐ [Attenuation Constants of UHF Radio Waves in Arched Tunnels \(Short Papers\)](#)

Yamamoto, K.

- ☐ [A 26-GHz High Performance MIC Transmitter/Receiver for Digital Radio Subscriber Systems \(1984 \[MWSYM\]\)](#)
- ☐ [A 26-GHz High-Performance MIC Transmitter/Receiver for Digital Radio Subscriber Systems \(Dec. 1984 \[T-MTT\]\)](#)
- ☐ [Design Consideration for Frequency-Stabilized MIC IMPATT Oscillators in the 26-GHz Band](#)

Yamamoto, R.

- ☐ [Fabrication of Low Power, High-Speed GaAs LSI On-Board Baseband Switching Matrix](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Yamamoto, S.

- ☐ [A Packaged 20-GHz 1-W GaAs MESFET with a Novel Via-Hole Plated Heat Sink Structure](#)

Yamanaka, T.

- ☐ [Measurement of TDC in Engine by Microwave Technique \(1985 \[MWSYM\]\)](#)
- ☐ [Measurement of TDC in Engine by Microwave Technique \(Dec. 1985 \[T-MTT\]\)](#)

Yamao, Y.

- ☐ [A Low-Noise GaAs Monolithic Broad-Band Amplifier Using a Drain Current Saving Technique \(Short Papers\)](#)
- ☐ [GaAs Monolithic Low-Power Amplifiers with RC Parallel Feedback \(Short Papers\)](#)

Yamasaki, H.

- ☐ [A 30 GHz Low Noise FET Amplifier](#)

Click on title for a paper summary.



Papers by Author



[Contents](#)

[Authors](#)

- ❑ A 69 GHz Monolithic FET Oscillator (1984 [MWSYM])
- ❑ Production Technology Development for High Yield, High Performance X-Band Monolithic Power and Low Noise Amplifiers

Yamasaki, K.

- ❑ A 2 Gb/s Throughput GaAs Digital Time Switch LSI Using LSCFL (1985 [MCS])
- ❑ A 2 Gb/s Throughput GaAs Digital Time Switch LSI Using LSCFL (Dec. 1985 [T-MTT])
- ❑ GaAs Ultra High Frequency Dividers with Advanced SAINT FETs (1986 [MCS])

Yamashita, E.

- ❑ A New Method for the Modal Analysis Having Symmetrically Distributed of Optical Fibers Multiple Cores
- ❑ Effects of Side-Wall Grooves on Transmission Characteristics of Suspended Strip Lines (1985 [MWSYM])

Click on title for a paper summary.



Papers by Author

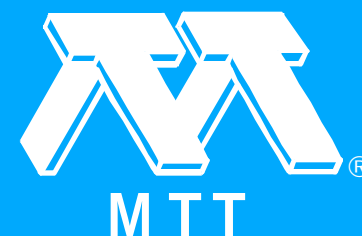
- ❑ Effects of Side-Wall Grooves on Transmission Characteristics of Suspended Striplines (Dec. 1985 [T-MTT])

Yamashita, S.

- ❑ A Design Method of Bandpass Filters Using Dielectric-Filled Coaxial Resonators (Short Papers)
- ❑ S- and X-Band GaAs FET Mixers with Thin-Film Lumped Elements (Short Papers)

Yamazaki, H.

- ❑ Phase-Matched Waveguide Using the Artificial Anisotropic Structure and its Application to a Mode Converter (Short Papers)
- ❑ Phase-Matched Waveguide Using the Artificial Anisotropic Structure and its Application to Mode Converter



Contents

Authors

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Yanagawa, S.

- ☐ [High-Power and High-Efficiency Ion-Implanted Power GaAs FETs for C and X Bands](#)

Yang, Y.-C.E.

- ☐ [Time-Domain Perturbational Analysis of Nonuniformly Coupled Transmission Lines](#)

Yashiro, K.

- ☐ [Boundary Element Method Approach Magnetostatic Wave Problems](#)
- ☐ [Edge-Guided Magnetostatic Mode in a Ridged-Type Waveguide \(Short Papers\)](#)

Yates, B.C.

- ☐ [Approach for Evaluating Effects of Wall Losses on Quarter-Wave Short-Circuit Impedance Standards](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Yatsuka, H.

- ☐ [Novel GaAs FET Phase Detector Operable to Ka Band](#)

Yee, H.-Y.

- ☐ [Transverse Modal Analysis of Printed Circuit Transmission Lines](#)

Yeh, C.

- ☐ [Dynamic Three-Dimensional TLM Analysis of Microstriplines on Anisotropic Substrate](#)

Yen, H.-w.

- ☐ [Optical Technology for Microwave Applications](#)

Yen, K.H.

- ☐ [Recent Developments in SAW Device Applications](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Yen, P.

- ❑ [W-Band \(75 to 110 GHz\) Microstrip Components \(1985 \[MWSYM\]\)](#)

Yen, P.C.H.

- ❑ [W-Band \(75-110 GHz\) Microstrip Components \(Dec. 1985 \[T-MTT\]\)](#)

Yngvesson, K.S.

- ❑ [Limitations of Microwave and Millimeter-Wave Mixers Due to Excess Noise \(Dec. 1985 \[T-MTT\]\)](#)

Yngvesson, S.

- ❑ [Limitations of Microwave and Millimeter-Wave Mixers Due to Excess Noise \(1985 \[MWSYM\]\)](#)

Yoder, M.N.

- ❑ [Session 4 Introduction \(1984 \[MWSYM\]\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Yokoshima, I.

- ☐ [Short Millimeter Wave Region High Accuracy Power Meter with Self-Calibration Function](#)

Yon-hui, S.

- ☐ [A Study of W Band Subharmonically Pump Mixer](#)

Yoneyama, T.

- ☐ [Design of Nonradiative Dielectric Waveguide Filter](#)
- ☐ [Design of Nonradiative Dielectric Waveguide Filters \(Corrections\)](#)
- ☐ [Design of Nonradiative Dielectric Waveguide Filters \(Short Papers\)](#)
- ☐ [Loss Measurements of Nonradiative Dielectric Waveguide \(Special Papers\)](#)
- ☐ [Nonradiative Dielectric Waveguide T-Junctions for Millimeter-Wave Applications \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Yong-Hui, S.

- ☐ [A Study of W-Band Subharmonically Pumped Mixer](#)

Yoshida, N.

- ☐ [Transient Analysis of a Stripline Having a Corner in Three-Dimensional Space](#)
- ☐ [Transient Analysis of Microstrip Gap in Three-Dimensional Space \(Short Papers\)](#)

Yoshikiyo, H.

- ☐ [Characteristic Impedance Design Considerations for a High-Speed Superconducting Packaging System \(Short Papers\)](#)

Young, J.A.

- ☐ [1984 IEEE MTT-S International Microwave Symposium Keynote Address \(Dec. 1984 \[T-MTT\]\)](#)

Young, P.E.

- ☐ [Imaging Polarimeter Arrays for Near-Millimeter Waves](#)

Click on title for a paper summary.



Papers by Author

- ☐ [Polarization-Sensitive Imaging Arrays](#)

Yova, D.

- ☐ [Changes in Liposomes Permeability Induced by Gramicidin D After Microwave Irradiation \(Short Papers\)](#)

Yu, P.K.

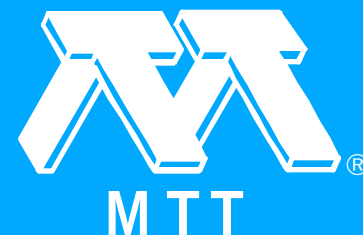
- ☐ [Field Patterns and Resonant Frequencies of High-Order Modes in an Open Resonator \(Short Papers\)](#)

Yu, S.S.

- ☐ [A Vlasov Description of the Gridded Gap-Electron Flow Interaction](#)

Yuan, L.T.

- ☐ [A W-Band Monolithic Balanced Mixer \(1985 \[MCS\]\)](#)
- ☐ [A W-Band Monolithic Balanced Mixer \(1985 \[MWSYM\]\)](#)
- ☐ [A W-Band Monolithic GaAs Crossbar Mixer \(1984 \[MWSYM\]\)](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Yuen, C.

- ☐ [Distributed GaAs FET Circuit Model for Broadband and Millimeter Wave Applications](#)

Yun-yi, W.

- ☐ [A Study of W Band Subharmonically Pump Mixer](#)
- ☐ [A Study of W-Band Subharmonically Pumped Mixer](#)

Yurek, A.M.

- ☐ [Optoelectronic Techniques for Microwave and Millimeter-Wave Applications](#)

Zaghloul, A.I.

- ☐ [An MMIC/MIC-to-Waveguide Transition for Single- and Dual-Polarization Systems](#)

Zaghloul, H.

- ☐ [Complex Permittivity Instrumentation for High-Loss Liquids at Microwave Frequencies \(Short Papers\)](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Zaki, K.A.

- ☐ Field Distribution of Hybrid Modes in Dielectric Loaded Waveguides
- ☐ Intensity and Distribution of Hybrid-Mode Fields in Dielectric-Loaded Waveguides
- ☐ Loss Mechanisms in Dielectric Loaded Resonators (1985 [MWSYM])
- ☐ Loss Mechanisms in Dielectric-Loaded Resonators (Dec. 1985 [T-MTT])

Zborowska, J.

- ☐ Multi-Octave Phase Modulators

Zdasiuk, G.

- ☐ A High Gain, Monolithic Distributed Amplifier Using Cascode Active Elements (1986 [MCS])
- ☐ Distributed GaAs FET Circuit Model for Broadband and Millimeter Wave Applications

Click on title for a paper summary.



Papers by Author

- ❑ [Waveguide Star Junction Used in Ka Band Dual Six Port Measurements](#)

Zhang, Q.

- ❑ [Analysis of Multilayer Interconnection Lines for a High-Speed Digital Integrated Circuit](#)

Zhiyi, C.

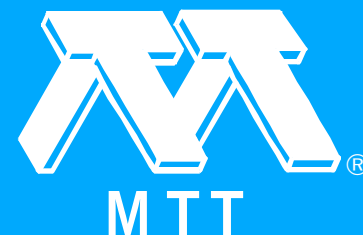
- ❑ [A 125--260-GHz Gyrotron](#)

Zhongru, G.

- ❑ [MIC Assembly for 12-GHz Direct Broadcast Satellite Receiver](#)

Zhu, S.-G.

- ❑ [Interaction of the Near-Zone Fields of a Slot on a Conducting Sphere with a Spherical Model of Man](#)
- ❑ [Interaction of the Near-Zone Fields of a Slot on a Conducting Sphere with a Spherical Model of Man \(Corrections\)](#)



IEEE

[Contents](#)

[Authors](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Zhuang, W.-C.

- ☐ [New Narrow-Band Dual-Mode Bandstop Waveguide Filters \(Corrections\)](#)

Zich, R.

- ☐ [Scattering at a Junction of Two Waveguides with Different Surface Impedances \(Comments\)](#)

Ziegler, C.

- ☐ [Miniature Band Reject Filters Applications for Satellite](#)

Zieniutycz, W.

- ☐ [Spectral-Domain Approach for Continuous Spectrum of Slot-Like Transmission Lines \(Short Papers\)](#)

Zimmerman, D.C.

- ☐ [A Dual-Gate FET Constant Phase Variable Power Amplifier](#)

Click on title for a paper summary.



Papers by Author



IEEE

Contents

Authors

Zimmerman, D.E.

- ☐ [A 16 Tap Hybrid Programmable Transversal Filter Using Monolithic GaAs Dual-Gate FET Array](#)
- ☐ [A Dual-Gate FET Constant Phase Variable Power Amplifier](#)

Zirath, H.

- ☐ [Noise Measurements and Noise Mechanisms in Microwave Mixer Diodes](#)

Zmuda, H.

- ☐ [A New Approach to Dispersion Analysis of Graded Index Optical Fibers](#)

Znojkwicz, M.E.

- ☐ [8 GHz Low Noise Bias Tuned VCO](#)

Zuffada, C.

- ☐ [Waveguide Modes Via an Integral Equation Leading to a Linear Matrix Eigenvalue Problem \(Corrections\)](#)

Click on title for a paper summary.



Papers by Author

- ❑ [Waveguide Modes Via an Integral Equation Leading to a Linear Matrix Eigenvalue Problem \(Short Papers\)](#)

Zurcher, J.-F.

- ❑ [MICROS 3 - A CAD/CAM Program for Fast Realization of Microstrip Masks](#)



[Contents](#)

[Authors](#)

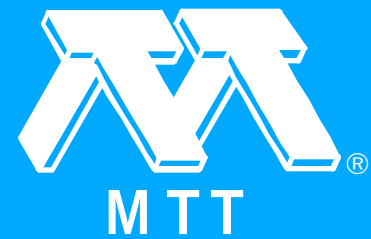
Click on title for a paper summary.



Abstracts

Front Cover (Jan. 1984 [T-MTT])

"Front Cover (Jan. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): f1-f2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

An Alternative Procedure for Implementing the Desegmentation Method

P.C. Sharma and K.C. Gupta. "An Alternative Procedure for Implementing the Desegmentation Method." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 1-4.

A new procedure for implementing the desegmentation method for analyzing two-dimensional microwave circuits is proposed. In certain situations, the condition for which has been brought out in this paper, the proposal procedure leads to more efficient evacuation of impedance matrices than the procedure known earlier. The computational efforts in the two procedures are compared.

Click on title for a complete paper.



Analysis of High-Speed GaAs Source-Coupled FET Logic Circuits

M. Idda, T. Takada and T. Sudo. "Analysis of High-Speed GaAs Source-Coupled FET Logic Circuits." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 5-10.

A source-coupled FET logic (SCFL) circuit is proposed for gigabit rate digital signal processing. FET threshold voltage tolerance in the SCFL circuit and the SCFL circuit performance are presented. The speed of the SCFL gate depends on the operating region of the FET. For high-speed operation, FET's drain-to-source voltage higher than a pinchoff voltage has to be supplied. The SCFL gate, which is composed of 1.5- μm gate-length FET's, shows that the minimum propagation time is predicted to be 25 ps/gate. Minimum rise time and fall time are expected to be 54 ps and 51 ps, respectively. Maximum RZ data rate is expected to be 5.6 Gb/s. The SCFL circuit is applicable for high-speed digital signal processing.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Scattering of Surface Waves on Transverse Discontinuities in Symmetrical Three-Layer Dielectric Waveguides

K. Uchida and K. Aoki. "Scattering of Surface Waves on Transverse Discontinuities in Symmetrical Three-Layer Dielectric Waveguides." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 11-19.

This paper presents a rigorous Wiener-Hopf solution to the problem of transverse discontinuities in a symmetrical three-layer dielectric waveguide excited by the dominant TE mode. Fourier transformation and the proper boundary conditions provide the Wiener-Hopf equation for the Fourier components of the scattered fields at the interface between the free space and the dielectric waveguide. A formal solution to this equation is derived by conventional factorization methods, and an iterative method is proposed to calculate the reflected, transmitted, and radiated fields numerically.

[Click on title for a complete paper.](#)



Abstracts

Finite-Element Analysis of Optical and Microwave Waveguide Problems

B.M.A. Rahman and J.B. Davies. "Finite-Element Analysis of Optical and Microwave Waveguide Problems." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 20-28.

A vector H-field formulation is developed for electromagnetic wave propagation for a wide range of guided-wave problems. It is capable of solving microwave or optical waveguide problems with arbitrarily anisotropic materials. We have introduced infinite elements to extend the region of explicit field representation to infinity, to consider open-type waveguides more accurately. Computed results are given for a variety of optical planar guides, image lines, and waveguides containing skew anisotropic dielectric.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Field Distribution of Two Conducting Posts in a Waveguide

S.L. Lopuch and T.K. Ishii. "Field Distribution of Two Conducting Posts in a Waveguide." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 29-33.

This paper reports a field analysis of two short and narrow metal posts in a rectangular waveguide. The posts project from the center of the wider wall: one post is "grounded" in the wall, and the other post terminates in a variable impedance (coaxial line). An integral over a Green's function relates the post currents to the electric field, which is high and quite nonuniform near the posts, and depends on the variable impedance. The posts could excite a glow-discharge detector or mixer circuit. Some measurements of guide impedance and observations on a glow tube are included.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Design of Multisection Impedance-Matched Dielectric-Slab Filled Waveguide Phase Shifters

F. Arndt, J. Bornemann and R. Vahldieck. "Design of Multisection Impedance-Matched Dielectric-Slab Filled Waveguide Phase Shifters." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 34-39.

Optimum-matched dielectric-slab filled waveguide phase shifters are designed with the method of field expansion into eigenmodes, which includes higher order mode interaction between the step discontinuities. The relative phase shift is mechanically adjustable between 0° and about 360° at midband frequency by lateral displacement of the dielectric slab. Computer-optimized design data are given for Ku-, K-, and Ka-band prototypes which achieve return losses of better than 40 dB, both as a function of displacement at midband frequency and as a function of frequency at fixed displacements. Measurements verify the theory.

[Click on title for a complete paper.](#)



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

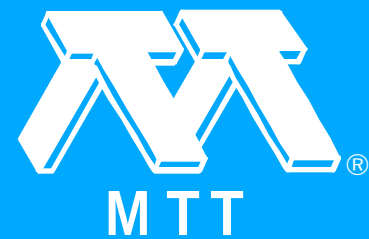
Rectangular Bars Coupled Through a Finite-Thickness Slot

J.H. Cloete. "Rectangular Bars Coupled Through a Finite-Thickness Slot." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 39-46.

A rigorous new solution, based on fringing capacitances and conformal mapping, is presented for the coupling problem in the parallel-coupled TEM transmission-line structure formed by two rectangular bars coupled through a rectangular slot, cut longitudinally in a finite-thickness ground plane. The conformal mapping solution is summarized in Appendix I and is based on the procedure published by Getsinger. Graphs of the capacitances needed to calculate the coupling for a given physical geometry, without solving the complicated equations associated with the theoretical solution, are also presented. A measurement procedure and experimental results are presented which verify the accuracy of the theoretical coupling data.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Experimental Study of the W-Band Dielectric-Guide Y-Branch Interferometer

A. Axelrod and M. Kisliuk. "Experimental Study of the W-Band Dielectric-Guide Y-Branch Interferometer." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 46-50.

Applicability of a W-band dielectric-guide Y-branch (DGY) interferometer as a modulator, switching element for the millimeter-wave planar dielectric-guide integrated circuits is established. The switching element includes a phase shifter formed by a metal wall proximate to a dielectric guide. The influence of the branches asymmetry on the on/off switching ratio was measured, found to comply with theory. On/off switching ratios of about 25 dB were obtained over a 98-104-GHz frequency range.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Properties of the Symmetrical Five-Port Circuit and Its Broad-Band Design

D.I. Kim, K. Araki and Y. Naito. "Properties of the Symmetrical Five-Port Circuit and Its Broad-Band Design." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 51-57.

The properties of the mismatched symmetrical five-port circuit are discussed, i.e., the equations for the maximum and minimum couplings of a mismatched symmetrical five-port circuit are derived by appropriate approximations. The approximate equations for the maximum and minimum phase differences due to mismatches of a symmetrical five-port circuit are also derived. Furthermore, a broad-band design theory of a symmetrical five-port circuit with microstrip line is proposed by applying a matching technique which adds a generalized compensating network and matching sections to the fundamental symmetrical five-port circuit. Thus, the bandwidth of the proposed broad-band symmetrical five-port circuit extends to about an octave. The experimental verification has been achieved, and, hence, the validity of the design method is confirmed.

[Click on title for a complete paper.](#)

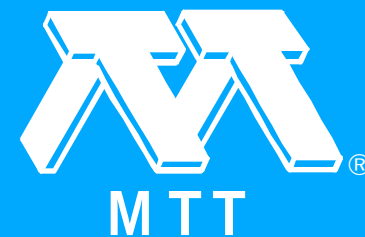


Abstracts

A 125--260-GHz Gyrotron

G.F. Brand, N.G. Douglas, M. Gross, J.Y.L. Ma, L.C. Robinson and C. Zhiyi. "A 125--260-GHz Gyrotron." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 58-64.

The second gyrotron constructed at the University of Sydney has produced continuous microwave output at more than 60 frequencies in the range 125-260 GHz at power levels approaching 10 W. A gyrotron like this, with broad frequency coverage and moderate power output, has a wide range of possible applications, from spectroscopy to scattering from waves and fluctuations in plasmas. In this paper, the results of detailed measurements of frequency, magnetic field, frequency pulling, and starting current are compared with theory. Agreement is excellent. We find that mode conversion at the output end of the cavity determines the level of output power.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

An Analysis of a Hybrid-Mode in a Twisted Rectangular Waveguide

H. Yabe and Y. Mushiake. "An Analysis of a Hybrid-Mode in a Twisted Rectangular Waveguide." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 65-71.

Analytic expressions of electromagnetic fields for the dominant hybrid-mode in a twisted rectangular waveguide are obtained. The fields exactly satisfy the boundary conditions on the guide walls in a helicoidal shape. By expanding these expressions for the fields in terms of the eigenfunctions of a straight waveguide, the hybrid-mode is found to be composed of a fundamental TE/sub 10/-mode component, accompanied with TE/sub 01/, TM/sub 21/, TE/sub 21/, and TE/sub 03/ modes, as successive higher order components. The result of the modal power calculation reveals that there exists a frequency at which the transmitting power carried in the cross-polarized TE/sub 01/-mode component just vanishes. As a limiting case of the twisted waveguide, fields in a twisted strip line are discussed also, and the existence of a propeller-like equiphase surface is shown.

[Click on title for a complete paper.](#)



Abstracts

2--20-GHz GaAs Traveling-Wave Amplifier

Y. Ayasli, L.D. Reynolds, Jr., J.L. Vorhaus and L.K. Hanes. "2--20-GHz GaAs Traveling-Wave Amplifier." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 71-77.

Single-stage and two-stage GaAs traveling-wave amplifiers operating with flat gain responses in the 2-20-GHz frequency range are described. The circuits are realized in monolithic form on a 0.1-mm GaAs substrate with 50- Ω input and output lines. Complete gate and drain dc bias circuitry is included on the chip. By cascading these amplifier chips, a 30-dB gain in the 2-20-GHz range is demonstrated, with 9 ± 1 -dB noise figure.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

A Dual Six-Port Network Analyzer Using Diode Detectors

J.R. Juroshek and C.A. Hoer. "A Dual Six-Port Network Analyzer Using Diode Detectors." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 78-82.

The performance of a dual six-port network analyzer using diode detectors is described. The network analyzer operates over the 2-18-GHz band using commercially available low-barrier Schottky diodes. The paper describes the process for calibrating the diodes for deviation from square law. Measurement results are presented showing the accuracy and precision of the six-port network analyzer when measuring 1-port and 2-port devices. Key work attenuation measurements, automated network analyzer, impedance measurements, microwave network analyzer, network analyzer, and six-port.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Accurate Wide-Range Design Equations for the Frequency-Dependent Characteristic of Parallel Coupled Microstrip Lines

M. Kirschning and R.H. Jansen. "Accurate Wide-Range Design Equations for the Frequency-Dependent Characteristic of Parallel Coupled Microstrip Lines." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 83-90.

In this paper, closed-form expressions are presented which model the frequency-dependent even- and odd-mode characteristics of parallel coupled microstrip lines with hitherto unattained accuracy and range of validity. They include the effective dielectric constants, the characteristic impedances using the power-current formulation, as well as the open-end equivalent lengths for the two fundamental modes on coupled microstrip. The formulas are accurate into the millimeter-wave region. They are based on an extensive set of accurate numerical data which were generated by a rigorous spectral-domain hybrid-mode approach and are believed to represent a substantial improvement compared to the state-of-the-art and with respect to the computer-aided design of coupled microstrip filters, directional couplers, and related components.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Dispersion Characteristics of Twisted Rectangular Waveguides

H. Yabe, K. Nishio and Y. Mushiake. "Dispersion Characteristics of Twisted Rectangular Waveguides." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 91-96.

Based on the expressions for the dominant hybrid-mode fields in twisted rectangular waveguides, dispersion formulas with two perturbational factors have been derived theoretically. These factors correspond to the two effects of the twist on the dominant wave propagation, respectively. The one expresses a shift in the cutoff frequency while the other expresses the effect of elongation in the transmission path. A set of 20-cm-long waveguides twisted uniformly by various multiples of 90° has been manufactured by the method of electroforming. The resonant frequencies of the respective waveguides have been measured as a transmission cavity in the 10-GHz band to obtain dispersion relations. Experimental results are found to be in good agreement with the theoretically derived formulas. The results of Lewin's theory are also compared with the present ones.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Planar Quasi-Optical Subharmonically Pumped Mixer Characterized by Isotropic Conversion Loss

K.D. Stephan and T. Itoh. "A Planar Quasi-Optical Subharmonically Pumped Mixer Characterized by Isotropic Conversion Loss." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 97-102.

By using a subharmonically pumped circuit in a quasi-optical planar mixer, we have found it possible to use an LO frequency of one-half the normal value with little added circuit complexity. This circuit shows conversion loss as low as $8.6 \text{ dB} \pm 2 \text{ dB}$ at 14 GHz. Through the means of a newly defined quasi-optical mixer parameter called isotropic conversion loss (L/sub ISO/), we find that performance of the mixer system degrades less than 10 dB from an RF input of 14 GHz to 35 GHz, which is more than twice the designed RF frequency.

[Click on title for a complete paper.](#)

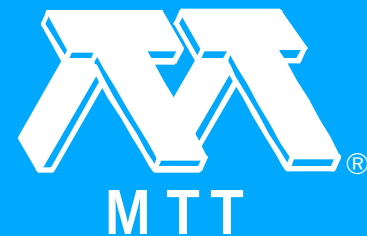


Abstracts

The Microstrip Open-Ring Resonator

I. Wolff and V.K. Tripathi. "The Microstrip Open-Ring Resonator." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 102-107.

The open-ring microstrip resonator is analyzed by utilizing the two-dimensional magnetic wall model. The solution and the numerical results for the eigenvalues and the electromagnetic fields for various resonant modes are presented. It is shown that the experimental results are in good agreement with the theoretical predictions based on this model.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

Characteristics of Some Asymmetrical Coupled Transmission Lines (Short Papers)

S.S. Bedair. "Characteristics of Some Asymmetrical Coupled Transmission Lines (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 108-110.

In this paper, expressions for the characteristics of some asymmetrical coupled transmission lines are derived. These include expressions for the capacitances, impedances, and phase velocities of asymmetrical coplanar strips, asymmetric coupled striplines, and asymmetric coupled microstriplines. Accuracy of these expressions is compared against available numerical results obtained using various numerical methods.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Plasma-Dielectric Sandwich Structure Used as a Tunable Bandpass Microwave Filter (Short Papers)

G.-C. Tai, C.H. Chen and Y.-W. Kiang. "Plasma-Dielectric Sandwich Structure Used as a Tunable Bandpass Microwave Filter (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 111-113.

A plasma-dielectric sandwich structure used as a tunable bandpass filter in a microwave spectrum is investigated in detail. The unique characteristics of this filter are that the center frequency of its passband and its bandwidth can be tuned electrically by varying the electron density of the plasma, which in turn can be adjusted by a voltage applied across the plasma electrodes. First, the principle in establishing the filtering effect is briefly discussed physically with an aim of suggesting a practical structure for theoretical analysis. A conventional multilayer theory is then employed to analyze this plasma-dielectric structure, and an optimization technique called the simplex method is used to find the center frequency. Both cases of having the TE/sub10/ dominant mode in a rectangular waveguide and the TEM mode in an unbounded structure are studied. Finally, included are the computed results for characterizing the filter such as reflection coefficients, center frequencies, bandwidths, quality factors, and lossy effects, etc.



Abstracts

Dielectric Waveguide Corner and Power Divider with a Metallic Reflector (Short Papers)

K. Ogusu. "Dielectric Waveguide Corner and Power Divider with a Metallic Reflector (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 113-116.

The right-angle corner and T- and Y-junction-type power dividers with the metallic reflector are experimentally investigated which are useful for dielectric waveguide millimeter-wave integrated circuits.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Broadside-Coupled Slot-Line Field Components (Short Papers)

R.N. Simons. "Broadside-Coupled Slot-Line Field Components (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 116-120.

This paper presents expressions for the odd- and even-mode electric field components and also the magnetic field components in the air, overlay, and dielectric regions of the broadside-coupled slot-line structure. These expressions are numerically computed, and the fields in the cross section and the longitudinal section are illustrated. The surface current distribution on the metal surfaces are also illustrated.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Radar-Echo Location of Conducting Spheres in Waveguide (Short Papers)

P.I. Somlo. "Radar-Echo Location of Conducting Spheres in Waveguide (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 120-122.

The radar-echo locations of conducting spheres placed in the center of the broad wall of a rectangular guide were measured using the synthetic-pulse technique. The measuring instrument was a six-port reflectometer whose results in the frequency domain were transformed digitally into the time domain. It was found that, as the size of the spheres was reduced, the radar-echo locations approached the center of the spheres in an oscillatory manner. The findings are somewhat unexpected, as the echo centers for some sphere sizes appear to be farther away from the source than their physical centers.

[Click on title for a complete paper.](#)



Abstracts

Propagation on a Sheath Helix in a Coaxially Layered Lossy Dielectric Medium (Short Papers)

M.J. Hagmann. "Propagation on a Sheath Helix in a Coaxially Layered Lossy Dielectric Medium (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 122-126.

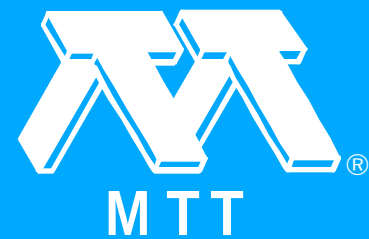
Radial and axial dependence of the azimuthally symmetric fields in each coaxial layer may be expressed in terms of modified Bessel functions and complex exponentials, respectively.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Impedance Calculation of Three Narrow Resonant Strips on the Transverse Plane of a Rectangular Waveguide (Short Papers)

K. Chang. "Impedance Calculation of Three Narrow Resonant Strips on the Transverse Plane of a Rectangular Waveguide (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 126-130.

A theoretical analysis has been developed to calculate the impedance of two inductive strips and one capacitive strip located on the transverse plane of a rectangular waveguide. The current ratios among the strips were determined by a variational method and then used for impedance calculations. The results can be applied to the impedance calculations of a single capacitive strip, two inductive strips, or three inductive strips as special cases.

[Click on title for a complete paper.](#)

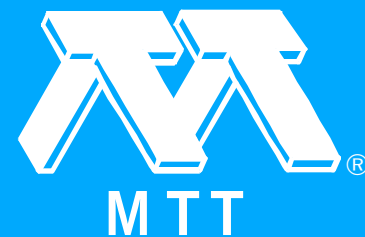


Abstracts

Accurate Approximations for a Function Appearing in the Analysis of Microstrip (Short Papers)

E.F. Kuester. "Accurate Approximations for a Function Appearing in the Analysis of Microstrip (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 131-133.

The function $Q(x)$ defined in the body of the paper is approximated accurately over the entire range $-1 \leq x < +1$. The simple approximate formulas are then used to obtain some simple expressions for several quantities which are encountered in the quasistatic analysis of microstrip transmission line.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

W-Band Low-Insertion-Loss E-Plane Filter (Short Papers)

R. Vahldieck, J. Bornemann, F. Arndt and D. Grauerholz. "W-Band Low-Insertion-Loss E-Plane Filter (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 133-135.

Computer-optimized design data for a four-resonator metallic E-plane filter are given with a midband frequency of about 94 GHz. The method of field expansion into suitable eigenmodes used considers the effects of finite insert thickness and higher order mode interaction. The measured minimum passband insertion loss of a metal filter prototype is 1.5 dB.

[Click on title for a complete paper.](#)



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

S- and X-Band GaAs FET Mixers with Thin-Film Lumped Elements (Short Papers)

H. Ohnishi and S. Yamashita. "S- and X-Band GaAs FET Mixers with Thin-Film Lumped Elements (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 135-138.

The design and performance of 2- and 11-GHz band mixers with a single-gate GaAs FET are presented in this paper. A mixer configuration in which the load oscillator (LO) signal is applied to the source is used. Matching networks are constructed with thin-film lumped elements fabricated on alumina. An SSB noise figure of 6.2 dB, with an associated conversion gain of 10 dB, has been achieved at the 11-GHz band, and SSB noise figures of less than 6 dB and a conversion gain of more than 8 dB over a 40-percent bandwidth are obtained at the 2-GHz band.

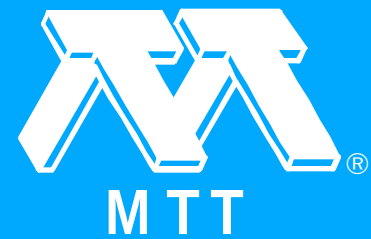
[Click on title for a complete paper.](#)



Abstracts

Patent Abstracts (Jan. 1984 [T-MTT])

"Patent Abstracts (Jan. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 139-141.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

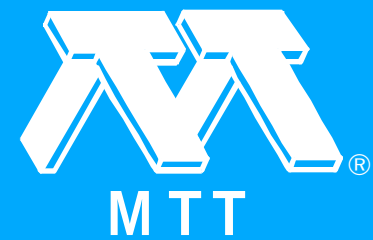
Click on title for a complete paper.



Abstracts

Membership Application (Jan. 1984 [T-MTT])

"Membership Application (Jan. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 142-142.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

IEEE Copyright Form (Jan. 1984 [T-MTT])

"IEEE Copyright Form (Jan. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): 143-144.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (Jan. 1984 [T-MTT])

"Back Cover (Jan. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.1 (Jan. 1984 [T-MTT]): b1-b2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

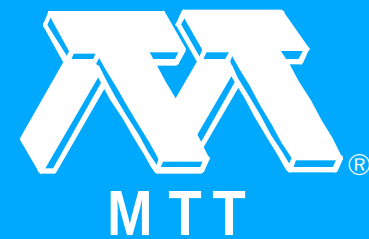
Click on title for a complete paper.



Abstracts

Front Cover (Feb. 1984 [T-MTT])

"Front Cover (Feb. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.2 (Feb. 1984 [T-MTT]): f1-f2.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.

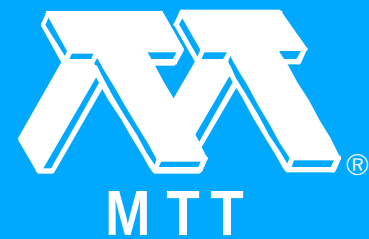


On the Resolution of Dicke-Type Radiometers

F. Thomsen. "On the Resolution of Dicke-Type Radiometers." 1984 Transactions on Microwave Theory and Techniques 32.2 (Feb. 1984 [T-MTT]): 145-150.

Microwave radiometers for remote sensing of the earth from a satellite are now in service. These are developed from astronomical radiometers designed for detection of interstellar radio sources. The radiometers measure the brightness temperature by comparing the received energy with an internal noise source at a well-defined radiation temperature. In the astronomical radiometers, it is traditional to use the same amount of time measuring the unknown source and the reference source. This principle has been inherited from the earth-based radiometers. As the earth brightness temperature varies very much due to the movement of the satellite, it is possible to enhance the resolution by rising more time to measure the earth brightness temperature and less time measuring the stable reference source. The possible gain in resolution is limited by the gain fluctuation of the receiver.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

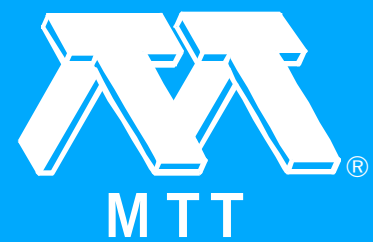
Measurements of the Photo-Induced Complex Permittivity of Si, Ge, and Te at 9 GHz

L. Ding, I. Shih, T.J.F. Pavlasek and C.H. Champness. "Measurements of the Photo-Induced Complex Permittivity of Si, Ge, and Te at 9 GHz." 1984 Transactions on Microwave Theory and Techniques 32.2 (Feb. 1984 [T-MTT]): 151-157.

The photo-induced complex permittivity $\Delta \epsilon' / (-j \Delta \epsilon'')$ of single, crystal silicon, germanium, and tellurium samples was studied using a transmission microwave bridge method at frequencies of about 9 GHz. The measurements were made at temperatures in a range from 100 to 300 K over an optical wavelength range from about 0.6 to 1.4 μm for silicon, 0.8 to 2.0 μm for germanium, and 1.5 to 4.2 μm for tellurium. The incident monochromatic illumination was chopped at about 90 Hz. It was found that the spectral variation of $\Delta \epsilon' / (-j \Delta \epsilon'')$ was similar to that for $\Delta \epsilon'' / \epsilon'$ over the wavelength ranges with the incident monochromatic light intensity in the order of 100 $\mu\text{W}/\text{cm}^2$. The spectral peaks (for Si and Ge samples) of both $\Delta \epsilon' / (-j \Delta \epsilon'')$ and $\Delta \epsilon'' / \epsilon'$ were found to shift towards shorter wavelengths as the temperature was decreased. From the photo-induced complex permittivity results, the collision time of the free carriers was derived.

[Click on title for a complete paper.](#)





[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

An Analysis of an Electronically Tunable n-GaAs Distributed Oscillator

A. Aishima and Y. Fukushima. "An Analysis of an Electronically Tunable n-GaAs Distributed Oscillator." 1984 Transactions on Microwave Theory and Techniques 32.2 (Feb. 1984 [T-MTT]): 157-164.

The effective Schottky-barrier height of a contact to n-GaAs can be designed arbitrarily by interposing a thin, highly doped layer between a metal and n-GaAs and by controlling the thickness optimally. An n-GaAs diode with a Schottky-barrier cathode exhibits various space-charge modes depending on the barrier height. A traveling dipole domain mode in an n-GaAs diode changes into a cathode trapped domain mode as the injection current at the cathode decreases. It has been shown that an n-GaAs diode, which operates in a cathode trapped domain mode, exhibits a negative conductance over a fairly wide frequency range. A super semiconductor. wide-band electronically tunable distributed oscillator can be achieved by inserting an n-GaAs diode with a suitably designed Schottky-barrier cathode between resonant microstriplines in place of conventional dielectric material. It has been shown that the frequency of the distributed oscillator would be electronically tunable over a fairly wide frequency range from 9 to 26 GHz.

[Click on title for a complete paper.](#)



Abstracts

Some Properties of the Matched, Symmetrical Six-Port Junction

G.P. Riblet and E.R.B. Hansson. "Some Properties of the Matched, Symmetrical Six-Port Junction." 1984 Transactions on Microwave Theory and Techniques 32.2 (Feb. 1984 [T-MTT]): 164-171.

Based on the S-matrix element-eigenvalue relations, the basic features of the matched, symmetrical, reciprocal six-port junction are derived. It is shown to be unsuitable for use in a six-port measurement system but can be used to build a five-way power divider. The equivalent admittance of the junction is derived, and, as an application, a stripline five-way power divider is designed. The theory is confirmed by the close agreement between computed and measured performance of an experimental one-to-five power divider.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Integrated Tunable Cavity Gunn Oscillator for 60-GHz Operation in Image Line Waveguide

R.E. Horn, H. Jacobs and E. Freibergs. "Integrated Tunable Cavity Gunn Oscillator for 60-GHz Operation in Image Line Waveguide." 1984 Transactions on Microwave Theory and Techniques 32.2 (Feb. 1984 [T-MTT]): 171-176.

The design, construction, and experimental test results of a mechanically tunable Gunn oscillator using a recessed diode metal coaxial cavity coupled to an image line waveguide is described. The oscillator frequency was changed by about 10-percent by varying the bias post length into the coaxial structure. The oscillator is designed so that both the Gunn diode and resonant cavity can be quickly replaced to provide extended frequency coverage and efficiency. This Gunn diode oscillator has provided up to 15-mW CW power at 60 GHz with 10-percent tuning range.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

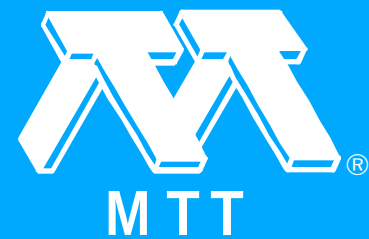
Two-Port Equivalent Circuits of Two-Wire Parabolic Tapered Coupled Transmission Lines

A. Endo, K. Kobayashi, Y. Nemoto and R. Sato. "Two-Port Equivalent Circuits of Two-Wire Parabolic Tapered Coupled Transmission Lines." 1984 Transactions on Microwave Theory and Techniques 32.2 (Feb. 1984 [T-MTT]): 177-182.

Two-port equivalent circuits of two-wire parabolic tapered coupled transmission lines (PTCTL) with open or short terminal conditions on the remaining two ports are presented. First, two-port equivalent circuits of PTCTL, whose characteristic admittances increase along the lines, are shown. Second, two-port equivalent circuits of PTCTL, whose characteristic impedances increase along the lines, the dual of the previous circuits, are shown. These two-port circuits of PTCTL are expressed in terms of two equivalent representations, one having mixed, lumped and uniform distributed circuits, and the other consisting of uncoupled nonuniform distributed circuits.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Scattering Analysis of a Millimeter-Wave Scalar Network Analyzer

J.B. Knorr. "Scattering Analysis of a Millimeter-Wave Scalar Network Analyzer." 1984 Transactions on Microwave Theory and Techniques 32.2 (Feb. 1984 [T-MTT]): 183-190.

This paper presents the results of a scattering analysis of a millimeter-wave scalar network analyzer system. The results clearly indicate the way in which the individual system components contribute to calibration and measurement error. Procedures which minimize the calibration error for waveguide measurement systems are described, and the residual measurement uncertainty is quantified in a way which establishes the tightest possible bound on the measurement error.

[Click on title for a complete paper.](#)



Abstracts

Hybrid-Mode Analysis of Arbitrarily Shaped Planar Microwave Structures by the Method of Lines

S.B. Worm and R. Pregla. "Hybrid-Mode Analysis of Arbitrarily Shaped Planar Microwave Structures by the Method of Lines." 1984 Transactions on Microwave Theory and Techniques 32.2 (Feb. 1984 [T-MTT]): 191-196.

This paper presents a method for analyzing arbitrarily shaped planar microwave structures, which is based on the method of lines and applies to both resonant and periodic structures in microstrip, slotline, and finline circuits. Numerical results are presented for some selected structures.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

One-Root Intervals of Dispersion Relations for a Resonator with Dielectric Sample (Short Papers)

V. Bilik. "One-Root Intervals of Dispersion Relations for a Resonator with Dielectric Sample (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.2 (Feb. 1984 [T-MTT]): 197-198.

A method is developed yielding intervals with analytically expressed bounds that contain only one root of the dispersion relation corresponding to any chosen mode of a cylindrical resonator with a dielectric sample, filling its cross section along part of the length of the resonator. A method for finding both the eigenfrequency and the sample permittivity is given.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Normal-Mode Parameters of Microstrip Coupled Lines of Unequal Width (Short Papers)

S. Kal, D. Bhattacharya and N.B. Chakraborti. "Normal-Mode Parameters of Microstrip Coupled Lines of Unequal Width (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.2 (Feb. 1984 [T-MTT]): 198-200.

Empirical relations for the capacitive and inductive coupling coefficients have been used to compute normal-mode parameters of non-identical microstrip coupled lines. The computed values of mode velocities and mode impedances are compared with available results from the literature and experimental results on nonidentical microstrip couplers to test the applicability of the empirical relations.

[Click on title for a complete paper.](#)



Abstracts

An Analysis of a Width-Modulated Microstrip Periodic Structure (Short Papers)

N.V. Nair and A.K. Mallick. "An Analysis of a Width-Modulated Microstrip Periodic Structure (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.2 (Feb. 1984 [T-MTT]): 200-204.

The wave propagation along a microstripline with sinusoidally varying width has been investigated. The analysis employs the circuit theory of uniform microstriplines and their step junctions. The wave amplitude transmission (WAT) matrix has been successfully used to determine the propagation constant, characteristic impedance, and the input impedance of the terminated line. Samples have been fabricated for the experimental verification of the above-mentioned quantities. Theory and experiment show good agreement.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Semiconductor Antenna: A New Device in Millimeter- and Submillimeter-Wave Integrated Circuits (Short Papers)

F.C. Jain, R. Bansal and C.V. Valerio, Jr.. "Semiconductor Antenna: A New Device in Millimeter- and Submillimeter-Wave Integrated Circuits (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.2 (Feb. 1984 [T-MTT]): 204-208.

A new approach in realizing millimeter- and submillimeter-wave antennas using semiconductor materials is described. The characteristics of these antennas can be controlled during fabrication and/or during operation by modulating the conductivity of the semiconductor. Theoretical computations are presented to evaluate the performance of some typical antenna structures. The physical layout of a monolithic semiconductor antenna with its associated control elements is also described.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Dynamic Behavior of Pulsed-IMPATT Oscillators (Short Papers)

R.K. Mains, G.I. Haddad, D. Bowling and M. Afendykiw. "Dynamic Behavior of Pulsed-IMPATT Oscillators (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.2 (Feb. 1984 [T-MTT]): 208-212.

A method of simulating the dynamic behavior of pulsed IMPATT oscillators is presented. It is assumed that the simulation variables change slowly with respect to the RF period so that the quasistatic approximation may be used. A comparison of simulation results with experimental results for an X-band circuit is given.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Spectral Domain Analysis of an Elliptic Microstrip Ring Resonator (Short Papers)

A.K. Sharma. "Spectral Domain Analysis of an Elliptic Microstrip Ring Resonator (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.2 (Feb. 1984 [T-MTT]): 212-218.

The quasi-static capacitance of an elliptic microstrip ring resonator is evaluated with the spectral domain technique. The effect of fringing of fields associated with the structure is determined using this capacitance value in terms of the effective eccentricities of the inner and outer ellipses, the effective values of the ratio of the semimajor and semiminor axes, and the effective dielectric constant. The resonant frequency of the even TM_{c110} mode, calculated utilizing them, is in good agreement with the experiment. Mode charts for the dominant and higher order even and odd TM_{cm10} resonance modes are also presented.

[Click on title for a complete paper.](#)



Abstracts

Characteristic Impedance of Rectangular Coaxial Transmission Lines (Correction)

R. Dileo and M. Magid. "Characteristic Impedance of Rectangular Coaxial Transmission Lines (Correction)." 1984 Transactions on Microwave Theory and Techniques 32.2 (Feb. 1984 [T-MTT]): 219-219.

An equation in a technical paper by Cruzan and Garver has been misprinted.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Microwave Automatic Impedance Measuring Schemes Using Three Fixed Probes (Correction)

C.-L.J. Hu. "Microwave Automatic Impedance Measuring Schemes Using Three Fixed Probes (Correction)." 1984 Transactions on Microwave Theory and Techniques 32.2 (Feb. 1984 [T-MTT]): 219-219.

In the above paper, the Acknowledgment Section should have appeared as follows.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

Scattering of Guided Modes Caused by an Arbitrarily Shaped Broken End in a Dielectric Slab Waveguide (Correction)

N. Morita. "Scattering of Guided Modes Caused by an Arbitrarily Shaped Broken End in a Dielectric Slab Waveguide (Correction)." 1984 Transactions on Microwave Theory and Techniques 32.2 (Feb. 1984 [T-MTT]): 219-219.

Due to a technical oversight in the production of the November issue of this Transactions, Nagayoshi Morita's photograph did not appear with his biography in the above paper. Following is a reprint of Dr. Morita's biography with his photo.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

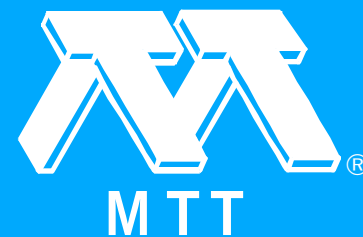


Abstracts

Loop-Gap Resonator: A Lumped Mode Microwave Resonant Structure (Correction)

"Loop-Gap Resonator: A Lumped Mode Microwave Resonant Structure (Correction)." 1984 Transactions on Microwave Theory and Techniques 32.2 (Feb. 1984 [T-MTT]): 219-219.

In the above paper, the first half of the sentence beginning on the left-hand column of p. 1060 was mistakenly deleted. The complete sentence reads as follows.



IEEE

Contents

Publications

Issues

Papers

Authors

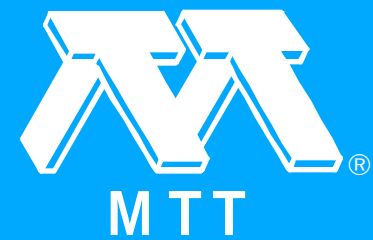
Click on title for a complete paper.



Abstracts

Patent Abstracts (Feb. 1984 [T-MTT])

"Patent Abstracts (Feb. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.2 (Feb. 1984 [T-MTT]): 220-223.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Membership Application (Feb. 1984 [T-MTT])

"Membership Application (Feb. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.2 (Feb. 1984 [T-MTT]): 224-224.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

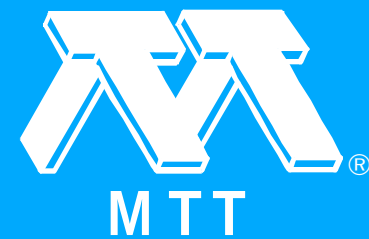
Click on title for a complete paper.



Abstracts

Back Cover (Feb. 1984 [T-MTT])

"Back Cover (Feb. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.2 (Feb. 1984 [T-MTT]): b1-b2.



IEEE

Contents

Publications

Issues

Papers

Authors

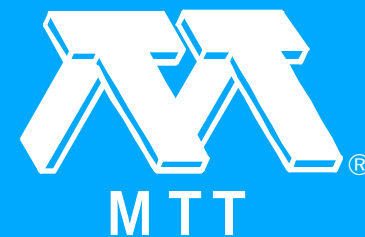
Click on title for a complete paper.



Abstracts

Front Cover (Mar. 1984 [T-MTT])

"Front Cover (Mar. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): f1-f2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

Contents

Publications

Issues

Papers

Authors

Foreword (Mar. 1984 [T-MTT])

H.Q. Tserng and C.C. Huang. "Foreword (Mar. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): 225-225.

Considerable progress has been made over the past several years in power and low-noise GaAs FET's and circuits. Power FET's with output powers of up to 30 W at S-C bands and a few hundred milliwatts at K-band have been achieved. Ultra-low-noise FET's operating at 20 GHz and beyond have been reported. Increasing interest in GaAs monolithic IC technology has also stimulated the steady improvements in discrete power and low-noise FET performance. Special circuit techniques such as large-signal characterization, modeling, and power combining have become increasingly important for realizing the ultimate performance potentials of this important and versatile solid-state microwave device.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

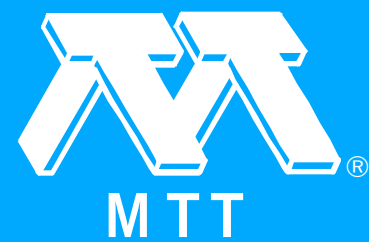
A 22--24-GHz Cryogenically Cooled GaAs FET Amplifier

A. Cappello and J. Pierro. "A 22--24-GHz Cryogenically Cooled GaAs FET Amplifier." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): 226-230.

This paper describes the design and performance of a cryogenically cooled low-noise FET amplifier operating in the 22-24-GHz range. The amplifier employs five cascaded single-ended gain stages and an integral bandpass filter. Noise temperatures in the 200 K range with an associated gain of 28 dB are typical for the nine cooled units built to date.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Characterization of GaAs FET's in Terms of Noise, Gain, and Scattering Parameters through a Noise Parameter Test Set

E.F. Calandra, G. Martines and M. Sannino. "Characterization of GaAs FET's in Terms of Noise, Gain, and Scattering Parameters through a Noise Parameter Test Set." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): 231-236.

A method for the complete characterization of GaAs FET's in terms of noise parameters (F_{min} , Γ_{opt} , R_n), gain parameters (G_{max} , Γ_{og} , R_g), and of those scattering parameters (S_{11} , S_{22} , $|S_{12}|$, $|S_{21}|$, $\angle S_{12}/\angle S_{21}$) that are needed for low-noise microwave amplifier design is presented. The instrumentation employed, i.e., a noise-figure measuring system equipped with a vectorial reflectometer, as well as the time consumption, are the same required for the determination of noise parameters only through conventional methods. The measuring setup and the experimental procedure are described in detail. Considerations about the computer-aided data processing technique are also provided. As an experimental result, the characterization of a sample device versus frequency (4-12 GHz) and drain current is reported. A comparison between the scattering parameters provided by the method and those measured by means of a network analyzer is also included.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Stability Margins in Microwave Amplifiers

D.J.H. MaClean. "Stability Margins in Microwave Amplifiers." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): 237-242.

Shunt feedback around single GaAs MESFET's is becoming more widespread to ease matching to 50 ohm terminations and improve gain flatness. The most accurate and meaningful method of assessing feedback intentional or unintentional, is described. A simple sequence of steps leads from measured S-parameters to a plot of return ratio and Nyquist's criterion of stability. An amplifier rising an accurately measured NE 70083 FET is analyzed to illustrate the method, and to present graphs of frequency-dependent admittances of a broad-band representation for transistors which is simpler than hybrid-pi models, and valid over the entire 2 to 18-GHz measured frequency range. The return ratio quantifies the total feedback present, thus enabling the most realistic stability margins to be found, and the benefits of feedback on performance to be quantified.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

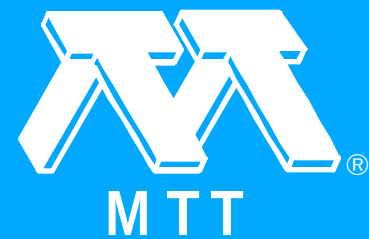
A Simplified Microwave Model of the GaAs Dual-Gate MESFET

J.R. Scott and R.A. Minasian. "A Simplified Microwave Model of the GaAs Dual-Gate MESFET." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): 243-248.

A simplified wide-band model of the GaAs dual-gate MESFET based upon the familiar cascode representation is presented, which is valid over the frequency range of 2-11 GHz. The equivalent circuit contains 14 elements and the parameter values are directly determined from 3-port S-parameters over the frequency range of 4-6 GHz, and dc data. Separate microwave measurements of each FET part are not required, thus greatly reducing the number of measurements required to fully characterize the device. The method has been used to model a GaAs dual-gate MESFET in which both FET parts were in the saturation region, and good agreement has been obtained between measured and calculated results without the need for computer optimization.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Dual-Gate MESFET Mixers

C. Tsironis, R. Meierer and R. Stahlmann. "Dual-Gate MESFET Mixers." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): 248-255.

A theoretical and experimental investigation of dual-gate MESFET mixers is presented. Based on a detailed analysis of the different nonlinear modes of DGFET's, a computer-aided modeling procedure has been developed, which allowed to recognize and optimize critical circuit and bias conditions for high conversion gain and IF bandwidth. Theoretical results are in good agreement with experiments on a 12-GHz TV reception mixer with 8-dB conversion gain and 800-MHz bandwidth.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

GaAs Dual-Gate FET for Operation up to K-Band

B. Kim, H.Q. Tserng and P. Saunier. "GaAs Dual-Gate FET for Operation up to K-Band." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): 256-261.

A high-frequency equivalent circuit model of a GaAs dual-gate FET and analytical expressions for the input/output impedances, transconductance, unilateral gain, and stability factor are presented in this paper. It is found that the gain of a dual-gate FET is higher than that of a single-gate FET at low frequency, but it decreases faster as frequency increases because of the capacitive shunting effect of the second gate. A dual-gate power FET suitable for variable gain amplifier applications up to K-band has been developed. At 10 GHz, a 1.2-mm gatewidth device has achieved an output power of 1.1 W with 10.5-dB gain and 31-percent power-added efficiency. At 20 GHz, the same device delivered an output power of 340 mW with 5.3-dB gain. At K-band, a dynamic gain control range of up to 45 dB was obtained with an insertion phase change of no more than ± 2 degrees for the first 10 dB of gain control.

[Click on title for a complete paper.](#)



Abstracts

Design of Broad-Band Power GaAs FET Amplifiers

Y. Tajima and P.D. Miller. "Design of Broad-Band Power GaAs FET Amplifiers." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): 261-267.

A model is presented for the drain-gate breakdown phenomenon of GaAs FET's, based on experimental results. this breakdown model is added to a previously published large-signal model and incorporated in a powerful computer-aided design program called LSFET. The program is capable of searching for the optimum power load for an FET and simulating the power performance of multistage amplifiers. The design of power amplifiers is discussed in detail, using the knowledge gained from LSFET. Data is presented from a fabricated monolithic broad-band power amplifier chip showing good agreement between measured results and simulated curves.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

MESFET Distributed Amplifier Design Guidelines

J.B. Beyer, S.N. Prasad, R.C. Becker, J.E. Nordman and G.K. Hohenwarter. "MESFET Distributed Amplifier Design Guidelines." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): 268-275.

In the paper, the analysis of GaAs MESFET distributed amplifiers and a systematic approach to their design are presented. The analysis focuses on fundamental design considerations and also establishes the maximum gain-bandwidth product of the amplifier. The design approach presented enables one to examine the tradeoffs between the variables, such as the device, the number of devices, and the impedances and cutoff frequency of the lines, and arrive at a design which gives the desired frequency response. Excellent agreement is shown when the theoretically predicted response of a typical amplifier is compared with computer-aided analysis results, and good agreement is shown with previously published experimental results.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A GaAs FET Model for Large-Signal Applications

D.L. Peterson, A.M. Pavio, Jr. and B. Kim. "A GaAs FET Model for Large-Signal Applications." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): 276-281.

The use of GaAs FET's under large-signal conditions requires a knowledge of the nonlinear behavior of these devices. A computer program, based on a circuit model with nonlinear elements, has been developed which provides this information. Results from the computer model and examples of its use in microwave circuit design are given.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Computer-Aided Synthesis of Lumped Lossy Matching Networks for Monolithic Microwave Integrated Circuits (MMIC's)

L.C.T. Liu and W.H. Ku. "Computer-Aided Synthesis of Lumped Lossy Matching Networks for Monolithic Microwave Integrated Circuits (MMIC's)." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): 282-289.

A systematic computer-aided synthesis (CAS) technique of lumped lossy matching networks is presented in this paper. This exact synthesis procedure can take arbitrary finite quality factor Q for each lumped element in the matching network and therefore facilitate the circuit design for monolithic microwave integrated circuits (MMIC's) where the loss of the passive elements is too large to be neglected. The gain-bandwidth limitations of some useful lumped lossy matching networks are discussed in detail and are summarized in a set of gain-bandwidth constraint plots. An interactive computer program LUMSYN is developed to solve this lumped lossy synthesis problem. LUMSYN is a general-purpose CAS program which can be used by microwave circuit designers with limited background in network synthesis to carry out low-noise and power amplifier designs in MMIC's. Finally, a design example of broad-band monolithic microwave low-noise amplifier using a state-of-the-art low-noise submicron gate-length GaAs MESFET is presented to illustrate the computer-aided synthesis of MMIC amplifiers.

Click on title for a complete paper.



Abstracts

2--20-GHz GaAs Traveling-Wave Power Amplifier (Mar. 1984 [T-MTT])

Y. Ayasli, L.D. Reynolds, R.L. Mozzi and L.K. Hanes. "2--20-GHz GaAs Traveling-Wave Power Amplifier (Mar. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): 290-295.

Power amplification in FET traveling-wave amplifiers is examined, and the mechanisms which limit power capability of the amplifier are identified. Design considerations for power amplification are discussed. A novel single-stage and two-stage monolithic GaAs traveling-wave power amplifier with over 250-mW power output in the 2-20-GHz frequency range is described.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Computer-Aided Error Correction of Large-Signal Load-Pull Measurements

R.S. Tucker and P.D. Bradley. "Computer-Aided Error Correction of Large-Signal Load-Pull Measurements." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): 296-301.

A versatile system is described for the large-signal characterization of microwave power MESFET's. High accuracy is obtained through vector error-correction techniques. The system is calibrated using a procedure based on conventional automatic network analyzer calibration measurements and a series of simple insertion loss measurements. The measurement system provides accurate reflection coefficient and RF power data over a wide range of device loading conditions.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A 6-GHz 80-W GaAs FET Amplifier with a TM-Mode Cavity Power Combiner

Y. Tokumitsu, T. Saito, N. Okubo and Y. Kaneko. "A 6-GHz 80-W GaAs FET Amplifier with a TM-Mode Cavity Power Combiner." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): 301-308.

A novel 8-way divider/combiner using TM/sub 010/- and TM/sub 020/-mode cavities was developed. This divider/combiner has an insertion loss of 0.2 dB and a bandwidth of 600 MHz in the 6-GHz communications band. For broadening the operating bandwidth of the divider/combiner, two techniques of double cavities and tight coupling are described. Degradation of power-combining efficiency is also discussed when input signals into a power combiner have variations in amplitude and phase. By using this divider/combiner, an experimental 6-GHz 80-W GaAs FET amplifier with a combining efficiency of 85 percent was demonstrated to investigate the feasibility of a solid-state high-power amplifier.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

A Packaged 20-GHz 1-W GaAs MESFET with a Novel Via-Hole Plated Heat Sink Structure

Y. Hirachi, Y. Takeuchi, M. Igarashi, K. Kosemura and S. Yamamoto. "A Packaged 20-GHz 1-W GaAs MESFET with a Novel Via-Hole Plated Heat Sink Structure." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): 309-316.

A novel Via-Hole plated heat sink (PHS) structure with an improved gate-packing density is developed for K-band GaAs power FET's. The gate-packing density in this structure is increased to four times greater than that in the conventional direct via-hole structure, by making via-holes under the source-grounding pads fabricated outside the FET active area. The increase in the gate-packing density allows the design of a high-power, high-frequency FET with a larger gate periphery. The resultant 2.4-mm gate periphery device with 0.7 μ m gate length delivered 1.1 W (30.4 dBm) of output power with 5.0-dB gain and 19.2-percent power added efficiency at 20 GHz, and exhibited 0.74 W (28.7 dBm) at 30 GHz. The same type of device assembled in the hermetically sealed package delivered 1.0 W (30 dBm) of output power with 4.8-dB gain and 13-percent power added efficiency at 20 GHz. Thermal and mechanical-environmental tests were made to assess the reliability of the novel Via-Hole PHS FET. Results showed no failure nor significant change in device parameters throughout the tests.

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A K-Band GaAs FET Amplifier with 8.2-W Output Power

J. Goel. "A K-Band GaAs FET Amplifier with 8.2-W Output Power." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): 317-324.

An 8.2-W GaAs FET amplifier with 38.6 ± 0.5 -dB gain over a 17.7-19.1 GHz frequency band has been developed. This amplifier combines the outputs of eight multistage amplifier modules utilizing a radial combiner. This state-of-the-art power level has been achieved with AM/PM of less than $2^\circ/\text{dB}$. The third-order intermodulation products at 1-dB gain compression were 20 dBc, and variation in group delay over the frequency band was less than ± 0.25 ns. Tests show that the amplifier is unconditionally stable and follows the graceful degradation principle.

[Click on title for a complete paper.](#)



Abstracts

The Dynamical Behavior of a Single-Mode Optical Fiber Strain Gage (Correction to Comments)

P.A.A. Laura and J.L. Pombo. "The Dynamical Behavior of a Single-Mode Optical Fiber Strain Gage (Correction to Comments)." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): 324-324.

In the first paragraph of Section II of the above paper, the words "Lagrange-Sophie Germaine's" do not belong there.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

New Narrow-Band Dual-Mode Bandstop Waveguide Filters (Corrections)

J.-R. Qian and W.-C. Zhuang. "New Narrow-Band Dual-Mode Bandstop Waveguide Filters (Corrections)." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): 324-324.

In the first paragraph of Section II of the above paper, the words "Lagrange-Sophie Germaine's" do not belong there.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

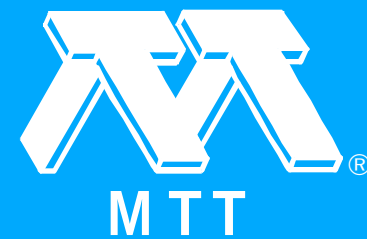
Click on title for a complete paper.



Abstracts

Patent Abstracts (Mar. 1984 [T-MTT])

"Patent Abstracts (Mar. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): 325-329.



IEEE

Contents

Publications

Issues

Papers

Authors

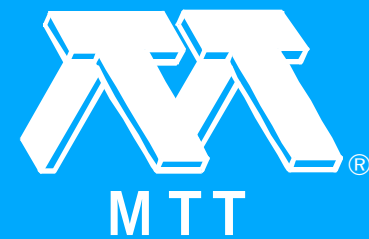
Click on title for a complete paper.



Abstracts

Membership Application (Mar. 1984 [T-MTT])

"Membership Application (Mar. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): 330-330.



IEEE

Contents

Publications

Issues

Papers

Authors

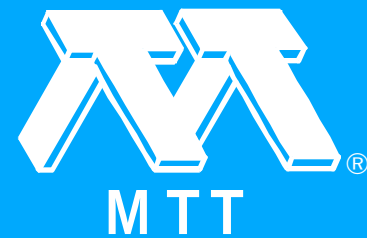
Click on title for a complete paper.



Abstracts

IEEE Open Order Plan (Advertisement) (Mar. 1984 [T-MTT])

"IEEE Open Order Plan (Advertisement) (Mar. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): 331-331.



IEEE

Contents

Publications

Issues

Papers

Authors

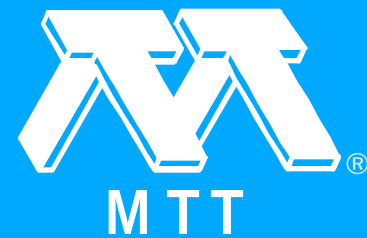
Click on title for a complete paper.



Abstracts

IEEE Annual Combined Index (Advertisement) (Mar. 1984 [T-MTT])

"IEEE Annual Combined Index (Advertisement) (Mar. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): 332-332.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

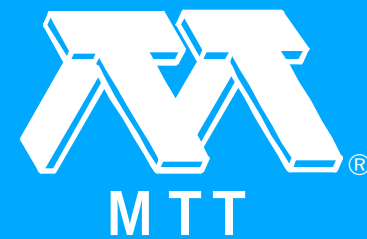
Click on title for a complete paper.



Abstracts

Back Cover (Mar. 1984 [T-MTT])

"Back Cover (Mar. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.3 (Mar. 1984 [T-MTT] (Special Issue on Power and Low-Noise GaAs FET Circuits and Applications)): b1-b2.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Front Cover (Apr. 1984 [T-MTT])

"Front Cover (Apr. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

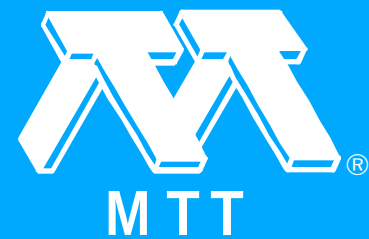
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

On the Solution of a Microstripline with Two Dielectrics

R.C. Callarotti and A. Gallo. "On the Solution of a Microstripline with Two Dielectrics." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 333-339.

We present the calculation for, the capacitance and the effective dielectric constant for a microstripline with two different dielectrics. The solution is based on the exact transformation law provided by two successive Schwarz-Christoffel transformations, which is given in terms of the Jacobi $Z/\text{sub } n/$ function. This function can be easily separated into its real and imaginary parts, allowing the exact determination of the curve which separates the two dielectrics in the transformed plane. Once the curve is obtained, the capacitance of the system is calculated numerically by a finite-difference method. We compare our results with data obtained from Wheeler's approximate ellipse solution, as well as with other analytical solutions. We assume an infinitely wide ground plane and TEM-mode propagation.

[Click on title for a complete paper.](#)



Analysis of Wave Propagation in Anisotropic Film Waveguides with Bent Optical Axes

M. Geshiro, Y. Kaihara and S. Sawa. "Analysis of Wave Propagation in Anisotropic Film Waveguides with Bent Optical Axes." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 339-339.

We present an analytical method for studying the wave propagation in anisotropic planar optical waveguides where the oblique angle between the optical axis and the propagation axis changes arbitrarily in the film surface along the propagation length. The analysis is based on the coupled-mode theory, where the coupling between a guided mode and radiation modes is regarded to be of major importance. We apply a hypothetical boundary method to quantize the continuum of radiation modes, and replace the continuously changing oblique angle by a step approximation. It is shown that these approximations do not degrade the computational accuracy. To exemplify the wave-propagation properties, we deal with a waveguide consisting of LiNbO₃/sub 3/ and let the oblique angle change linearly along the propagation length. It is found that the incident guided TE mode leaks its power primarily in a very narrow region centered on the critical oblique angle, and that TE radiation modes play an important role in the power conversion, even though they carry far less power than the TM radiation modes.



Abstracts

A New Method for Calculating TE and TM Cutoff Frequencies of Uniform Waveguides with Lunar or Eccentric Annular Cross Section

J.R. Kuttler. "A New Method for Calculating TE and TM Cutoff Frequencies of Uniform Waveguides with Lunar or Eccentric Annular Cross Section." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 348-354.

Cutoff frequencies are determined for the uniform waveguide with circular outer conductor and eccentric circular inner conductor. The "lunar line" formed by connecting the inner circle to the outer circle is also considered. Both TE and TM modes are treated. The technique used is to combine conformal mapping of the cross section with the powerful method of intermediate problems. This combination of methods has not been applied previously to the calculation of cutoff frequencies. It produces good, rigorous lower bounds for the frequencies. When complementary upper bounds are found by the Ritz method, very small intervals are determined containing the exact frequencies. For the examples considered, the first twenty or so frequencies are bounded very accurately.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

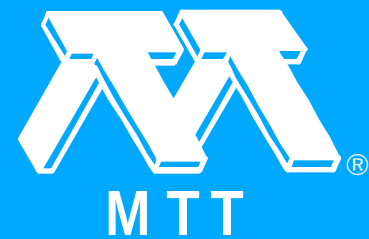
Fast-Fourier-Transform Method for Calculation of SAR Distributions in Finely Discretized Inhomogeneous Models of Biological Bodies

D.T. Borup and O.P. Gandhi. "Fast-Fourier-Transform Method for Calculation of SAR Distributions in Finely Discretized Inhomogeneous Models of Biological Bodies." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 355-360.

The paper describes a novel iterative approach for calculations of specific absorption rate (SAR) distributions in arbitrary, lossy, dielectric bodies. To date, the method has been used for 2-D problems where its accuracy has been confirmed by comparison with the analytic solutions for homogeneous and layered, circular, cylindrical bodies. With computation times that are proportional to $N \log_2 N$ rather than N^2 to N^3 for the method of moments, the present approach should be extendable to 3-D bodies with $N = 10^4$ to 10^5 cells allowing, thereby, details of SAR distributions that are needed for EM hyperthermia, as well as for assessing biological effects.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Characteristics of Transmission Lines with a Single Wire for a Multiwire Circuit Board

H. Shibata and R. Terakado. "Characteristics of Transmission Lines with a Single Wire for a Multiwire Circuit Board." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 360-364.

This paper presents the characteristic impedance Z_0 and the phase velocity v_p of transmission lines with a single wire for a multiwire circuit board (MWB) under the quasi-TEM wave approximation. The characteristics are discussed for each of three investigated structures a: (I) $H = h + r$, (II) $H = h$, and (III) $H = h - r$, where r , h , and H are the radius of the wire, the thickness of the dielectric (adhesive layer), and the distance from the ground plane to the center of the wire, respectively. A charge simulation method is used for the calculation of the parameters. Z_0 and v_p are presented in graphical form for adhesive relative dielectric constants ϵ_r of 1.0, 2.65, and 5.0 as a function of r/h . An approximate formula of Z_0 for the structure of case (II) with $\epsilon_r = 5.0$ is also presented.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Multiple-Post Inductive Obstacles in Rectangular Waveguide

P.G. Li, A.T. Adams, Y. Leviatan and J. Perini. "Multiple-Post Inductive Obstacles in Rectangular Waveguide." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 365-373.

A complete analysis of multiple-post inductive obstacles in rectangular waveguide is presented. A moment method solution with exponential ($e^{\sup jn\theta}$) expansion and weighting functions is used in a Galerkin solution. Post currents are expressed as a Fourier series. As many Fourier series terms ($e^{\sup jn\theta}$) as desired may be included. All higher order (cutoff) mode interactions between posts are taken into account. The solution is rapid and accurate, and errors may be controlled (specified). Data are given for the triple-post obstacle and for a two-element filter.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Theory and Numerical Modeling of a Compact Low-Field High-Frequency Gyrotron

P. Vitello, W.H. Miner and A.T. Drobot. "Theory and Numerical Modeling of a Compact Low-Field High-Frequency Gyrotron." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 373-386.

The electron-cyclotron maser interaction provides an extremely efficient means of generating high-power radiation in the millimeter and submillimeter regimes. For devices where both high frequencies and low magnetic fields are required, high cyclotron-harmonic interactions must be considered. We present here a linear and nonlinear analysis of a TE/sub m11/ whispering-gallery-mode gyrotron. Resonances at the m th and $(m \pm 1)$ th cyclotron harmonic are found. The start oscillation condition is calculated from linear theory for a wide range of parameters. Maximum efficiency for different beam and cavity conditions is calculated with a fully relativistic numerical simulation code. High efficiencies, > 35 percent, have been found at the m th cyclotron harmonic. The effect on the efficiency of an initial velocity spread in the electron beam has also been considered.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

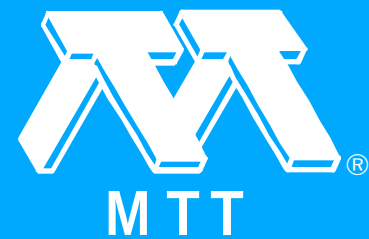
The Displaced Rectangular Waveguide Junction and Its Use as an Adjustable Reference Reflection

J.D. Hunter. "The Displaced Rectangular Waveguide Junction and Its Use as an Adjustable Reference Reflection." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 387-394.

The reflection from a displaced junction in rectangular waveguide and the equivalent circuit parameters are calculated using modal analysis. The use of weighted Gegenbauer polynomials to describe the field in the plane of displacement is shown to significantly improve the rate of convergence of the solution in comparison to waveguide-type mode functions. Approximate formulas are given for displacements of up to 25 percent of the waveguide dimensions. An E-plane displaced junction is suggested for use as an adjustable reference reflection.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Theoretical Analysis of Intermodulation Distortion of Reflection-Type IMPATT Amplifiers

M. El-Gabaly and M.E. El-Shandwily. "Theoretical Analysis of Intermodulation Distortion of Reflection-Type IMPATT Amplifiers." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 394-399.

The basic equations for a reflection-type IMPATT amplifier are used to derive expressions for the output when the amplifier is driven by a multifrequency input signal. The third-order intermodulation distortion is expressed and graphically presented for various diode, circuit, and signal parameters. The results provide a guideline for designing amplifiers with minimum intermodulation distortion or prescribed distortion level.

Click on title for a complete paper.



The Inverse Problem for Biaxial Materials

N.J. Damaskos, R.B. Mack, A.L. Maffett, W. Parmon and P.L.E. Uslenghi. "The Inverse Problem for Biaxial Materials." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 400-405.

Theory and measurements for the determination of the constitutive parameters of an anisotropic material are described, when a slab of the material is inserted in a rectangular waveguide. If both epsilon and μ tensors have zero off-diagonal elements (biaxial material), then the six diagonal elements can be determined by measuring amplitude and phase of reflection and transmission coefficients. If the material is nondispersive, two sets of measurements at two different frequencies are sufficient, under TE/sub 10/ excitation. In the more general case of a lossy and dispersive material, two sets of measurements at the same frequency under TE/sub10/ and TE/sub20/ excitations are needed. An experimental setup for the latter case is described.



Abstracts

Perturbation Analysis and Design Equations for Open- and Closed-Ring Microstrip Resonators

V.K. Tripathi and I. Wolff. "Perturbation Analysis and Design Equations for Open- and Closed-Ring Microstrip Resonators." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 405-410.

Simple closed-form expressions for the resonant frequency and electromagnetic field distribution for various modes of the open- and closed-ring microstrip resonators are derived by utilizing the perturbation analysis of the equivalent curved waveguide model. These results are shown to be in good agreement with the exactly computed values obtained by the solution of the eigenvalue equation for the equivalent waveguide model and the experimental data. The effect of gap capacitance on the eigenvalues of the open-ring resonator is also examined.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Characteristics of Metal-Insulator-Semiconductor Coplanar Waveguides for Monolithic Microwave Circuits

R. Sorrentino, G. Leuzzi and A. Silbermann. "Characteristics of Metal-Insulator-Semiconductor Coplanar Waveguides for Monolithic Microwave Circuits." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 410-416.

Using a full-wave mode-matching technique, an extensive analysis is presented of the slow-wave factor, attenuation, and characteristic impedance of a metal-insulator semiconductor coplanar waveguide (MISCPW) as functions of the various structural parameters. Design criteria are given for low-attenuation slow-wave propagation. By a proper optimization of the structure, performances comparable with or even better than those of alternative structures proposed in the literature are theoretically predicted.

[Click on title for a complete paper.](#)



Abstracts

An Efficient 200--290-GHz Frequency Tripler Incorporating a Novel Stripline Structure

J.W. Archer. "An Efficient 200--290-GHz Frequency Tripler Incorporating a Novel Stripline Structure." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 416-420.

This paper describes a broadly tuneable frequency tripler which can provide more than 2-mW output power at any frequency between 200 and 290 GHz. It is derived from an earlier narrow-band prototype design, with the major improvements being the use of a new low-pass filter design implemented using a novel suspended substrate stripline structure, an optimized waveguide transformer, and a lower loss contacting output backshort.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

A Novel Quasi-Optical Frequency Multiplier Design for Millimeter and Submillimeter Wavelengths

J.W. Archer. "A Novel Quasi-Optical Frequency Multiplier Design for Millimeter and Submillimeter Wavelengths." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 421-427.

This paper describes a novel design for millimeter and sub-millimeter wavelength varactor frequency triplers and quadruplers. The varactor diode is coupled to the pump source via waveguide and stripline impedance matching and filtering structures. Output power at the various harmonics of the pump frequency is fed to quasi-optical filtering and tuning elements. The low-loss quasi-optical structures enable near-optimum control of the impedances seen by the varactor diode at the idler and output frequencies, resulting in efficient high-order harmonic conversion. A minimum efficiency of 4 percent with 30-mW input power has been obtained for a tripler operating between 200 and 280 GHz, with a peak efficiency of 8 percent between 250 and 280 GHz. Another tripler, designed for the 260-350-GHz band, gave a minimum conversion efficiency of 3 percent with 30-mW input power, with a peak efficiency of 5 percent at 340 GHz.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Analysis and Design of Branch-Line Hybrids with Coupled Lines

V.K. Tripathi, H.B. Lunden and J.P. Starski. "Analysis and Design of Branch-Line Hybrids with Coupled Lines." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 427-432.

The scattering parameters of four-ports consisting of coupled lines with coupled or uncoupled connecting branches are derived in terms of the even- and odd-mode impedances and the lengths of the lines. These are used to analyze and formulate basic design procedures for the application of these structures as directional couplers including 0° and 90° 3-dB hybrids. The proposed new structures are quite compact at lower frequencies as compared to conventional uncoupled branch-line and rat-race hybrids. The results for the case of the coupled-line four-port with uncoupled branch lines also lead to closed-form expressions for the lengths and impedances of the lines required to nullify the effect of coupling between the main lines of a conventional branch-line coupler for use at higher frequencies. The measured response of the fabricated couplers is in good agreement with the theoretical predictions.

[Click on title for a complete paper.](#)



Abstracts

Lumped Capacitance, Open-Circuit End Effects, and Edge-Capacitance of Microstrip-Like Transmission Lines for Microwave and Millimeter-Wave Applications

B. Bhat and S.K. Koul. "Lumped Capacitance, Open-Circuit End Effects, and Edge-Capacitance of Microstrip-Like Transmission Lines for Microwave and Millimeter-Wave Applications." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 433-439.

A detailed analysis of lumped capacitance, open-circuit end effects, and edge-capacitance of finite-length strip conductors embedded in multilayer, isotropic dielectrics without sidewalls is presented. The analysis uses the well-known variational technique, in conjunction with the transverse transmission-line technique. The lumped capacitances of square and rectangular conductor patches in sandwiched microstrip, inverted microstrip, and suspended microstrip are computed. Further, extensive data on the open-circuit end effects and edge-capacitances of finite-length strip conductors in these microstrip-like transmission lines are generated. Using the method presented, the analysis of lumped capacitance, open-circuit end effects, and edge-capacitances of finite-length strip conductors in various microstrip-like structures reduces to the determination of a single admittance parameter. This parameter can be simply obtained from the transmissionline equivalent circuit.



[Contents](#)

[Publications](#)

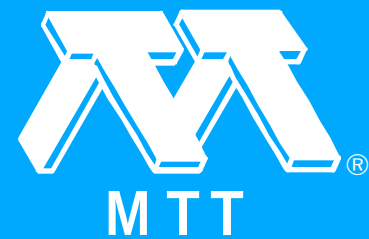
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Multiconductor Transmission Lines In Multilayered Dielectric Media

C. Wei, R.F. Harrington, J.R. Mautz and T.K. Sarkar. "Multiconductor Transmission Lines In Multilayered Dielectric Media." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 439-450.

A method for computing the capacitance matrix and inductance matrix for a multiconductor transmission line in a multilayered dielectric region is presented. The number of conductors and the number of dielectric layers are arbitrary. Some of the conductors may be of finite cross section and others may be infinitesimally thin. The conductors are either above a single ground plane or between two parallel ground planes. The formulation is obtained by rising a free-space Green's function in conjunction with total charge on the conductor-to-dielectric interfaces and polarization charge on the dielectric-to-dielectric interfaces. The solution is effected by the method of moments using pulses for expansion and point matching for testing. Computed results are given for some cases where all conducting lines are of finite cross section and other cases where they are infinitesimally thin.

[Click on title for a complete paper.](#)



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Determination of the Characteristic Impedance by a Step Current Density Approximation (Short Papers)

S.A. Ivanov and G.L. Djankov. "Determination of the Characteristic Impedance by a Step Current Density Approximation (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 450-452.

The step current densities are used to determine the characteristic impedance of a transmission line with rectangular shape of the conductors. Numerical results for different rectangular lines with asymmetrical position of the inner conductor are presented. The comparison of the results for the square and rectangular coaxial lines shows quite good agreement with the known data.

[Click on title for a complete paper.](#)



Abstracts

Definition of Nonlinear Reflection Coefficient of a Microwave Device Using Describing Function Formalism (Short Papers)

J. Obregon and F. Farzaneh. "Definition of Nonlinear Reflection Coefficient of a Microwave Device Using Describing Function Formalism (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 452-455.

At microwaves, it is necessary to define rigorously the large signal reflection coefficient of a nonlinear device. In this paper, the describing function concept is applied to the power waves incident on, and reflected by, a nonlinear element. This method allows us to define the nonlinear reflection coefficient (NLRC) on the power wave basis. This NLRC is then compared with that defined on the current or voltage basis. Numerical calculations applied to nonlinear elements illustrate the theoretical results.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Application of Boundary-Element Method to Electromagnetic Field Problems (Short Papers)

S. Kagami and I. Fukai. "Application of Boundary-Element Method to Electromagnetic Field Problems (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 455-461.

This paper proposes an application of the boundary-element method to two-dimensional electromagnetic field problems. By this method, calculations can be performed using far fewer nodes than by the finite-element method, and unbounded field problems are easily treated without special additional consideration. In addition, the results obtained have fairly good accuracy. In this paper, analyzing procedures of electromagnetic field problems by the boundary-element method, under special conditions, are proposed and several examples are investigated.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Optimum Design of a Potentially Dispersion-Free Helical Slow-Wave Circuit of a Broad-Band TWT (Short Papers)

B.N. Basu, B.B. Pal, V.N. Singh and N.C. Vaidya. "Optimum Design of a Potentially Dispersion-Free Helical Slow-Wave Circuit of a Broad-Band TWT (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 461-463.

The results of an equivalent circuit analysis are studied for a potentially dispersion-free slow-wave circuit of a TWT which consists of a dielectric-supported helix in a metal shell provided with vanes. The optimum vane dimensions are predicted, which should be helpful in broadbanding the performance of a TWT.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)

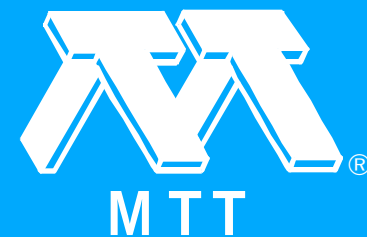


Abstracts

Magnetostatic Forward Volume Wave Propagation--Finite Width (Short Papers)

I.J. Weinberg and J.C. Sethares. "Magnetostatic Forward Volume Wave Propagation--Finite Width (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 463-464.

The infinite radiation resistance encountered at the low end of the magnetostatic forward volume wave frequency band for a YIG layer of finite width is avoided by employing a physically justifiable low frequency cutoff value higher than that for which radiation resistance would be infinite. Radiation reactance and insertion loss then can be calculated and are found to be relatively insensitive to the choice of the cutoff frequency, except for frequencies very close to cutoff. Beam spreading considerations determine the cutoff frequency.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Determination of the Admittance of a General Waveguide-Coaxial Line Junction (Short Papers)

M.E. Bialkowski and P.J. Khan. "Determination of the Admittance of a General Waveguide-Coaxial Line Junction (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 465-467.

An analytical approximate method to determine the admittance of a general coaxial-waveguide junction is presented. The accuracy of the method is verified experimentally for the case of rectangular waveguide.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Coupled Microstrips on Double Anisotropic Layers (Short Papers)

M. Horno and R. Marques. "Coupled Microstrips on Double Anisotropic Layers (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 467-470.

A variational expression is presented for the mode capacitances of coupled microstrip lines with double anisotropic layered substrates. It is shown that the even-and odd-mode phase velocities can be made equal when a sapphire layer is deposited on a boron nitride substrate. High coupler directivity can be achieved with appropriate values of both layers' thicknesses.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

A Complete GaAs MESFET Computer Model for SPICE (Short Papers)

S.E. Sussman-Fort, S. Narasimhan and K. Mayaram. "A Complete GaAs MESFET Computer Model for SPICE (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 471-473.

A model for the gallium arsenide MESFET has been implemented into the source code of the well-known circuit simulation program SPICE. Both large-signal and small-signal simulations of MESFET circuits are now possible within the familiar framework and data format of SPICE. The line-by-line modifications made to SPICE to achieve the model implementation will be made available to interested researchers.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Microwave Diffraction Tomography for Biomedical Applications (Comments)

T.C. Guo, W.W. Guo and L.E. Larsen. "Microwave Diffraction Tomography for Biomedical Applications (Comments)." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 473-474.

In the above paper, and a subsequent publication, Bolomey et al. suggested a very useful technique of biological tomography which may provide a fast image reconstruction at low cost. In a more recent work, Bolomey also presented some interesting results of a reconstructed image of a pony kidney. The virtue of the suggested technique lies in the rapidity of data collection by modulated scattering. Here we would like to point out that more theoretical study is still needed on the interpretation of the reconstructed image.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Variational Methods for Nonstandard Eigenvalue Problems (Further Comments)

G.J. Gabriel. "Variational Methods for Nonstandard Eigenvalue Problems (Further Comments)." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 474-476.

In response to the author's reply to the first Comment on the above paper, it is affirmed that the proof of fallacy and statements contained therein stand unaltered. The author's attempt at clarification shows that his propositions are founded on contradictory suppositions and equivocation. If not for rigor and consistency, what is the excuse for using mathematics? The issues, however, are not merely ones of purity and semantics--although precision in terminology is essential to meaningful communication--but there is also an important practical consideration.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Planar Quasi-Optical Subharmonically Pumped Mixer Characterized by Isotropic Conversion Loss (Corrections)

K.D. Stephan and T. Itoh. "A Planar Quasi-Optical Subharmonically Pumped Mixer Characterized by Isotropic Conversion Loss (Corrections)." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 476-476.

In the above paper, the antenna patterns in Figs. 8 and 9 were transposed. Fig. 8 is actually the H-plane pattern and Fig. 9 is the E-plane pattern.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Patent Abstracts (Apr. 1984 [T-MTT])

"Patent Abstracts (Apr. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): 477-480.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

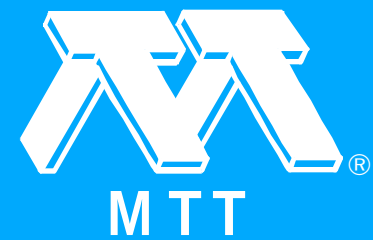
Click on title for a complete paper.



Abstracts

Back Cover (Apr. 1984 [T-MTT])

"Back Cover (Apr. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.4 (Apr. 1984 [T-MTT]): b1-b2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (May 1984 [T-MTT])

"Front Cover (May 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.5 (May 1984 [T-MTT]): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

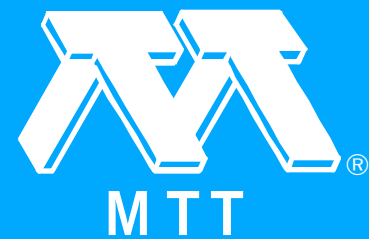
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Multimode Oscillation and Mode Competition in High-Frequency Gyrotrons

K.E. Kreischer, R.J. Temkin, H.R. Fetterman and W.J. Mulligan. "Multimode Oscillation and Mode Competition in High-Frequency Gyrotrons." 1984 Transactions on Microwave Theory and Techniques 32.5 (May 1984 [T-MTT]): 481-490.

Stable operation in a single mode is an important goal of high-power gyrotrons. Both multimoding and switching into unwanted modes can lead to lower efficiency and undesirable heating of components not designed to accommodate parasitic modes. We have extensively studied mode behavior in a pulsed 100-kW, 140-GHz gyrotron using a variety of mixing techniques. As a result, a number of multimoding regions have been identified. Two possible explanations are presented. If the ratio of beam thickness to cavity radius is relatively large, different parts of the beam can excite different modes. Secondly, it can be shown theoretically that, under certain conditions, the presence of one mode can enlarge the excitation region of a neighboring, parasitic mode by favorably prebunching the beam. Experimental evidence strongly supports this latter interpretation. To our knowledge, this is the first use of mixing techniques in conjunction with the study of gyrotron operation. These diagnostic methods are important because they can conclusively identify the presence of parasitic modes, even when these modes are weakly excited.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Transient Analysis of a Stripline Having a Corner in Three-Dimensional Space

N. Yoshida and I. Fukai. "Transient Analysis of a Stripline Having a Corner in Three-Dimensional Space." 1984 Transactions on Microwave Theory and Techniques 32.5 (May 1984 [T-MTT]): 491-498.

The transient analysis of electromagnetic fields has shown its utility not only in clarifying the variation of the fields in time but also in gaining information on mechanisms by which the distributions of an electromagnetic field at the stationary state are brought about. We have recently proposed a new numerical method for the transient analysis in three-dimensional space by formulating the equivalent circuit based on Maxwell's equation by Bergeron's method. The resultant nodal equation is uniquely formulated in the equivalent circuit for both the electric field and the magnetic field. In this paper, we deal with the stripline which should be analyzed essentially in three-dimensional space because of its structure. The time variation of the electric and magnetic field of the stripline having a corner is analyzed and the remarkable changing of distribution of the field is presented as a parameter of time and of conditions imposed by the corner structure.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Broad-Band, Ultra-Low-Noise Schottky Diode Receiver from 80 to 115 GHz Diode

C.R. Predmore, A.V. Raisanen, N.R. Erickson, P.F. Goldsmith and J.L.R. Marrero. "A Broad-Band, Ultra-Low-Noise Schottky Diode Receiver from 80 to 115 GHz Diode." 1984 Transactions on Microwave Theory and Techniques 32.5 (May 1984 [T-MTT]): 498-507.

A cryogenic 3-mm receiver has been developed which fully utilizes the low-noise potential of Schottky diodes by approaching the shot-noise limit within 10 percent. With a broad-band mixer design which properly terminates the input sidebands and reactively terminates the second harmonic of the local oscillator and its sidebands, the double sideband (DSB) mixer noise temperature is 35 K in the best case. This design has given an average DSB receiver noise temperature of 75 K over the 80 to 115-GHz band with a best noise temperature of 62 K.

[Click on title for a complete paper.](#)





[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Imaging Polarimeter Arrays for Near-Millimeter Waves

P.P. Tong, D.P. Neikirk, P.E. Young, W.A. Peebles, N.C. Luhmann, Jr. and D.B. Rutledge. "Imaging Polarimeter Arrays for Near-Millimeter Waves." 1984 Transactions on Microwave Theory and Techniques 32.5 (May 1984 [T-MTT]): 507-512.

An integrated-circuit antenna array has been developed that images both polarization and intensity. The array consists of a row of antennas that lean alternately left and right, creating two interlaced sub-arrays that respond to different polarizations. The arrays and the bismuth bolometer detectors are made by a photoresist shadowing technique that requires only one photolithographic mask. The array has measured polarization at a wavelength of 800 μm with an absolute accuracy of 0.8° and a relative precision of 7 arc min, and has demonstrated nearly diffraction-limited resolution of a 20° step in polarization.

[Click on title for a complete paper.](#)



Abstracts

Wave Propagation and Attenuation in the General Class of Circular Hollow Waveguides with Uniform Curvature

M. Miyagi, K. Harada and S. Kawakami. "Wave Propagation and Attenuation in the General Class of Circular Hollow Waveguides with Uniform Curvature." 1984 Transactions on Microwave Theory and Techniques 32.5 (May 1984 [T-MTT]): 513-521.

A general method has been developed to evaluate the propagation constant in oversized circular hollow-core waveguides characterized by a surface impedance and admittance due to a uniform bend. Completely different formulas are obtained for the attenuation constants of the modes in metallic or dielectric hollow waveguides from those obtained by Marcatili and Schmeltzer. Electric-field lines are also presented for several lower order modes in bent waveguides.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



The Propagation Characteristics of Signal Lines in a Mesh-Plane Environment

B.J. Rubin. "The Propagation Characteristics of Signal Lines in a Mesh-Plane Environment." 1984 Transactions on Microwave Theory and Techniques 32.5 (May 1984 [T-MTT]): 522-531.

This paper investigates the propagation characteristics of signal lines situated between a pair of mesh reference planes in a homogeneous dielectric. These mesh reference planes, which form the heart of high-performance multichip modules, provide a transmission-line environment for the signals carried between integrated circuit chips. A numerical solution that employs a set of rooftop functions to represent the current density is developed and used to find the propagation velocity and characteristic impedance in mesh plane structures where the conductors have zero thickness and finite sheet resistance. The telegraphist's equations are shown to apply, and are used to find the capacitance and inductance matrices in coupled fine configurations. The near- and far-end crosstalk are calculated when the coupled lines are on the same, and on opposite, sides of a mesh plane. The presence of conductors which run in a direction orthogonal to the signal lines, whether as an array of crossing signal lines or as part of the mesh planes, is shown to significantly affect only the capacitive parameters. The influence of such orthogonal lines on the propagation velocity, characteristic impedance, and crosstalk are given, and a detailed plot clearly indicates the circulating current flow in these lines.



Abstracts

Computer Analysis of Dielectric Waveguides: A Finite-Difference Method

E. Schweig and W.B. Bridges. "Computer Analysis of Dielectric Waveguides: A Finite-Difference Method." 1984 Transactions on Microwave Theory and Techniques 32.5 (May 1984 [T-MTT]): 531-541.

A method for computing the modes of dielectric guiding structures based on finite differences is described. The numerical computation program is efficient and can be applied to a wide range of problems. We report here solutions for circular and rectangular dielectric waveguides and compare our solutions with those obtained by other methods. Limitations in the commonly used approximate formulas developed by Marcatili are discussed.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



GaAs Monolithic Low-Power Amplifiers with RC Parallel Feedback (Short Papers)

J. Tajima, Y. Yamao, T. Sugeta and M. Hirayama. "GaAs Monolithic Low-Power Amplifiers with RC Parallel Feedback (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.5 (May 1984 [T-MTT]): 542-544.

GaAs monolithic broad-band low-power-dissipated amplifiers with inductive/resistive load and RC parallel feedback circuits have been developed. An inductive load amplifier provides a gain of 8 dB, a 3-dB bandwidth of 2.5 GHz, and a noise figure of 2.7 dB at 1 GHz with less than + 1-V supply voltage and very low-power dissipation of 20 mW. A resistive load two-stage amplifier provides a gain of 15 dB and a 3-dB bandwidth of 2 GHz. Input and output reflection coefficients at 1 GHz are -13 dB and -21 dB, respectively.

Abstracts

Tolerance Analysis of Shielded Microstrip Lines (Short Papers)

S.S. Bedair and M.I. Sobhy. "Tolerance Analysis of Shielded Microstrip Lines (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.5 (May 1984 [T-MTT]): 544-547.

A complete analysis of the sensitivities of shielded microstrips is presented. The sensitivity formulas form the basis for studying the effect of tolerances on the performance of these circuits. A set of sensitivity curves are given to help the design procedure. It is suggested that the position of the top cover can be adjusted to compensate for some of the effects of the manufacturing tolerances. Practical examples are given to support the suggested procedure.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Heating Pattern in a Multi-Layered Material Exposed to Microwaves (Short Papers)

M. Nachman and G. Turgeon. "Heating Pattern in a Multi-Layered Material Exposed to Microwaves (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.5 (May 1984 [T-MTT]): 547-552.

The electromagnetic-induced heating pattern in a multilayered slab material exposed to uniform plane microwaves is studied. A general expression taking into account the multiple reflections at the interfaces is derived for the power dissipated per unit volume in the medium. A numerical method is developed for solving the heat transport equation describing the temperature distribution in this material. A steady, as well as a transient solution is obtained for either a Dirichlet- or a Neumann-type of boundary condition. The effect on the temperature distribution of a cooling fluid circulating inside the slab is considered. The method is applied to the special case of a three-layered material having characteristics similar to those of a biological structure. The possibility of achieving a preferential heating of one of the layers by, means of standing waves created with the aid of a flat reflector is demonstrated.

[Click on title for a complete paper.](#)



Abstracts

On Temperature Characteristics for a GaAs Monolithic Broad-Band Amplifier Having Resistive Loads (Short Papers)

K. Honjo. "On Temperature Characteristics for a GaAs Monolithic Broad-Band Amplifier Having Resistive Loads (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.5 (May 1984 [T-MTT]): 552-553.

Temperature characteristics for a GaAs monolithic broad-band amplifier having resistive loads were investigated. It was demonstrated that gain versus temperature characteristics for the amplifier are self-compensated and that the bandwidth for the amplifier becomes narrow when ambient temperature increases.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Radiometric Technique for Measuring Changes in Lung Water (Short Papers)

M.F. Iskander, C.H. Durney, T. Grange and C.S. Smith. "Radiometric Technique for Measuring Changes in Lung Water (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.5 (May 1984 [T-MTT]): 554-556.

In this paper, we describe a new approach to continuous, noninvasive monitoring of changes in lung-water content based on radiometry. It is shown theoretically, as based on a planar model of the lung, that a one-percent change in lung-water content corresponds to a 0.260-K change in brightness temperature, which is within the detection sensitivity of available radiometers. Practicably, taking into account reflections at the tissue interfaces and attenuation in the chest wall, it is estimated that it is possible to detect a three to four-percent change in lung-water content. Initial experimental measurements at 1 GHz also have shown promising results. Some of the basic problems associated with the adaptability of the radiometric technique for clinical use have been identified and are discussed along with suggested solutions.

[Click on title for a complete paper.](#)



Abstracts

An Empirical Design Technique for Microwave Oscillators (Short Papers)

E.R. Ehlers. "An Empirical Design Technique for Microwave Oscillators (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.5 (May 1984 [T-MTT]): 556-559.

A large-signal design technique for series-type microwave oscillators using three-terminal active devices is described. Using this technique, the characteristics of the embedding circuits required for maximum output power are measured directly under actual oscillation conditions. A two-signal technique is used in the measurement to establish the required oscillation conditions and to prevent oscillation at unwanted frequencies. The design technique has been verified by the construction of a 2.7-GHz bipolar transistor oscillator.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

The Measurement of Noise in Microwave Transmitters (Comments) (May 1984 [T-MTT])

W. Freude. "The Measurement of Noise in Microwave Transmitters (Comments) (May 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.5 (May 1984 [T-MTT]): 559-561.

The recent comment by Ashley et al. as a reply to the remarks by Knochel et al. drew my attention to the, work by Ashley Barley, and Rast, Jr., to which I would like to add three supplements. On an improved version of the frequency discriminator of Ondria and Ashley et al., the following results have been published.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

The Design Parameters of Nonsymmetrical Coupled Microstrips (Comments)

V.K. Tripathi. "The Design Parameters of Nonsymmetrical Coupled Microstrips (Comments)." 1984 Transactions on Microwave Theory and Techniques 32.5 (May 1984 [T-MTT]): 561-563.

A recent paper dealt with the subject of the design parameters of nonsymmetrical coupled microstrips for applications as microwave circuit elements. In this brief correspondence, the completeness and consistency of some of the results presented in the paper are examined and the existence of an earlier relatively comprehensive work reported on the same subject is pointed out.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Patent Abstracts (May 1984 ([T-MTT]))

"Patent Abstracts (May 1984 ([T-MTT]))." 1984 Transactions on Microwave Theory and Techniques 32.5 (May 1984 [T-MTT]): 563-567.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

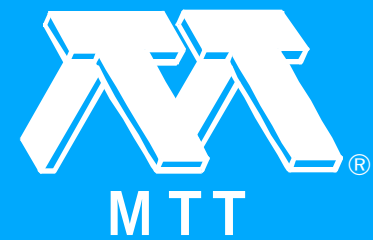
Click on title for a complete paper.



Abstracts

Membership Application (May 1984 [T-MTT])

"Membership Application (May 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.5 (May 1984 [T-MTT]): 568-568.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

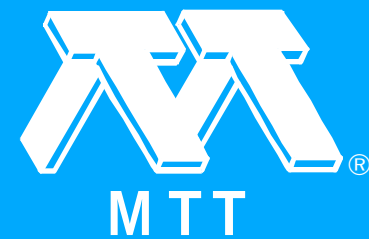
Click on title for a complete paper.



Abstracts

Back Cover (May 1984 [T-MTT])

"Back Cover (May 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.5 (May 1984 [T-MTT]): b1-b2.



- Contents
- Publications
- Issues
- Papers
- Authors

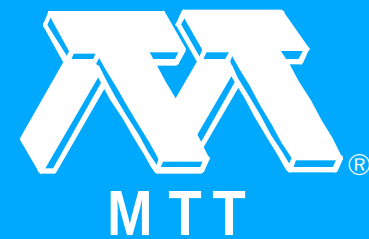
Click on title for a complete paper.



Abstracts

Front Cover (Jun. 1984 [T-MTT])

"Front Cover (Jun. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.6 (Jun. 1984 [T-MTT]): f1-f2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

EM Local Heating with HF Electric Fields

M.K. Hessary and K.-M. Chen. "EM Local Heating with HF Electric Fields." 1984 Transactions on Microwave Theory and Techniques 32.6 (Jun. 1984 [T-MTT]): 569-576.

Capacitor-plate applicators consisting of a pair of flat-plate electrodes, energized by a HP voltage, are utilized to induce heating inside a biological body for the purpose of hyperthermia cancer-therapy. In this paper, a theoretical analysis for such applicators is presented. A pair of coupled integral equations for the unknown total induced electric field inside the body and the charge density on the electrodes is derived and solved numerically for several different cases. The distribution of the specific absorption rate (SAR) of energy inside the body is obtained for each case. The body-electrode coupling is taken into account. A theoretical scheme for synthesizing proper potential distributions on two arrays of subelectrodes for inducing a desirable SAR distribution inside the body is also developed. Using such arrays of subelectrodes, the excessive heating at the fat layer of the body may be avoided. An experiment has been conducted to test the theory.

[Click on title for a complete paper.](#)



Abstracts

Microwave Modeling of Rectangular Tunnels

B. Jacard and O. Maldonado. "Microwave Modeling of Rectangular Tunnels." 1984 Transactions on Microwave Theory and Techniques 32.6 (Jun. 1984 [T-MTT]): 576-581.

Natural propagation of electromagnetic waves in rectangular tunnels is investigated experimentally at microwave frequencies (1-10 GHz) using a tunnel model of reduced dimensions made of a lossy mixture of sand, water, and salt. The experimental results for the propagation constant of the low-order modes agree satisfactorily with theoretical predictions. Practical applications of the experimental technique are discussed.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

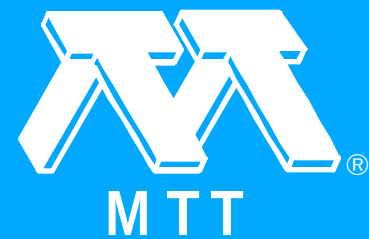
Reflection Coefficient of a Conducting Sphere on the Broad Wall of a Rectangular Waveguide

J.D. Cashman and H.E. Green. "Reflection Coefficient of a Conducting Sphere on the Broad Wall of a Rectangular Waveguide." 1984 Transactions on Microwave Theory and Techniques 32.6 (Jun. 1984 [T-MTT]): 582-586.

Small spherical objects have been found useful as impedance matching elements in rectangular waveguides. In this paper, we develop a formula for the reflection coefficient produced by a conducting spherical ball in contact with the broad wall of a rectangular waveguide. The solution involves replacement of the obstacle by equivalent electric and magnetic dipoles but employs no ad hoc assumptions to determine the dipole moments and to this extent is exact. The theory is found to yield good results for all balls likely to be practical as impedance matching elements.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Approximate Scalar Finite-Element Analysis of Anisotropic Optical Waveguides with Off-Diagonal Elements in a Permittivity Tensor

M. Koshiba, K. Hayata and M. Suzuki. "Approximate Scalar Finite-Element Analysis of Anisotropic Optical Waveguides with Off-Diagonal Elements in a Permittivity Tensor." 1984 Transactions on Microwave Theory and Techniques 32.6 (Jun. 1984 [T-MTT]): 587-593.

An approximate scalar finite-element program for the analysis of anisotropic optical waveguides having a permittivity tensor with nonzero off-diagonal elements is described. In this approach, the nonphysical spurious solutions which are included in the solutions of the earlier vectorial finite-element method in an axial-components formulation do not appear. Numerical examples On an anisotropic dielectric rectangular waveguide composed of a uniaxial medium are given. Our results for the waveguide whose optic axis lies in the plane (xy-plane) normal to the direction (z-axis) of propagation agree well with the results of the vectorial wave analysis using the variational method. We also demonstrate the application of this approach by analyzing the anisotropic dielectric rectangular waveguide whose optic axis lies in the xz- or yz-plane.

[Click on title for a complete paper.](#)



Limitations on the Size of Miniature Electric-Field Probes

G.S. Smith. "Limitations on the Size of Miniature Electric-Field Probes." 1984 Transactions on Microwave Theory and Techniques 32.6 (Jun. 1984 [T-MTT]): 594-600.

The miniature dipole probe is a useful tool for measuring the electric field at high radio and microwave frequencies. A common design for the probe consists of an electrically-short antenna with a diode across its terminals. A resistive, parallel-wire transmission line transmits the detected signal from the diode to the monitoring instrumentation. Small dipoles are desirable because they provide high spatial resolution of the field, and because they permit a frequency-independent response at higher microwave frequencies. Recent efforts have produced probes with dipole half lengths h less than one millimeter. With the advances occurring in microelectronics and thin-film technology, the construction of even smaller probes may be possible. In this paper, the limitations imposed on the sensitivity of the probe by a reduction in its physical size are determined. A model that contains noise sources for the diode and the resistive transmission line is used to obtain the signal-to-noise ratio for the probe, and this is examined as a function of the parameters that describe the dipole, diode, resistive transmission line, and amplifier. When the physical dimensions of the probe are reduced by the scale factor k/l ($k/l < 1$), the signal-to-noise ratio is found to decrease by approximately the factor k^4/l , and the minimum-detectable incident electric field for a fixed signal-to-noise ratio is found to increase by approximately the factor l/k^2 . A numerical estimate is made for the sensitivity of miniature probes with dipole half lengths in the range $10 \mu\text{m} \leq h \leq 1 \text{ cm}$.





IEEE

Contents

Publications

Issues

Papers

Authors

Calculation of TM_{0n} Dispersion Relations in a Corrugated Cylindrical Waveguide

A. Bromborsky and B. Ruth. "Calculation of TM_{0n} Dispersion Relations in a Corrugated Cylindrical Waveguide." 1984 Transactions on Microwave Theory and Techniques 32.6 (Jun. 1984 [T-MTT]): 600-605.

The TM_{0n} -mode Maxwell equations in a cylindrical geometry are converted to a state-vector system of coupled linear differential equations, in which the boundary conditions for a waveguide of varying diameter are included in the coefficient matrix of the state-vector system. The particular problem of periodic boundary conditions is solved for a waveguide with a sinusoidally undulating wall.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

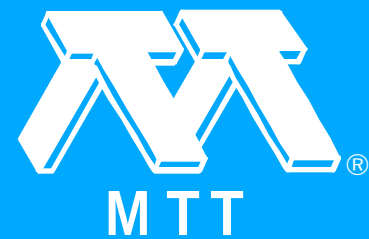
Inductive Posts and Diaphragms of Arbitrary Shape and Number in a Rectangular Waveguide

H. Auda and R.F. Harrington. "Inductive Posts and Diaphragms of Arbitrary Shape and Number in a Rectangular Waveguide." 1984 Transactions on Microwave Theory and Techniques 32.6 (Jun. 1984 [T-MTT]): 606-613.

Consider a finite number of posts and/or diaphragms located close to each other in a rectangular waveguide. These are assumed to be perfectly conducting, of arbitrary shape, and uniform in the direction parallel to the narrow side of the waveguide, i.e., of the inductive type. The solution of the problem involves determining the network describing the effect of the posts and diaphragms on the waveguide dominant mode. A moment procedure is devised and applied to a set of test problems. The simplicity and generality of the procedure, together with its excellent performance, as indicated by the results obtained, clearly shows that it is a powerful tool worth using.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Composite Coupler Design

T.C. Choinski. "Composite Coupler Design." 1984 Transactions on Microwave Theory and Techniques 32.6 (Jun. 1984 [T-MTT]): 613-620.

Unequal power splitters and combiners are generally limited by the line widths which can be practically synthesized in a given transmission medium. This practical limitation on the ratio of unequal power division can be extended by incorporating the same types of couplers into a composite design. The general composite design approach outlined in this paper rises three couplers (three terminal couplers) to generate a new three-terminal circuit. The design equations are derived for the composite approach and summarized in graphic form. The feasibility of the composite design approach is demonstrated by the construction of a 5.76-dB differential coupler rising intently series-terminated Wilkinson couplers. The circuit was designed, analyzed via computer, and finally built and tested. The results from the composite design are compared to that of a single Wilkinson coupler design.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Directly Connected Image Guide 3-dB Couplers with Very Flat Couplings

D.I. Kim, D. Kawabe, K. Araki and Y. Naito. "Directly Connected Image Guide 3-dB Couplers with Very Flat Couplings." 1984 Transactions on Microwave Theory and Techniques 32.6 (Jun. 1984 [T-MTT]): 621-627.

The design and evaluation of the directly connected image guide 3-dB directional coupler is described. These couplers have several useful features as a component for millimeter-wave integrated circuits because of broadband and flat coupling characteristics, mechanical stability, and compactness. The bandwidth of the directly connected image guide coupler with proper dimensions and the nearly optimized value of h extends to about 28 percent under the tolerance limits of ± 0.25 dB of deviation in coupling from 3 dB. Furthermore, experimental verification has been performed, and, hence, the usefulness of the proposed directly connected couplers with appropriate tapered sections was confirmed, even at frequencies where higher modes could be excited.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Analytical and Experimental Investigations on Several Resonant Modes in Open Dielectric Resonators

M. Tsuji, H. Shigesawa and K. Takiyama. "Analytical and Experimental Investigations on Several Resonant Modes in Open Dielectric Resonators." 1984 Transactions on Microwave Theory and Techniques 32.6 (Jun. 1984 [T-MTT]): 628-633.

The complex resonant frequency of open dielectric pillbox resonators is analyzed by an analytical method proposed by the present authors, which expands the field into a truncated series of solutions of the Helmholtz equation in the spherical coordinates and treats the boundary condition in the least-squares sense. This method is applied to calculate the characteristics of several resonant modes which will be of practical use. The accuracy of the method is confirmed by investigating the convergence of solutions. Also, numerical results are compared with experimental results of several resonant modes, which are obtained for the dielectric samples with $\epsilon_r = 38.0$ and 19.5 in the X-band.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Analysis of Hybrid Field Problems by the Method of Lines with Nonequidistant Discretization

H. Diestel and S.B. Worm. "Analysis of Hybrid Field Problems by the Method of Lines with Nonequidistant Discretization." 1984 Transactions on Microwave Theory and Techniques 32.6 (Jun. 1984 [T-MTT]): 633-638.

The method of lines, which has been proved to be very efficient for calculating the characteristics of one-dimensional and two-dimensional planar microwave structures, is extended to nonequidistant discretization. By means of an intermediate transformation it is possible to maintain all essential transformation properties that are given in the case of equidistant discretization. The flexibility of the method of lines is increased substantially. As a consequence, the accuracy is improved with reduced computational effort.

[Click on title for a complete paper.](#)



Abstracts

High-Order Mode Cutoff In Rectangular Striplines (Short Papers)

C.M. Weil and L. Gruner. "High-Order Mode Cutoff In Rectangular Striplines (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.6 (Jun. 1984 [T-MTT]): 638-641.

The higher order mode cutoff characteristics of rectangular stripline structures, with thin center conductors, are discussed. Data are given, using an alternative method of presentation, on the normalized cutoff of the first eleven higher order modes. Discussions are included on the physical reasons why cutoff is altered for some modes, relative to that in rectangular waveguides, but not for others.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Field Patterns and Resonant Frequencies of High-Order Modes in an Open Resonator (Short Papers)

P.K. Yu and K.M. Luk. "Field Patterns and Resonant Frequencies of High-Order Modes in an Open Resonator (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.6 (Jun. 1984 [T-MTT]): 641-645.

Using the electromagnetic perturbation theory, it is shown that the linearly polarized TEM/sub $pl/$ modes ($l > 0$) predicted by conventional methods are not the resonant modes in an open resonator. Instead, two other series of high-order modes are proposed with improved accuracy in resonant frequencies.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Phased-Dipole Applicators for Torso Heating in Electromagnetic Hyperthermia (Short Papers)

Y.-G. Gu and O.P. Gandhi. "Phased-Dipole Applicators for Torso Heating in Electromagnetic Hyperthermia (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.6 (Jun. 1984 [T-MTT]): 645-647.

The paper describes a two-dipole applicator that is capable of providing in-depth and relatively uniform rates of heating (SAR's) over the volume of the torso and greatly reduced SAR's for the rest of the body. Power coupling efficiencies in excess of 60 percent and fairly low leakage power densities have been measured for the applicator.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Microwave Diffraction Tomography for Biomedical Applications (Further Comments)

J.C. Bolomey, A. Izadnegahdar, L. Jofre, C. Pichot, G. Peronnet and M. Solaimani.

"Microwave Diffraction Tomography for Biomedical Applications (Further Comments)." 1984 Transactions on Microwave Theory and Techniques 32.6 (Jun. 1984 [T-MTT]): 648-648.

The comment made by Drs. L. Larsen, T. Guo, and W. Guo is worth noting and requires further explanations. Our reconstruction process is effectively based on a spectral domain approach, but does not involve identity, which is no longer valid inside the object under investigation. Instead, we use the relation existing between the Fourier-Transform of the normalized current distribution and the Fourier-Transform of the scattered field in the plane of measurement. The relevant equations are derived in and a paper has been submitted for publication in the IEEE Transactions on Antennas and Propagation.

[Click on title for a complete paper.](#)



Abstracts

Patent Abstracts (Jun. 1984 [T-MTT])

"Patent Abstracts (Jun. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.6 (Jun. 1984 [T-MTT]): 648-651.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

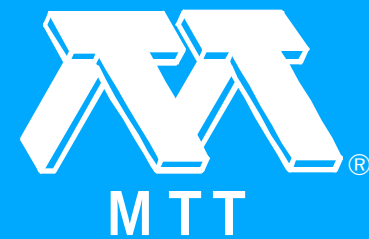
Click on title for a complete paper.



Abstracts

Membership Application (Jun. 1984 [T-MTT])

"Membership Application (Jun. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.6 (Jun. 1984 [T-MTT]): 652-652.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

Back Cover (Jun. 1984 [T-MTT])

"Back Cover (Jun. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.6 (Jun. 1984 [T-MTT]): b1-b2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (Jul. 1984 [T-MTT])

"Front Cover (Jul. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.7 (Jul. 1984 [T-MTT]): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Cell Membrane Nonlinear Response to an Applied Electromagnetic Field

G. Franceschetti and I. Pinto. "Cell Membrane Nonlinear Response to an Applied Electromagnetic Field." 1984 Transactions on Microwave Theory and Techniques 32.7 (Jul. 1984 [T-MTT]): 653-658.

The transmembrane potential difference induced by an impressed electromagnetic field in a spherical homogeneous cell with nonlinear membrane is obtained by using the Volterra-series formalism. Some possible generalizations are suggested, and computed results are discussed.



IEEE

Contents

Publications

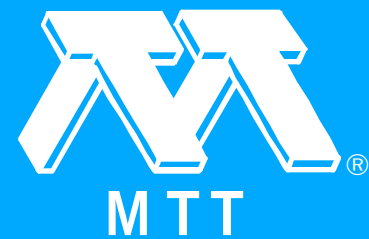
Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)



A Quasi-Optical Method for Measuring the Complex Permittivity of Materials

F.I. Shimabukuro, S. Lazar, M.R. Chernick and H.B. Dyson. "A Quasi-Optical Method for Measuring the Complex Permittivity of Materials." 1984 Transactions on Microwave Theory and Techniques 32.7 (Jul. 1984 [T-MTT]): 659-665.

A quasi-optical method for measuring the complex permittivity of materials is described. The determination is derived from measurements of the transmission of a perpendicularly polarized wave through a dielectric slab at different angles of incidence. This relatively simple method is quite sensitive. Accurate estimates of the relative permittivity and the loss tangent can be obtained by accurately measuring the frequency of the signal and by the use of large, precisely machined Fabry-Perot plates. Estimates of the standard errors in the determinations are obtained by using a bootstrap resampling technique. The measurements here are made at a frequency of 93.788 GHz at ambient temperature.

[Click on title for a complete paper.](#)

Abstracts

Q-Factor Measurement with Network Analyzer

D. Kajfez and E.J. Hwan. "Q-Factor Measurement with Network Analyzer." 1984 Transactions on Microwave Theory and Techniques 32.7 (Jul. 1984 [T-MTT]): 666-670.

Ginzton's impedance method of Q-factor measurement is adapted to network analyzer techniques. The circuit model of the resonator incorporates also an external reactance which varies linearly with frequency to take into account the effects of the coupling mechanism and the influence of the distant resonant modes.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A Nonlinear Analysis of the Effects of Transient Electromagnetic Fields on Excitable Membranes

P. Bernardi and G. D'Inzeo. "A Nonlinear Analysis of the Effects of Transient Electromagnetic Fields on Excitable Membranes." 1984 Transactions on Microwave Theory and Techniques 32.7 (Jul. 1984 [T-MTT]): 670-679.

The transmembrane voltage produced by a transient electromagnetic field has been determined using a nonlinear model of the cellular membrane. The influence on the membrane voltage of the various parameters characterizing the incident field, such as wave-shape, time-width, and amplitude, has been analyzed. In particular, the amplitude of the incident field for which the cell's behavior can be assumed as linear and the threshold level for exciting action potentials on the membrane have been determined. Potential hazards for humans exposed to transient fields are examined in light of this interaction mechanism.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



A Novel K-Band Balanced FET Up-Converter

T. Hirota and H. Ogawa. "A Novel K-Band Balanced FET Up-Converter." 1984 Transactions on Microwave Theory and Techniques 32.7 (Jul. 1984 [T-MTT]): 679-683.

The performance of the K-band balanced FET up-converter is described. A novel circuit configuration effective in enhancing conversion gain in the FET up-converter is proposed. An analysis using a simplified circuit model shows the effect of LO feedback in the balanced circuit. A conversion gain of 0.9 dB was experimentally obtained at 20 GHz. Maximum output power was 15.9 dBm.

Abstracts

An Investigation of Striplines and Fin Lines with Periodic Stubs

T. Kitazawa and R. Mittra. "An Investigation of Striplines and Fin Lines with Periodic Stubs." 1984 Transactions on Microwave Theory and Techniques 32.7 (Jul. 1984 [T-MTT]): 684-685.

In this paper, a technique based on the network-analytical formalism of electromagnetic fields is used to analyze the strip and fin lines with periodic stubs. Numerical results for the dispersion characteristics of the periodically loaded lines are presented. The effect of the loading stubs on the passband and stopband characteristics is investigated.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Bragg Interaction of Electromagnetic Waves in a Ferrite Slab Periodically Loaded with Metal Strips

C. Surawatpunya, M. Tsutsumi and N. Kumagai. "Bragg Interaction of Electromagnetic Waves in a Ferrite Slab Periodically Loaded with Metal Strips." 1984 Transactions on Microwave Theory and Techniques 32.7 (Jul. 1984 [T-MTT]): 689-695.

The waveguiding characteristics of electromagnetic TE waves in a ferrite slab periodically loaded with metal strips are investigated. Theoretical formulation by means of the spectral domain approach is employed to obtain the Brillouin diagrams of two types of volume modes and a surface mode. It is found that the nonreciprocal properties of waves depend on the metal strip profile and bias magnetic field strength. Experiments on the magnetic-field dependence of the Bragg frequency and the stop bandwidth are carried out in the millimeter-wave frequencies. Typical results obtained from a polycrystalline YIG slab with periodic gold strips deposited on one surface are stop bandwidth about 2.14 GHz, with return loss about 2 dB at the Bragg frequency of 47.5 GHz, for the bias magnetic-field strength of 5.7 kG. The Bragg frequency can be tuned over the range of 1.39 GHz by varying the bias magnetic field from 0 to 8.2 kG. Experimental results show good agreement with theoretical predictions.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Design of Waveguide E-Plane Filters with All-Metal Inserts

Y.-C. Shih. "Design of Waveguide E-Plane Filters with All-Metal Inserts." 1984 Transactions on Microwave Theory and Techniques 32.7 (Jul. 1984 [T-MTT]): 695-704.

Waveguide E-plane filters with all-metal inserts are designed by a procedure based on the reflection coefficients of axial inductive strips. The scattering matrix, representing the junction in a bifurcated waveguide, is calculated by a mode-matching method. The reflection coefficient for an inductive strip is then obtained by cascading two scattering matrices separated by a distance equal to the stripwidth. The design is valid up to moderate bandwidths, except for the narrowband design at the higher waveguide frequency range, where both the center frequency and the bandwidth are inaccurate. Possible sources of error are studied and a method minimizing the error is proposed.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Losses on Multiconductor Transmission Lines in Multilayered Dielectric Media

R.F. Harrington. "Losses on Multiconductor Transmission Lines in Multilayered Dielectric Media." 1984 Transactions on Microwave Theory and Techniques 32.7 (Jul. 1984 [T-MTT]): 705-710.

For the transmission-line modes, a multiconductor transmission line in a multilayered dielectric medium can be characterized by four matrix parameters the capacitance matrices $[C]$, the inductance matrix $[L]$, the shunt conductance matrix $[G]$, and the series resistance matrix $[R]$. The first two matrices $[C]$ and $[L]$ can be obtained from equivalent electrostatic and magnetostatic problems. The conductance matrix $[G]$ can be obtained by changing all dielectric constants ϵ_{ij} to complex dielectric constants ϵ_{ij}^* in the equivalent electrostatic problem. The resistance matrix $[R]$ can be obtained by applying a perturbation method to each mode of the transmission line. A computer program has been written for an arbitrary line, and sample computations are presented.

[Click on title for a complete paper.](#)



Abstracts

Analysis of Low-Loss Broadside-Coupled Dielectric Image Guide Using the Mode-Matching Technique (Short Papers)

B. Bhat and A.K. Tiwari. "Analysis of Low-Loss Broadside-Coupled Dielectric Image Guide Using the Mode-Matching Technique (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.7 (Jul. 1984 [T-MTT]): 711-717.

The solutions of electromagnetic field equations of the broad-side-coupled dielectric image guide are derived using the mode-matching technique. The even- and odd-mode dispersion characteristics are presented as a function of the dimensional parameters of the guide for the low-loss mode for which the principal electric field is parallel to the metal image planes.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Method of Avoiding the Edge Current Divergence in Perturbation Loss Calculations (Short Papers)

L. Lewin. "A Method of Avoiding the Edge Current Divergence in Perturbation Loss Calculations (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.7 (Jul. 1984 [T-MTT]): 717-719.

From a consideration of the properties near the edge of a flat finite-thickness strip and an elliptic cross-section strip, it is shown that the divergence that arises in the perturbation method near a sharp edge can be handled by halting the loss calculation at a definite distance just short of the strip edge. This distance can be expressed in terms of the radius of curvature at the tip for a rounded edge, and in terms of the strip thickness for a flat edge.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Technique for the Design of Microwave Transistor Oscillators (Short Papers)

K.L. Kotzebue. "A Technique for the Design of Microwave Transistor Oscillators (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.7 (Jul. 1984 [T-MTT]): 719-721.

A technique for the design of microwave transistor oscillators is presented in which measurements made on an experimentally optimized amplifier are used to calculate six basis oscillator circuits which yield maximum power output. The procedure has been experimentally verified by the construction of a silicon bipolar transistor test oscillator at 1 GHz.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Microwave Helix Waveguide Absorption Cell for Passive Frequency Standard (Short Papers)

J.-C. Mollier and M. Valentin. "Microwave Helix Waveguide Absorption Cell for Passive Frequency Standard (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.7 (Jul. 1984 [T-MTT]): 721-722.

A new closed absorption cell, which has been developed for a passive frequency standard, is described. This cell is made from a cylindrical quartz tube with copper wire wound around it. For the limiting case of the zero pitch helix, Maxwell's equations are graphically solved, which show that the cell is operating like a monomode waveguide at 23.8 GHz, the frequency of interest, and can be used from 10 to 100 GHz with few modifications.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

94-GHz 4-Port E-Plane Junction Circulator (Short Paper)

K. Solbach. "94-GHz 4-Port E-Plane Junction Circulator (Short Paper)." 1984 Transactions on Microwave Theory and Techniques 32.7 (Jul. 1984 [T-MTT]): 722-724.

A 4-port junction circulator for use in 94-GHz E-plane integrated circuits is investigated. The design incorporates an E-plane X-junction of standard metal waveguides with a single ferrite disk on one of the narrow walls of the junction plus a metal plunger extending into the junction from the opposite side. The plunger is used to tune the $n = 0$ mode to the circulator center frequency and additionally can be used to tune the circulator center frequency over several gigahertz without critically degrading circulator performance. Minimum insertion loss of 0.65 dB was typical in a series of 12 plunger-tuned circulators with adjacent port isolation better than 20 dB, and crossport isolation better than 15 dB over nearly a 1-GHz bandwidth.

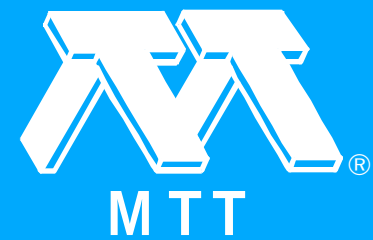
[Click on title for a complete paper.](#)



Abstracts

Patent Abstracts (Jul. 1984 [T-MTT])

"Patent Abstracts (Jul. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.7 (Jul. 1984 [T-MTT]): 725-728.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (Jul. 1984 [T-MTT])

"Back Cover (Jul. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.7 (Jul. 1984 [T-MTT]): b1-b2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (Aug. 1984 [T-MTT])

"Front Cover (Aug. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Editorial (Aug. 1984 [T-MTT])

J.C. Toler. "Editorial (Aug. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 729-729.

The primary motivation for undertaking the considerable task of serving as Guest Editor of this Special Issue stems from the strong conviction that we absolutely must know more about the subject of nonionizing electromagnetic wave interactions with biological functioning. By presenting major collections of technical papers in reputable international publications, perhaps attention can be focused on this subject, with the result being that the need for more knowledge will be further emphasized. To not vigorously pursue increased knowledge on this subject is to condemn ourselves to a future with inadequately established safety standards and incomplete realization of major medical benefits.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

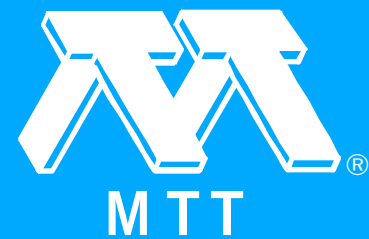


Abstracts

A Review of Numerical Models for Predicting the Energy Deposition and Resultant Thermal Response of Humans Exposed to Electromagnetic Fields

R.J. Spiegel. "A Review of Numerical Models for Predicting the Energy Deposition and Resultant Thermal Response of Humans Exposed to Electromagnetic Fields." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 730-746.

For humans exposed to electromagnetic (EM) radiation, the resulting thermophysiologic response is not well understood. Because it is unlikely that this information will be determined from quantitative experimentation, it is necessary to develop theoretical models which predict the resultant thermal response after exposure to EM fields. These calculations are difficult and involved because the human thermoregulatory system is very complex. In this paper, the important numerical models are reviewed and possibilities for future development are discussed.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Limitations of the Cubical Block Model of Man in Calculating SAR Distributions

H. Massoudi, C.H. Durney and M.F. Iskander. "Limitations of the Cubical Block Model of Man in Calculating SAR Distributions." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 746-752.

Block models of man which consist of a limited number of cubical cells are commonly used to predict the internal electromagnetic (EM) fields and specific absorption rate (SAR) distributions inside the human body. Numerical results, for these models, are obtained based on moment-method solutions of the electric-field integral equation (EFIE) with a pulse function being used as the basis for expanding the unknown internal field. In this paper, we first examine the adequacy of the moment-method procedure, with pulse basis functions, to determine SAR distributions in homogeneous models. Calculated results for the SAR distributions in some block models are presented, and the stability of the solutions is discussed. It is shown that, while the moment-method, using pulse basis functions, gives good values for whole-body average SAR, the convergence of the solutions for SAR distributions is questionable. A new technique for improving the spatial resolution of SAR distribution calculations using a different EFIE and Galerkin's method with linear basis functions and polyhedral mathematical cells is also described.



Abstracts



IEEE

Contents

Publications

Issues

Papers

Authors

Average SAR and SAR Distributions in Man Exposed to 450-MHz Radiofrequency Radiation

A.W. Guy, C.-K. Chou and B. Neuhaus. "Average SAR and SAR Distributions in Man Exposed to 450-MHz Radiofrequency Radiation." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 752-763.

Fifth-scale phantom models were exposed to 2450-MHz electromagnetic fields to obtain the average specific absorption rate (SAR) and SAR distribution in man exposed to 1 mW/cm² 450-MHz radiofrequency radiation for various polarizations and body positions. The average SAR was measured calorimetrically and SAR distribution was determined thermographically using an interactive computer system. The mean SAR, as averaged over the body, remained relatively constant at 0.050 W/kg, with a standard deviation of ± 0.007 W/kg for all polarizations and body postures considered in the study. Peak SAR values were as high as 0.650 W/kg, occurring typically in the wrist.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

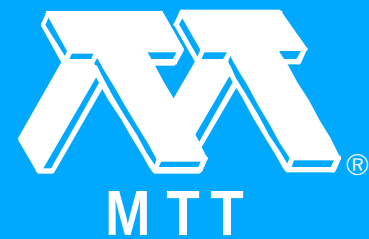
Human Body Impedance for Electromagnetic Hazard Analysis in the VLF to MF Band

H. Kanai, I. Chatterjee and O.P. Gandhi. "Human Body Impedance for Electromagnetic Hazard Analysis in the VLF to MF Band." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 763-772.

A knowledge of the average electrical impedance of the human body is essential for the analysis of electromagnetic hazards in the VLF to MF band. The purpose of our measurements was to determine the average body impedance of several human subjects as a function of frequency. Measurements were carried out with the subjects standing barefoot on a ground plane and touching various metal electrodes with the hand or index finger. The measured impedance includes the electrode polarization and skin impedances, spread impedance near the electrode, body impedance, stray capacitance between the body surface and ground, and inductance due to the body and grounding strap. These components are separated and simplified equivalent circuits are presented for body impedance of humans exposed to free-space electromagnetic waves as well as in contact with large ungrounded metallic objects therein.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Effect of Separation from Ground on Human Whole-Body RF Absorption Rates

D.A. Hill. "Effect of Separation from Ground on Human Whole-Body RF Absorption Rates." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 772-778.

Whole-body absorption rates of human volunteers exposed in E-polarization are reported as a function of the separation between the subject's feet and the ground plane. Little difference is observed between the results for the EKH and EHK orientations. At frequencies below the grounded resonance (7 to 25 MHz), and air gap of 3 to 6 mm reduces the absorption rate to half the grounded rate. On the other hand, near the grounded resonance (at 40.68 MHz), an air gap of 50 to 80 mm is required for the same effect. Typical footwear provides some radiation protection by reducing the RF absorption rate by approximately 50 percent at below-resonance frequencies, or 20 percent at near-resonance frequencies. Experiments with different dielectric materials between the soles of the feet and the ground plane support the idea that those two surfaces effectively form a parallel-plate capacitor. The experimental results are compared to the predictions of the cylinder and block-model calculations.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

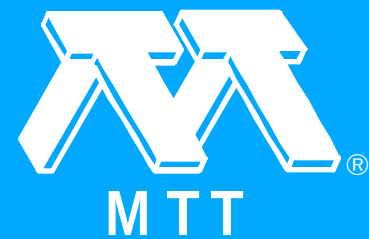
Specific Absorption Rate Distribution in a Full-Scale Model of Man at 350 MHz

A. Kraszewski, M.A. Stuchly, S.S. Stuchly, G. Hartsgrrove and D. Adamski. "Specific Absorption Rate Distribution in a Full-Scale Model of Man at 350 MHz." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 779-783.

A computer-controlled scanning system and an implantable triaxial electric-field probe have been used to obtain maps of the specific absorption rate (SAR) in various cross sections of a full-scale model of man. The model was exposed to a 350-MHz plane wave that provided various orientations of the electric-field vector with respect to the body. The results obtained are in general agreement with previously published theoretical and experimental data. The SAR distributions in the torso and head were in relatively good agreement with cylindrical and spherical models, respectively. Enhanced absorption in the neck and the limbs, as previously found by the thermographic method, was observed. This study provides much more detailed information than previously available, with an absolute accuracy of ± 1 db.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Interaction of the Near-Zone Fields of a Slot on a Conducting Sphere with a Spherical Model of Man

S.-G. Zhu, K.-M. Chen and H.-R. Chuang. "Interaction of the Near-Zone Fields of a Slot on a Conducting Sphere with a Spherical Model of Man." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 784-795.

We consider the geometry of a lossy dielectric sphere, simulating a human body, placed in the proximity of a conducting sphere with a radiating slot, simulating a leaking microwave oven. An exact solution is obtained for this idealized problem by using two spherical coordinate systems and employing the addition theorem to translate the vector spherical harmonics between the coordinate systems. Multiple scattering of the EM wave between the two spheres are determined by solving the boundary value problems iteratively. An extensive numerical computation has been conducted to determine the induced SAR in the dielectric sphere, and the body-source coupling effect was evaluated. It was found that a serious error in the SAR estimation can be caused if the body-source coupling is neglected, a common approximation used in most of the existing studies on the subject.

Click on title for a complete paper.



Abstracts

The Absence of Significant Short-Term Electromagnetic Bioeffects in Giant Algal Cells Exposed to CW and Pulse-Modulated X-Band Bursts

A.V. Gokhale, K.M. Brunkard and W.F. Pickard. "The Absence of Significant Short-Term Electromagnetic Bioeffects in Giant Algal Cells Exposed to CW and Pulse-Modulated X-Band Bursts." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 795-797.

Giant cells of the algae *Chara brauni* and *Nitella flexilis* were exposed to continuous wave and pulse-modulated bursts of X-band microwaves and the vacuolar potential was monitored for immediate radiation-correlated offsets. No such offsets were observed despite a resolution of approximately 5 in 10/sup 5/, and despite the wide variety of frequencies, power levels, and pulse protocols employed.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Some Results on Low-Level Microwave Treatment of the Mountain Pine Beetle and the Darkling Beetle

H.S. Whitney and M.M.Z. Kharadly. "Some Results on Low-Level Microwave Treatment of the Mountain Pine Beetle and the Darkling Beetle." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 798-803.

Various stages of the mountain pine beetle (*Dendroctonus ponderosae* Hopk.) and pupae of the darkling beetle (*Tenebrio molitor* L.) were treated in waveguide and in "free space" with a wide range of doses of low-level microwave radiation at 10, 35, and 74 GHz. The insects were found to be more resistant to radiation than previously reported in *T. molitor* for similar and weaker doses. It is suggested that this lack of response could be due to different physiological conditions in the *T. molitor* population studied.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Exposure of Human Mononuclear Leukocytes to Microwave Energy Pulse-Modulated at 16 or 60 Hz

N.J. Roberts, Jr., S.M. Michaelson and S.-T. Lu. "Exposure of Human Mononuclear Leukocytes to Microwave Energy Pulse-Modulated at 16 or 60 Hz." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 803-808.

Human mononuclear leukocytes were exposed to 2450-MHz microwaves pulse modulated at 16 or 60 Hz, at specific absorption rates up to 4 mW/ml. Such exposures produced no detectable effects on leukocyte viability, or on unstimulated or mitogen-stimulated DNA synthesis or total protein synthesis. The data provided no evidence that exposure to pulse-modulated microwaves is more likely to alter human leukocyte function than is exposure to continuous waves at equivalent energy levels.



MTT



IEEE

[Contents](#)

[Publications](#)

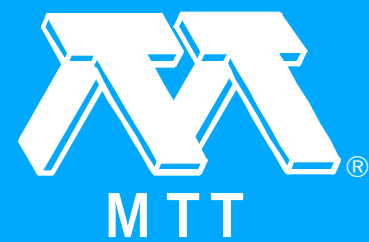
[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Effects of 2450-MHz Microwave Energy on the Blood-Brain Barrier: An Overview and Critique of Past and Present Research

W.M. Williams, S.-T. Lu, M. Del Cerro, W. Hoss and S.M. Michaelson. "Effects of 2450-MHz Microwave Energy on the Blood-Brain Barrier: An Overview and Critique of Past and Present Research." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 808-818.

The dynamics and complexity of the blood-brain barrier (BBB) make it a very difficult system for study. The variety of techniques employed to assess microwave effects on the barrier all appear subject to limitations in either sensitivity or applicability. Inconsistencies in tracer characteristics, experimental design, and in the microwave parameters employed, i.e., microwave system used (pulsed or continuous wave), field orientation relative to the exposed animal, frequency, power density, and duration of exposure, anesthesia or physical restraint, all have lead to difficulties in interpreting results and replication of experiments. Therefore, the technical approach, as well as data obtained, must be carefully scrutinized to avoid misinterpretation of results that may lead to erroneous conclusions. Recent studies by Williams et al. have endeavored to consolidate various technical approaches within a single study in order to more clearly interpret potential microwave-blood-brain barrier interactions and to minimize extraneous factors which may confound these effects. Our findings, as well as those of other investigators, fail to confirm previously published reports of increased blood-brain barrier permeability in rats following exposure to microwaves. Our findings, however, support the conclusion that suppression of BBB permeability occurs, and that this effect is mediated by temperature-dependent changes in endothelial cell function, and not by qualities unique to microwave energy.

Click on title for a complete paper.



Abstracts

A High-Power Automatic Network Analyzer for Measuring the RF Power Absorbed by Biological Samples in a TEM Cell

J.R. Juroshek and C.A. Hoer. "A High-Power Automatic Network Analyzer for Measuring the RF Power Absorbed by Biological Samples in a TEM Cell." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 818-824.

A device for measuring the radiofrequency (RF) power absorbed by biological samples while they are being irradiated in a transverse electromagnetic (TEM) cell is described. The report discusses the design, calibration, and performance of this automated measurement system. The power absorption analyzer is based on a six-port type of automatic network analyzer, and operates at an incident power to the TEM cell of 1 to 1000 W, over a frequency range of 100 to 1000 MHz. Experiments show that an absorbed power of 0.02 to 0.05 percent of the incident power can be measured. Measurements of the power absorbed by a 1-percent saline solution were made using the power absorption analyzer and by an independent calorimetric measurement. The two measurement techniques show excellent agreement.



Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Probing Electromagnetic Fields in Lossy Spheres and Cylinders

G.H. Wong, S.S. Stuchly, A. Kraszewski and M.A. Stuchly. "Probing Electromagnetic Fields in Lossy Spheres and Cylinders." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 824-828.

Distributions of electric fields in lossy spheres and infinite lossy cylinders simulating biological objects were measured at 350, 920 and 2450 MHz. The measurements were performed in a computer-controlled scanning system using three different implantable nonperturbing probes. The results are compared with theory, and use of lossy spheres and cylinders for calibration of implantable probes is quantitatively evaluated.

Click on title for a complete paper.



Abstracts

Aperture Synthesis Thermography -- A New Approach to Passive Microwave Temperature Measurements in the Body

N.C. Haslam, A.R. Gillespie and C.G.T. Haslam. "Aperture Synthesis Thermography -- A New Approach to Passive Microwave Temperature Measurements in the Body." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 829-835.

The radio astronomical technique of aperture synthesis is proposed for use in medical applications to give, noninvasively, a thermal image of a large fraction of the human body to a depth of several centimeters with no microwave irradiation. The principles of operation are illustrated by a practical design which could give a sensitivity of a few milli-Kelvin over a 50-cm field in a 10-s exposure. Applications of the proposed system include detection of cancers and other infections, and also rest-time monitoring of the effects of hyperthermia on the surrounding tissue.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Microwave-Induced Thermoacoustic Effect in Dielectrics and its Coupling to External Medium--A Thermodynamical Formulation

T.C. Guo, W.W. Guo and L.E. Larsen. "Microwave-Induced Thermoacoustic Effect in Dielectrics and its Coupling to External Medium--A Thermodynamical Formulation." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 835-843.

A thorough formulation of electromagnetic wave interaction with biological systems is presented. The thermodynamic process of the microwave-induced thermoacoustic generation is clearly defined. Couplings of the acoustic and thermal energies to the surrounding medium are included through consideration of discontinuities of thermodynamical variables and microwave exposure. Contrary to prior analyses, it is shown that acoustic waves may be generated by pulsed microwaves, even in the absence of inhomogeneity of microwave absorption, owing to discontinuities of thermodynamical variables and microwave exposure conditions across the interface. General equations for the thermoacoustic waves are derived, and the validity of the first-order linear approximation is estimated in terms of its percentage error. For a system with water as the absorbing dielectric interfacing with air of 1 atmosphere pressure, the first-order approximation becomes invalid for a peak specific absorption rate greater than 13 kW/gm.



Abstracts

A Local Field Study of a Water-Immersed Microwave Antenna Array for Medical Imagery and Therapy

T.C. Guo, W.W. Guo and L.E. Larsen. "A Local Field Study of a Water-Immersed Microwave Antenna Array for Medical Imagery and Therapy." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 844-854.

A water-immersed microwave array system for medical imaging is described, and a theoretical analysis of its local field pattern is presented. The theoretical study also applies to similar systems for medical therapy purposes. It is shown that, using a technique of phase and amplitude conjugations, a satisfactory three-dimensional focusing for targets located in the neighborhood of the array may be achieved. The focusing resolutions for transverse and longitudinal directions are approximately $\lambda/2$ and λ , respectively, where λ is the wavelength in the dielectric. By increasing the element spacing of the array, the resolutions can be as good as 5.3 and 11.7 mm, respectively, at the operating frequency of 3 GHz.



[Contents](#)

[Publications](#)

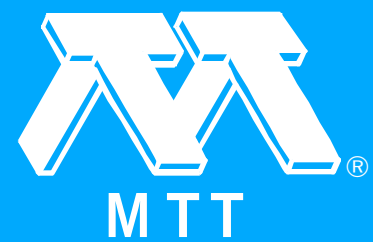
[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

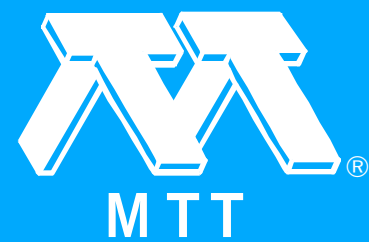
Authors

Microwave Thermoelastic Tissue Imaging-- System Design

J.C. Lin and K.H. Chan. "Microwave Thermoelastic Tissue Imaging--System Design." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 854-860.

A microwave-induced thermoplastic tissue imaging system is proposed as a new and promising imaging modality. It possesses unique features that permit noninvasive imaging of tissue characteristics which are not identifiable by other techniques. It uses nonionizing radiation and relies on a beam of impinging microwave energy to launch an acoustic wavefront into tissue. This thermoplastic wave of pressure propagates through the tissue and is detected by a two-dimensional array of piezoelectric transducers positioned on the body surface to give an image of the intervening tissue structure. Signals from the output of this transducer array are amplified and band-limited. A computer-controlled data acquisition system samples and converts them to digital form for further processing. A hybrid parallel/serial design for dividing the array into segments and collecting data from each segment sequentially is used. The area image sensor offers inherent geometric stability essential for reliable measurement. Error in scan position is not a concern, since mechanical scanning is not involved. The gray level resolution is 256 after digitization, and the spatial resolution is 5 X 5 mm. These resolutions, along with a calculated signal-to-noise ratio greater than 2500, are sufficient to provide structural information needed to render microwave-induced thermoelastic imaging a useful, noninvasive method for imaging biological tissues.





IEEE

Contents

Publications

Issues

Papers

Authors

Limitations of Imaging with First-Order Diffraction Tomography

M. Slaney, A.C. Kak and L.E. Larsen. "Limitations of Imaging with First-Order Diffraction Tomography." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 860-874.

In this paper, the results of computer simulations used to determine the domains of applicability of the first-order Born and Rytov approximations in diffraction tomography for cross-sectional (or three-dimensional) imaging of biosystems are shown. These computer simulations were conducted on single cylinders, since in this case analytical expressions are available for the exact scattered fields. The simulations establish the first-order Born approximation to be valid for objects where the product of the relative refractive index and the diameter of the cylinder is less than 0.35λ . The first-order Rytov approximation is valid with essentially no constraint on the size of the cylinders; however, the relative refractive index must be less than a few percent. We have also reviewed the assumptions made in the first-order Born and Rytov approximations for diffraction tomography. Further, we have reviewed the derivation of the Fourier Diffraction projection Theorem, which forms the basis of the first-order reconstruction algorithms. We then show how this derivation points to new FFT-based implementations for the higher order diffraction tomography algorithms that are currently being developed.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Hyperthermia and Inhomogeneous Tissue Effects Using an Annular Phased Array

P.F. Turner. "Hyperthermia and Inhomogeneous Tissue Effects Using an Annular Phased Array." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 874-875.

A regional hyperthermia Annular Phased Array (APA) applicator is described, and examples of its various heating patterns, obtained by scanning the electric fields with a small E-field sensor, are illustrated. Also shown are the effects of different frequencies of an elliptical phantom cylinder having a 1-cm-thick artificial fat wall and the general dimensions of the human trunk. These studies show the APA's ability to achieve uniform heating at lower frequencies (below 70 MHz) or to focus central heating at moderately higher frequencies (above 70 MHz). The influence of human anatomical contours in altering heating patterns is discussed using results obtained with a female mannequin having a thin latex shell filled with tissue-equivalent phantom. Field perturbations caused by internally embedded low-dielectric structures are presented, showing the localized effects of small objects whose surfaces are perpendicular to the electric field.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Microwave-Induced Post-Exposure Hyperthermia: Involvement of Endogenous Opioids and Serotonin

H. Lai, A. Horita, C.K. Chou and A.W. Guy. "Microwave-Induced Post-Exposure Hyperthermia: Involvement of Endogenous Opioids and Serotonin." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 882-887.

Acute exposure to pulsed microwaves (2450 MHz, 1 mW/ cm/sub 2/, SAR 0.6 W/kg, 2- μ s pulses, 500 pulses/s) induces a transient post-exposure hyperthermia in the rat. The hyperthermia was attenuated by treatment with either the narcotic antagonist naltrexone or one of the serotonin antagonists cinanserin, cyproheptadine, or metergoline. It was not affected, however, by treatment with the peripheral serotonin antagonist xylamidine nor the dopamine antagonist haloperidol. It thus appears that both endogenous opioids and central serotonin are involved. It is proposed that pulsed microwaves activate endogenous opioid systems, and that they in turn activate a serotonergic mechanism that induces the rise in body temperature.

Click on title for a complete paper.



Abstracts

Focused Electromagnetic Heating of Muscle Tissue (Short Papers)

P. Raskmark and J.B. Andersen. "Focused Electromagnetic Heating of Muscle Tissue (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 887-888.

A cylinder of muscle tissue may be heated at depth by applying an electric field to a circumferential gap in a metallic cylinder surrounding the tissue. Experiments at 150 MHz on a 10-cm-diameter cylinder verify the theoretical calculations and show a well-defined focus on the axis.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

On the Nonthermal Microwave Response of *Drosophila Melanogaster* (Short Papers)

H. Aichmann, G. Nimtz and A.-H. Frucht. "On the Nonthermal Microwave Response of Drosophila Melanogaster (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 888-891.

The fertility of microwave-irradiated fruit flies was investigated in an experiment conducted at 40 GHz and at a low power level to avoid thermal effects. In a series of six experiments with 82910 flies, the fertility of irradiated flies and of their first and second filial generation was determined. No radiation effect was found. This result is contrary to previously published data.



[Contents](#)

[Publications](#)

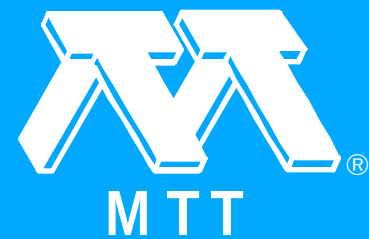
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Changes in Liposomes Permeability Induced by Gramicidin D After Microwave Irradiation (Short Papers)

D. Yova, S. Loukas and G. Boudouris. "Changes in Liposomes Permeability Induced by Gramicidin D After Microwave Irradiation (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 891-893.

The response of model membranes (liposomes) to microwave irradiation (9.2 GHz, energy absorption 20 mW/g, continuous 1.5-h exposure in an orthogonal waveguide) was determined spectrophotometrically by recording after irradiation the gramicidin D-induced cation permeability. The irradiation modified the gramicidin D-induced permeability to the cations K^{+} , Na^{+} , and Rb^{+} through the liposomes and seemed to facilitate the movement of Na^{+} and Rb^{+} . These results are discussed in relation with the hypothesis that microwave radiation may induce changes to the structure of liposomes.

Click on title for a complete paper.



Abstracts

A Multifrequency Water-Filled Waveguide Applicator: Thermal Dosimetry in Vivo (Short Papers)

G.A. Lovisolo, M. Adami, G. Arcangeli, A. Borrani, G. Calamai, A. Cividalli and F. Mauro. "A Multifrequency Water-Filled Waveguide Applicator: Thermal Dosimetry in Vivo (Short Papers)." *1984 Transactions on Microwave Theory and Techniques* 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 893-896.

A new horn-shaped waveguide hyperthermia applicator, operating in the range 300-1000 MHz, has been designed. The applicator is filled with deionized water acting as both a dielectric and a cooling fluid. Preliminary tests indicate that proper heating can be achieved at frequencies of about 340, 440, 560, and 690 MHz. A very low level of environmental pollution was observed. Thermodosimetry has been carried out on two young female sheep. Measurements in vivo have been carried out using up to 5 temperature sensors in different positions. The results indicate the occurrence of different temperature trends if the water is maintained at 15, 23, 30, and 35°C.



[Contents](#)

[Publications](#)

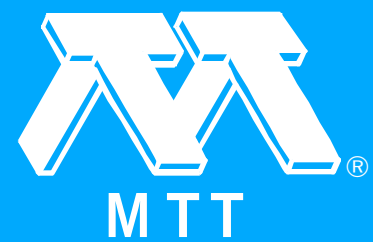
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Multi-Octave Performance of Single-Ended Microwave Solid-State Amplifiers

K.B. Niclas. "Multi-Octave Performance of Single-Ended Microwave Solid-State Amplifiers." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 896-908.

The computed performances of multi-stage single-ended GaAs MESFET amplifiers are compared when employing one and the same transistor type. The circuit principles studied are of the reflective match the lossy match, the feedback, the distributed, and the active-match amplifier variety. It was found that the gain characteristics of the single-stage modules using either passive or active matching do not conclusively identify the optimum circuit type in the band of interest (2-18 GHz). For the case of multistage devices, however, the gain and the VSWR performance clearly favor the distributed amplifier principle. In addition to the data reported in the literature, the paper discusses recent experimental results obtained from a 3-17.5-GHz reflective match module, a two-stage 2-18-GHz and a four-stage 0.5-18.5-GHz feedback amplifier, as well as a two-stage 2-20-GHz and a four-stage 2-18-GHz distributed amplifier.



Abstracts

Design of Waveguide Circulators with Chebyshev Characteristics Using Partial-Height Ferrite Resonators

J. Helszajn. "Design of Waveguide Circulators with Chebyshev Characteristics Using Partial-Height Ferrite Resonators." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 908-917.

This paper outlines a step-by-step approach to the design of waveguide circulators using partial-height resonators, which incorporates every linear dimension of the device. The approach used consists of defining the physical variables of the ferrite region in terms of the frequency, VSWR, and bandwidth specification. It also incorporates the definition of the length and admittance level of the radial transformer. The model employed is essentially a two-mode one, with the third mode separately adjusted to exhibit an ideal electric-wall boundary condition at the terminals of the junction.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Cyclotron Maser and Peniotron-Like Instabilities in a Whispering Gallery Mode Gyrotron

P. Vitello. "Cyclotron Maser and Peniotron-Like Instabilities in a Whispering Gallery Mode Gyrotron." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 917-921.

The efficiency of the m th harmonic electron cyclotron maser interaction for a TE/ mn_1 gyrotron oscillator is compared with the $(m-1)$ th harmonic peniotron-like interaction. Identical cavities and electron beams are used. Start oscillation conditions from weak-field linear theory are given, as well as optimized nonlinear efficiencies. The peniotron-like interaction leads to optimized efficiencies of ~ 65 percent, while those for the electron cyclotron maser interaction are limited to ~ 25 percent in the cases studied.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Penalty Function Improvement of Waveguide Solution by Finite Elements

B.M.A. Rahman and J.B. Davies. "Penalty Function Improvement of Waveguide Solution by Finite Elements." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 922-928.

The finite element method is a well-established method for the solution of a wide range of guided wave problems. One drawback associated with the powerful vector formulation is the appearance of spurious or nonphysical solutions. A penalty function method has been introduced to the finite element formulation, to reduce or eliminate spurious solutions. It also improves the quality of the physical field solutions. The method has been applied for the solution of metallic homogeneous and inhomogeneous guides, and integrated optics guides.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Time Dispersion Properties of Cascaded Multimode Fiber Links

G. Cancellieri and P. Fantini. "Time Dispersion Properties of Cascaded Multimode Fiber Links." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 929-935.

A general model for studying the time dispersion properties of cascaded multimode fiber links is presented. Fibers having different index profiles and misaligned joints are taken into account. It is shown that the transit time of a ray in the first fiber is conserved and transferred to another ray in the second fiber, and so forth. Simple compensation formulas are derived for alpha-profile fibers. The lower limit to the total time dispersion, which is imposed by material dispersion, is also investigated.

[Click on title for a complete paper.](#)



Abstracts

Characterization of a Dual-Mode Horn for Submillimeter Wavelengths (Short Papers)

H.M. Pickett, J.C. Hardy and J. Farhoomand. "Characterization of a Dual-Mode Horn for Submillimeter Wavelengths (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 936-937.

A simple dual-mode conical horn has been developed and tested at 0.5, 1.4, 3.1, and 34.2 mm. The horn has nearly equal beam shape in the E and H plane far field patterns with a 3-dB half angle of 6°. At 34.2 mm, the waveguide reflection loss and the phase center have been determined.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

An Analytical Method for the Capacitance of the Rectangular Inhomogeneous Coaxial Line Having Anisotropic Dielectrics (Short Papers)

S.K. Koul. "An Analytical Method for the Capacitance of the Rectangular Inhomogeneous Coaxial Line Having Anisotropic Dielectrics (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 937-941.

An analytical technique for the capacitance of a rectangular inhomogeneous coaxial line with zero thickness offset inner conductor and having anisotropic dielectrics is briefly outlined. The spectral domain technique in discrete Fourier variable, under quasi-static approximation, is used to determine the capacitance expression. Numerical data are presented on the capacitance of rectangular homogeneous/inhomogeneous coaxial lines having anisotropic dielectrics. The capacitance values obtained using the analytical technique presented are found to be in good agreement with the results reported using numerical techniques by other authors.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Incremental Frequency Rule for Computing the Q-Factor of a Shielded TE/sub omp/ Dielectric Resonator (Short Papers)

D. Kajfez. "Incremental Frequency Rule for Computing the Q-Factor of a Shielded TE/sub omp/ Dielectric Resonator (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 941-943.

The principle of Wheeler's incremental inductance rule is applied to the TE/sub omp/ cylindrical resonator within a metal enclosure. The procedure permits one to compute the conductor losses solely from the decrease in resonant frequency when the metal walls are receded for one skin depth.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Loss Measurements of Nonradiative Dielectric Waveguide (Special Papers)

T. Yoneyama, N. Tozawa and S. Nishida. "Loss Measurements of Nonradiative Dielectric Waveguide (Special Papers)." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 943-946.

A technique has been developed for precisely measuring the attenuation constant of the nonradiative dielectric waveguide (NRD-guide) at 50 GHz. The novelty of the present technique lies in incorporating the NRD-guide directional coupler into the measurement system and taking advantage of the total reflection of waves at the truncated end of the dielectric strip to facilitate the construction of the setup and to attain a high degree of accuracy in measurements. Measured attenuation constants were found to be about 13 dB/m for a polystyrene NRD-guide and 4 dB/m for a Teflon NRD-guide. These values indicate that the NRD-guide can be of practical use as a waveguide for millimeter-wave integrated circuits because of its low-loss nature as well as its radiation suppression capability. Calculation is also carried out in order to support measurements.

[Click on title for a complete paper.](#)

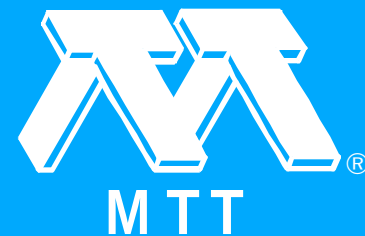


Abstracts

The Microstrip Open-Ring Resonator (Comments)

K.B. Niclas. "The Microstrip Open-Ring Resonator (Comments)." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 946-947.

Attention is drawn to the analogy existing between the electromagnetic fields of the open-ring resonator and the ring-sector waveguide. Except for the eigenvalues of gamma and kappa, the spatial variations of their fields in the cross-sectional plane are solutions of the same differential equation.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

Patent Abstracts (Aug. 1984 [T-MTT])

"Patent Abstracts (Aug. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 948-950.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Call for Papers - Numerical Methods for Microwave and Millimeter Wave Characterizations and Designs (Aug. 1984 [T-MTT])

"Call for Papers - Numerical Methods for Microwave and Millimeter Wave Characterizations and Designs (Aug. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 951-951.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

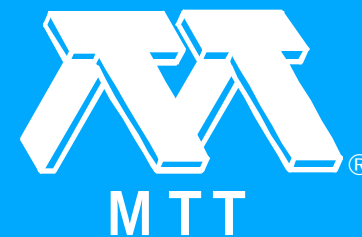
Click on title for a complete paper.



Abstracts

Information for Authors (Aug. 1984 [T-MTT])

"Information for Authors (Aug. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): 952-952.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

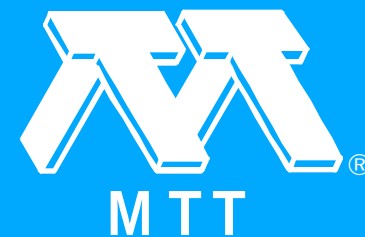
Click on title for a complete paper.



Abstracts

Back Cover (Aug. 1984 [T-MTT])

"Back Cover (Aug. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.8 (Aug. 1984 [T-MTT] (Special Issue on Electromagnetic-Wave Interactions with Biological Systems)): b1-b2.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

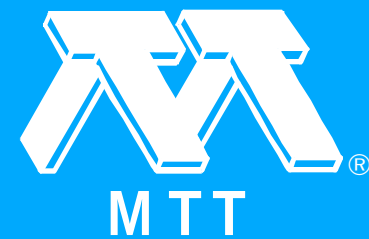
Click on title for a complete paper.



Abstracts

Front Cover (Sep. 1984 [T-MTT])

"Front Cover (Sep. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): f1-f2.



IEEE

Contents

Publications

Issues

Papers

Authors

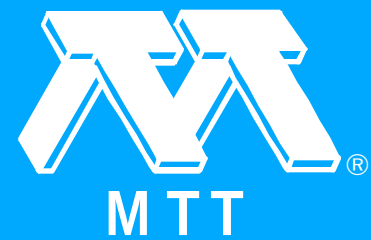
Click on title for a complete paper.



Abstracts

Table of Contents (Sep. 1984 [T-MTT])

"Table of Contents (Sep. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 953-954.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Introduction (Sep. 1984 [T-MTT])

T.S. Saad. "Introduction (Sep. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 955-955.

This special issue of the IEEE Transactions of Microwave Theory and Techniques, "Historical Perspectives of Microwave Technology," has been published to help commemorate the 100th anniversary of the IEEE.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

History of the Administrative Committee of the Microwave Theory and Techniques Society

T.S. Saad. "History of the Administrative Committee of the Microwave Theory and Techniques Society." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 956-960.

Although for the last several years the history of the Microwaves Theory and Techniques Society Administrative Committee (AdCom) has been carried on an issue-by-issue basis in the MTT Newsletter, I thought a short historical overview might be appropriate in this Special Centennial Issue of the Transactions on Microwave Theory and Techniques.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

The Origin of Waveguides: A Case of Multiple Rediscovery

K.S. Packard. "The Origin of Waveguides: A Case of Multiple Rediscovery." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 961-969.

The early history of hollow tube waveguides is described. Conceived by Lord Rayleigh in 1897, they were little used and the idea forgotten. Almost 40 years later, G. C. Southworth and W. L. Barrow rediscovered the concept, each working independently for almost five years with no knowledge of the other. This work culminated in almost simultaneous public presentations in 1936. The significance of these events for gaining insight into the interactions of science, mathematics, and engineering is discussed.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Coaxial Transmission Lines, Related Two-Conductor Transmission Lines, Connectors, and Components: A U.S. Historical Perspective

J.H. Bryant. "Coaxial Transmission Lines, Related Two-Conductor Transmission Lines, Connectors, and Components: A U.S. Historical Perspective." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 970-981.

This Special Issue of the Transactions on Microwave Theory and Techniques in observance of the first 100 years of the IEEE has an especially interesting parallel for the history of guided electromagnetic (EM) waves. It was in this decade 100 years ago that Heinrich Hertz, a German professor of physics, carried out his original experiments which demonstrated the reality of the Faraday-Maxwell theory of the wave nature of light and electricity and the central thesis that they are essentially the same. According to Hertz, the result of the experiments is to confirm the fundamental hypotheses of the theory. He acknowledged the problems of following Maxwell's difficult style, with its "unwonted mathematical difficulties," and of not always being quite certain of having grasped the physical significance of Maxwell's statements.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Microwave Printed Circuits - The Early Years

R.M. Barrett. "Microwave Printed Circuits - The Early Years." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 983-990.

An important milestone in microwave technology was the development of the "microwave printed circuit" (MPC), or flat-strip microwave components, fabricated by conventional printed-circuit techniques. This development freed the microwave designer from the constraints, and often prohibitive costs, encountered when designing complex circuitry either in wave-guides, coaxial lines, or two-wire transmission systems. The costs and complexities of fabrication often discouraged the development of innovative and complex circuits using these traditional wave guiding or transmission structures.



[Contents](#)

[Publications](#)

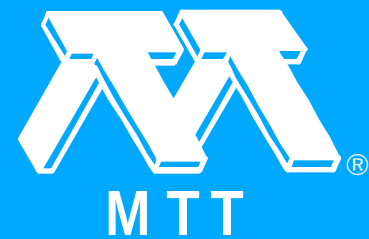
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Microwave Integrated Circuits--An Historical Perspective

H. Howe, Jr.. "Microwave Integrated Circuits--An Historical Perspective." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 991-996.

Before attempting an historical view of microwave integrated circuits, it was necessary to consider just what a microwave integrated circuit is. If someone can come up with a clear, noncontroversial, universally accepted definition, he's a better man than I am. In the broadest sense, a microwave integrated circuit is any combination of circuit functions which are packaged together without a user accessible interface. This definition, however, opens the door to great kluges of waveguide bends and components which have been brazed or welded together, and that is clearly not the intent of this review. I have, therefore, limited the scope to planar integrated circuits which make use of process control manufacturing techniques for a significant portion of the integrated circuit. This would include such transmission-line techniques as stripline, microstrip, slotline, finline, co-planar waveguide, and to a slightly lesser extent, lumped element circuits, image guide dielectric waveguides, and planar waveguide packages which are becoming a viable technique for integrated circuits at millimeter-wave frequencies.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Monolithic Microwave Integrated Circuits: An Historical Perspective

D.N. McQuiddy, Jr., J.W. Wassel, J.B. LaGrange and W.R. Wisseman. "Monolithic Microwave Integrated Circuits: An Historical Perspective." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 997-1008.

Monolithic microwave integrated-circuit (MMIC) technology as it exists today has evolved from events that occurred during the middle-to-late 1950's and early 1960's. These events are reconstructed through a review of the published literature, government contract reports and proposals, U.S. patents, and private communications with individuals directly involved in early MMIC development. No single point in time can be viewed as that historical moment when the idea of an MMIC was formalized; rather, the idea evolved over a period of time as a direct result of the successful development of analog and digital IC's and the push by the military services (primarily the Air Force at Wright Patterson) to apply semiconductor technology in defense systems, the evolutionary period is presented in chronological order and includes a discussion of the role played by the Molecular Electronics for Radar Applications program. Early development activities were pursued, with both silicon and GaAs used as the monolithic material. These activities, the early problems encountered with both materials, and the influence the problems had in molding today's technology are described.

[Click on title for a complete paper.](#)



Reflection Charts Relating to Impedance Matching

H.A. Wheeler. "Reflection Charts Relating to Impedance Matching." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 1008-1021.

A reflection chart is some grid of coordinates on which to plot an impedance locus over a frequency range. Taking as a reference a constant real impedance, one may construct contours of the reflection coefficient (or the related VSWR, reflection loss, etc.). The reference may be the wave impedance of a transmission line. This may be a line connecting radio equipment with an antenna or it may be a standard line used in measuring the impedance. The reflection chart in widest use is the so-called "Smith Chart" proposed by Philip H. Smith in 1939. It is one form of the hemisphere chart, which was proposed, also in 1939, by Philip S. Carter. Its properties, uses are described. It has some limitations. A reference value must be assigned, after which the shape of a locus depends on this value. Also, a locus is crowded toward the rim of the chart. A logarithmic reflection chart has recently been proposed by the author, which overcomes these limitations but loses some desirable features of the hemisphere chart.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Historical Perspectives on Microwave Field Theory

A.A. Oliner. "Historical Perspectives on Microwave Field Theory." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 1022-1045.

Microwave Field Theory furnishes the foundation for all of the microwave circuitry that made possible the great advances achieved by the microwave field. It is important to understand that microwave field theory is only a portion of electromagnetic field theory in general, and to appreciate how it is distinguished from it. In addition, the network formulation of microwave field theory has been fundamental to the rapid progress made by the microwave community; the formulation in network terms has been so intertwined with the development and understanding of the field concepts and behavior that the network formulation should be viewed as an integral part of microwave field theory. The first part of this introduction explains the point of view indicated in the above paragraph. The second part of the introduction outlines the scope of the historical review presented here.

[Click on title for a complete paper.](#)



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

History of Microwave Passive Components with Particular Attention to Directional Couplers

S.B. Cohn and R. Levy. "History of Microwave Passive Components with Particular Attention to Directional Couplers." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 1046-1054.

After Hertz verified Maxwell's electromagnetic wave theory using a spark-gap microwave source, activity in the microwave range was negligible until about 1930, and quite limited until 1939. In that year, an explosion of activity commenced, motivated by military needs for radar and the invention of the high-power pulsed magnetron. Microwave passive component development during World War II (1939- 1945) is discussed briefly, and then, because of space limitations, this paper concentrates on the important sub-field of directional couplers. The history of microwave filters is covered by the coauthors in a companion paper, while certain other passive components are touched on in the other historical review papers in this issue.

[Click on title for a complete paper.](#)



Abstracts

A History of Microwave Filter Research, Design, and Development

R. Levy and S.B. Cohn. "A History of Microwave Filter Research, Design, and Development." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 1055-1067.

An account of the development of microwave filters is surveyed, commencing from 1937. Much of the foundation of modern filter theory and practice took place during the period of World War II and the years immediately following, especially by such pioneers as the late P. I. Richards, whose subsequent career is briefly described. Filter topics discussed include low-pass, bandpass, high-pass, and multiplexers constructed in a variety of media such as waveguide, coaxial line, microstrip, and stripline, as well as dielectric resonators. All types of filter characteristics are surveyed, such as Chebyshev, elliptic and pseudo-elliptic function, Achieser-Zolotarev, and a variety of generalized designs, including linear phase.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

An Historical View of the Evolution of Low-Noise Concepts and Techniques

S. Okwit. "An Historical View of the Evolution of Low-Noise Concepts and Techniques." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 1068-1082.

Presenting an historical paper on a broad technical subject such as this can be a more difficult task than describing the details of a technical contribution. The former is subjective while the latter, with its logic, mathematics, and measurement data is (usually) objective. Individual points of view of historical highlights, differ, so it is important that some background on the author of such a paper be known by the reader to give him an aid in evaluating the perspective of the points of view presented.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Solid-State Microwave and Millimeter-Wave Sources Development--A Personal Account

H.J. Kuno. "Solid-State Microwave and Millimeter-Wave Sources Development--A Personal Account." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 1083-1087.

The personal experience with the development of solid-state microwave and millimeter-wave sources in the late 1960's and early 1970's is described.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

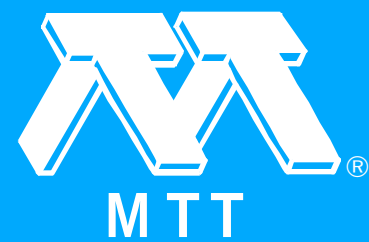
Microwave Ferrite Devices: The First Ten Years

K.J. Button. "Microwave Ferrite Devices: The First Ten Years." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 1088-1096.

The first twenty years of microwave radar development was done entirely without the benefit of ferrite devices. The first experimental microwave ferrite device was demonstrated in 1949. Ten more years of research and development on the devices was required before significant performance was achieved and large scale commercial participation began. This is the story of those ten years.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

The Virtues of Nonlinearity--Detection, Frequency Conversion, Parametric Amplification and Harmonic Generation

M.E. Hines. "The Virtues of Nonlinearity--Detection, Frequency Conversion, Parametric Amplification and Harmonic Generation." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 1097-1104.

In the late 1920's when I was 9 and my brother Laurence was 12, he spent his life savings to buy a "crystal set". This was an exceedingly simple radio receiver. It had no tubes, it required no battery, and it had no power cord. It was a black box about 6 x 6 x 2 in. On its top were two tuning knobs, a number of binding posts, and a "crystal." Following instructions, we connected an "aerial," a ground wire, and a pair of earphones. The crystal itself was a piece of rock-like mineral; galena, I believe. It had a polycrystalline multifaceted surface. It was clamped in a metal cup. Facing the crystal was a pointed spring wire mounted in a ball-joint holder, designed so that the point could be placed anywhere on the surface of the crystal and be set to remain there under spring pressure. This was known as the "cat whisker." Again, following instructions, with the earphones in place, Laurence searched for and found a sensitive spot, after many tries. Eureka! He could hear the nearest local radio station, faintly but clearly. We spent many hours with this receiver, not all happy. The crystal contact was erratic and the sound was always faint. We would lose the signal quite frequently, necessitating a search for a new sensitive spot on the crystal.

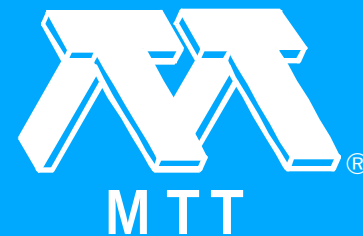


Abstracts

Origins of High-Power Diode Switching

J.F. White. "Origins of High-Power Diode Switching." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 1105-1105.

The most remarkable aspect of high-power semiconductor switching is the quiet way in which it slipped into the engineering art.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

History of Millimeter and Submillimeter Waves

J.C. Wiltse. "History of Millimeter and Submillimeter Waves." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 1118-1127.

In this review an attempt is made to identify many of the major events that have occurred in the development of millimeter- and submillimeter-wave technology from its beginnings in the 1890's until the present time. The review is not intended to be the definitive history of the field, but may form the basis for someone to later write a more comprehensive or encyclopedic version. The history conveniently divides into three periods: 1890 through World War II, Post War (1947 to 1965), and Modern Age (after 1965).



[Contents](#)

[Publications](#)

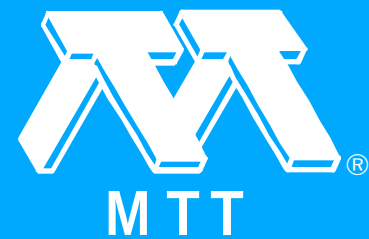
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Short History of Microwave Acoustics

J.H. Collins. "A Short History of Microwave Acoustics." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 1127-1140.

Microwave acoustics may be defined as the subject embodying the propagation of acoustic waves in solid-state materials at-micron-order wavelengths where analysis, design, and componentry realizations are similar to those used by the microwave engineer exploiting electromagnetic waves. Microwave acoustics has a short history, being about 25 years old, but is underpinned by the theory of sound propagation due to Lord Rayleigh of 100 years ago. Microwave acoustic components inherently have several distinct physical origins including volume acoustic waves in solids excited by piezoelectric thin-film transducers and magnetic propagating modes in yttrium iron garnet, both at conventional microwave frequencies; the later surface acoustic-wave (SAW) technology for operation at VHF/UHF and the realm of acoustooptics, which can embody any of the earlier three. Over its 25-year history, microwave acoustics has matured to become a necessary building-block in many radar and communication systems for efficiently carrying out real-time analog signal processing. Contributions to microwave acoustics have been truly international and have spanned many diverse disciplines. The growth of this subject has led to the formation of several companies dedicated to its application.

[Click on title for a complete paper.](#)



Abstracts

The Birth of Lightwave Technology and Its Implications to Microwaves

W.S.C. Chang. "The Birth of Lightwave Technology and Its Implications to Microwaves." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 1140-1143.

Ever since the invention of lasers in the late 1950's, the use of coherent optical radiation for communication and signal processing with multigigahertz bandwidth has been a major research goal in electron devices, microwaves, quantum electronics, and optics. In order to realize that goal, the key issues that need to be addressed include a) how to transmit optical radiation with low propagation loss and signal distortion, b) how to effectively interface optical devices with electronic devices, c) how to modulate, multiplex, switch, and detect optical radiation at such high data rates, and d) how to solve the materials and fabrication technology problems. In the early 1960's, research on optical communications was concerned primarily with transmission of laser radiation through the atmosphere and the pipes.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

The Historical Development of GaAs FET Digital IC Technology

P. Greiling. "The Historical Development of GaAs FET Digital IC Technology." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 1144-1155.

Only ten years have passed since the first GaAs field-effect transistor (FET) digital IC was reported showing the potential for gigabit data rates for microwave systems. During this short time, GaAs FET digital IC technology has matured to produce a 4K static RAM with 3-ns access time. This rapid progress of the technology is due in part of the synergistic research on FET's for microwave device applications, progress in materials growth, lithography, and processing techniques necessary to make uniform and reproducible devices and the support and leadership of the military services. The events that lead to the present, state of the art for GaAs digital IC technology are discussed in chronological order starting with Shockley's theory for the field effect transistor and concluding with performance projections for the technology. Discussions with individuals involved in the technology and review of the published literature have been taken into account in an attempt to outline the contributions that have been made to the technology.

Click on title for a complete paper.



Abstracts

Microwave Instrumentation: An Historical Perspective

S.F. Adam. "Microwave Instrumentation: An Historical Perspective." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 1157-1161.

Metrology is the science of measurements. When one is making a measurement, one is comparing an unknown quantity of some measure with a known (calibrated) quantity of the same measure. The equipment being used in electronics, especially in microwaves, is called instrumentation. When making measurements, using the appropriate instrumentation, the basic rules of metrology have to be observed. It is not enough to gather the data by performing the test; an evaluation of the errors involved also has to be determined. Resolution, readability, repeatability, and absolute calibration accuracy are all important factors in these considerations. It was exactly the evolution of these factors (the need for better accuracy and more data points by systems engineers) which fueled this process. When the measurement techniques fulfilled the requirements of systems designers, better, more sophisticated systems were possible to invent, which in turn posed the need for more improvements in instrumentation.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

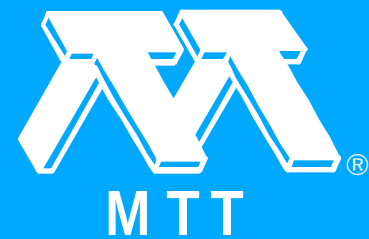
[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Half Century of Radar

D.K. Barton. "A Half Century of Radar." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 1161-1170.

As the IEEE celebrates its 100th anniversary, the practitioners of radar look back on fifty years of progress in their specialized field. Although microwave radar has been the dominant concern for most of this period, the earliest efforts and some of the most recent have used other regions of the spectrum-metric and now micrometer wavelengths. The evolutionary development of radar can be traced through this half century, punctuated by several major innovations in techniques and components: the microwave magnetron, high-power klystron and Amplitron transmitting tubes, coherent signal processing, monopulse tracking, pulse compression, electronically steered arrays, digital processing and control, and solid-state microwave devices. By comparing the appearance and performance of typical radar systems developed before and after each of these innovations, we can see how they have affected the art of radar, and we may also be able to predict what future developments will bring to this ever-changing field.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Microwave Communications--An Historical Perspective

H. Sobol. "Microwave Communications--An Historical Perspective." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 1170-1181.

The history of microwave communications includes major discoveries of Morse, Maxwell, Hertz, Marconi, and other pioneers of the radio and electronics fields. This paper traces the early work which led to wireless communications and the long struggle to achieve practical microwave radio. Even though the first microwave line-of-sight systems were demonstrated and placed in service during the 1930's, it was not until the late 1940's and early 1950's that huge transcontinental microwave transmission systems were implemented. The 1960's and 1970's witnessed significant progress in the technology and application of line-of-sight microwave communication systems. Other microwave systems including troposcatter, satellite, and millimeter waveguide transmission systems were also developed during the 1960's and 1970's. The past 100 years have witnessed very significant breakthroughs in radio technology, particularly at microwave frequencies, that have had an enormous impact on the world's societies through improved communications for the populace, business, and governments.

Click on title for a complete paper.



Abstracts

History of Biological Effects and Medical Applications of Microwave Energy

A.W. Guy. "History of Biological Effects and Medical Applications of Microwave Energy." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 1182-1200.

Though this Special Issue is devoted to the history of microwaves, an appreciation of the history of the interaction of microwaves with biological systems would not be complete without also covering the role that lower frequencies have played in research directed toward the improvement of human health. Licht and Susskind provide an excellent history of the medical applications and biological effects of electromagnetic energy at submicrowave frequencies.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

Contents

Publications

Issues

Papers

Authors

A History of Microwave Heating Applications

J.M. Osepchuk. "A History of Microwave Heating Applications." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 1200-1224.

The development of microwave heating applications is reviewed. This field has followed the earlier application of lower RF frequencies to induction and dielectric heating. Serious activity began after World War II, directed towards a microwave oven for commercial and residential use. The broadening of interest to include scientific and industrial applications followed in the early sixties as new markets for microwave power sources were sought. The creation of the International Microwave Power Institute was one result. The marketing of a countertop microwave oven for consumers gave birth to the economically important oven business in the sixties. The growth of this field has been marked, perhaps slowed, by a series of sociotechnical events questioning the safety of microwave exposure near high-power microwave systems. Although some of this has receded, a problem of public education remains for those who will expand this field. The future development of this field will exploit a broader number of operating frequencies and will be ultimately limited by environmental regulations related to electromagnetic compatibility (or RFI), rather than safe exposure of biological tissue.

Click on title for a complete paper.



Abstracts

50 Years of Radio Astronomy

P.G. Mezger. "50 Years of Radio Astronomy." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 1224-1229.

Contrary to most other branches of science, the birth of radio astronomy can be very accurately pinned down. In the early thirties Carl Guthe Jansky, an engineer at Bell Telephone Laboratories, was investigating atmospheric noise at 14.6-m wavelength with a highly directional antenna. He found that the antenna noise attained a maximum which shifted in time by 4 min per day, the difference between stellar time and solar time. He identified the direction of the maximum intensity with the position of the center of our Galaxy. He had discovered what we now know to be the diffuse galactic synchrotrons emission, caused by relativistic electrons, which gyrate in the galactic magnetic field. Jansky published his discovery of the galactic origin of the observed antenna noise in the Proceedings IRE in 1933. Therefore, this year, we celebrate the 50th birthday of radioastronomy.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

The History of Power Transmission by Radio Waves

W.C. Brown. "The History of Power Transmission by Radio Waves." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 1230-1242.

The history of power transmission by radiowaves is reviewed from Heinrich Hertz to the present time with emphasis upon the free-space microwave power transmission era beginning in 1958. The history of the technology is developed in terms of its relationship to the intended applications. These include microwave powered aircraft and the Solar Power Satellite concept.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A Conversation Between Harold Barlow and Alec Cullen, on November 24, 1983

H. Barlow and A. Cullen. "A Conversation Between Harold Barlow and Alec Cullen, on November 24, 1983." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 1243-1248.

Cullen: How did you first join the academic staff at University College? Barlow: Well, I started life in industry with my father, and I was working in his business (he was an electrical contractor) when I received a letter one day out of the blue from Ambrose Fleming offering me a post as an Assistant Lecturer in the design of electrical machinery. This seemed a good opportunity for me at that time to get into research, which I had always been interested in, and after talking to my father I decided to take up the post...



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

From the Inventor and the Pilot Russell and Sigurd Varian

D. Varian. "From the Inventor and the Pilot Russell and Sigurd Varian." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 1248-1263.

Sig was intensely interested in ways to make flying safer and talked about the problems they encountered with inadequate instruments. The pilots lacked instruments that could locate mountains hidden by clouds where Mexican maps indicated swamps, detect planes approaching in overcast or at night, or guide a plane to a safe landing when visibility was obscured. These and many other navigation aids were badly needed, Since this was a subject Sig knew well, he could foresee a promising future for them if they were able to develop instruments of this kind.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Patent Abstracts (Sep. 1984 [T-MTT])

"Patent Abstracts (Sep. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.9 (Sep. 1984 [T-MTT] (Special Centennial Issue Historical Perspectives of Microwave Technology)): 1263-1271.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (Oct. 1984 [T-MTT])

"Front Cover (Oct. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Finite-Element Analysis of Dielectric-Loaded Waveguides

M. Hano. "Finite-Element Analysis of Dielectric-Loaded Waveguides." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1275-1279.

A finite-element analysis in which nonphysical spurious solutions do not appear has been established to solve the electromagnetic field problem of the closed waveguide filled with various anisotropic media. This method is based on the approximate extremization of a functional, whose Euler equation is the three-component curlcurl equation derived from the Maxwell equations, with a new conforming element. Specific examples are given and the results are compared with those obtained by exact solutions and longitudinal two-component finite-element solutions. Very close agreement was found and all nonzero eigenvalues have been proved to have one-to-one correspondence to the propagating modes of the waveguide.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Phase Shifts in Single- and Dual-Gate GaAs MESFET's for 2-4-GHz Quadrature Phase Shifters

J.P. Mondal, A.G. Milnes, J.G. Oakes and S.-K. Wang. "Phase Shifts in Single- and Dual-Gate GaAs MESFET's for 2-4-GHz Quadrature Phase Shifters." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1280-1288.

The variation of transmission phase for single- and dual-gate GaAs MESFET's with bias change and its probable effects on the performance of an active phase shifter have been studied for the frequency range 2 to 4 GHz. from measured S-parameter values for single- and dual-gate transistors, the element values of the equivalent circuits were fitted by using the computer-aided design program SUPER COMPACT. For the normal full-gate voltage range 0 to -2 V at $V_{DS}/V_{GS} = 4$, the single-gate MESFET varies in transmission phase from 142° to 149° at 2 GHz, and from 109° to 119° at 4 GHz. However, with drain voltage varied from 0.3 to 4 V and a constant gate-voltage bias of 0 V, the phase shifts are much larger, 105° to 145° at 2 GHz and 78° to 112° at 4 GHz. this suggests that large phase shifts may be expected in a dual-gate device and this is found to be so. With $V_{DS}/V_{GS} = 4$ and $V_{GS1} = -1.0$ V, variation of control (second) gate bias from 0 to -1.75 V for the NE463 GaAs MESFET produces a transmission phase variation from 95° to 132° at 2 GHz and 41° to 88° at 4 GHz. Such phase shifts cause both amplitude and phase errors in phase-shifter circuits of the kind where signals from two FET channels are combined in quadrature with their gate voltages controlled to provide 0° to 90° phase control with constant amplitude. For the single-gate FET examined, the expected amplitude and phase errors are 0.30 dB and 6° at 2 GHz, and 0.36 dB and 10° at 4 GHz. If dual-gate FET's are used in similar circuits, the distribution of errors is different. For NE463 devices, the corresponding figures are 0.56 dB and 2° at 2 GHz and 1.2 dB and 3° at 4 GHz. the advantage of the dual-gate configuration is that the input impedance conditions are more constant than for the single-gate configuration.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Correction Due to a Finite Permittivity for a Ring Resonator in Free Space

R. De Smedt. "Correction Due to a Finite Permittivity for a Ring Resonator in Free Space." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1288-1293.

To better determine the resonant fields of a dielectric resonator with high permittivity ϵ_r , the asymptotic theory with $1/\sqrt{\epsilon_r}$ as a small parameter is extended by adding higher order terms in $1/\sqrt{\epsilon_r}$ in the fields, the resonant wavenumber, and radiation Q. Extensive data are shown for the Φ independent "nonconfined" mode of a ring resonator, which radiates as a magnetic dipole. Some results are added for the "magnetic quadrupole" mode.

[Click on title for a complete paper.](#)



Abstracts

Theory and Numerical Simulation of a TE/sub 111/ Gyroresonant Accelerator

W.H. Miner, Jr., P. Vitello and A.T. Drobot. "Theory and Numerical Simulation of a TE/sub 111/ Gyroresonant Accelerator." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1293-1301.

The production of spiral relativistic electron beams in a TE/sub 111/ gyroresonant accelerator cavity for injection into a compact high-harmonic gyrotron is studied. Parametric studies are performed to determine the effects of variations in the background magnetic field amplitude, the RF amplitude in the cavity, and the initial beam voltage on the output beam. The effects of velocity spread and a finite radial extent of the input beam are also discussed. Power curves for obtaining optimum operating regimes for the TE/sub 111/ accelerator are provided.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

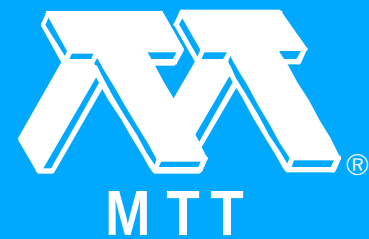
Analysis of Slotted, Dielectrically Loaded, Ridged Waveguide

A.T. Villeneuve. "Analysis of Slotted, Dielectrically Loaded, Ridged Waveguide." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1302-1310.

This paper considers a symmetrical double-ridged waveguide with an axial dielectric slab inserted into it. Series expansions are used to describe the waveguide fields. The method of moments is employed to provide a system of linear equations from which the propagation constant and the coefficients of the series expansions are obtained. From these quantities, the field distributions and power flow are determined and a characteristic impedance based on a power-voltage definition is computed. The calculated propagation constants are compared with measured values.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Stability of Multifrequency Negative-Resistance Oscillators

B.D. Bates and P.J. Khan. "Stability of Multifrequency Negative-Resistance Oscillators." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1310-1318.

A general criterion is derived for the stability of a negative-resistance oscillator with respect to small perturbations in the operating point. The derivation applies when the oscillator output consists of an arbitrary number of related frequency components, including possible nonharmonic components. Examples are given of the application of the stability criterion to coaxial IMPATT oscillator circuits, with experimental verification of the frequency and output power at theoretically determined stable operating points.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Scattering at a Junction of Two Waveguides with Different Surface Impedances

C. Dragone. "Scattering at a Junction of Two Waveguides with Different Surface Impedances." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1319-1328.

We consider junction of two cylindrical waveguides and derive the scattering matrix when a single mode is incident in one of the two waveguides. We are interested primarily in the case of two corrugated waveguides with different longitudinal impedances, but the analysis applies also to waveguides with nonzero transverse impedances. It is shown that, under certain general conditions the infinite set of equations specifying the junction scattering coefficients can be solved exactly by the residue-calculus method. Very simple expressions are then obtained between the scattering coefficients and the propagation constants γ_n and y_i of the modes in the two waveguides. These expressions, obtained previously only in special cases, are direct consequences of certain simple relations derived here for the coupling coefficients between the modes of the two waveguides. In those cases in which the scattering coefficients cannot be determined exactly, we determine them approximately by a perturbation analysis.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

High-Temperature Microwave Characterization of Dielectric Rods

J.C. Araneta, M.E. Brodwin and G.A. Kriegsmann. "High-Temperature Microwave Characterization of Dielectric Rods." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1328-1335.

A technique for the simultaneous heating and characterization of dielectric rods using a single microwave source is described. The rod is heated in a rectangular cavity excited by an iris. A variational model for the impedances of homogeneous rods used in the characterization procedure is discussed. It is accurate regardless of the diameter of the rod, even at resonance. Experimental results of Beta-Al/sub 2/O/sub 3/ are presented.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Electromagnetic Waves in Toroidal Vessels of Arbitrary Cross Section Filled with Radially Inhomogeneous Dielectric Medium

F.F. Cap. "Electromagnetic Waves in Toroidal Vessels of Arbitrary Cross Section Filled with Radially Inhomogeneous Dielectric Medium." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1336-1341.

In this paper, analytical solutions of Maxwell's equations in cylindrical coordinates are presented for toroidal resonators filled with homogeneous or inhomogeneous unmagnetized plasma or another dielectric medium. It is shown that the electromagnetic boundary conditions valid on a conducting toroidal surface of arbitrary meridional cross section can be satisfied by the general solution since the general solution contains an infinite set of arbitrary constants. A method is given to show how these constants and the eigenfrequency of the resonator can be calculated for a given cross section of the toroidal vessel.

[Click on title for a complete paper.](#)



Abstracts

Effect of Doping Profile Variation on GaAs Hybrid and Double-Read IMPATT Diode Performance at 60 and 94 GHz

M.A. El-Gabaly, R.K. Mains and G.I. Haddad. "Effect of Doping Profile Variation on GaAs Hybrid and Double-Read IMPATT Diode Performance at 60 and 94 GHz." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1342-1352.

Doping profile parameters were varied in a computer optimization of hybrid and double-read GaAs IMPATT diodes at 60 and 94 GHz. The energy-momentum transport model was used to simulate each structure. Optimum results for the various structures that were studied are presented and compared.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Effects of Doping Profile on GaAs, Double-Drift IMPATT Diodes at 33 and 44 GHz Using the Energy-Momentum Transport Model

M.A. El-Gabaly, R.K. Mains and G.I. Haddad. "Effects of Doping Profile on GaAs, Double-Drift IMPATT Diodes at 33 and 44 GHz Using the Energy-Momentum Transport Model." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1353-1361.

Experimentally determined doping profiles for double-read GaAs IMPATT diodes operating at 33 and 44 GHz are used as starting points for a computer optimization. A computer simulation including energy and momentum relaxation effects was used to simulate these devices as the lengths of the drift regions and the integrated charge in the doping spikes were varied. The effects of these doping profile variations on diode performance are presented.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Hyperbolic Secant Coupling in Overmoded Waveguide

J.L. Doane. "Hyperbolic Secant Coupling in Overmoded Waveguide." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1362-1371.

This work presents a new solution of the coupled-mode equations for a hyperbolic secant spatial variation of the coupling between two modes. An analytic expression is given for the transmission coefficient for arbitrary complex differential propagation constant and coupling strength. The expression is particularly simple in the case when the differential attenuation between the modes is negligible. Design curves are presented in terms of normalized parameters. The hyperbolic secant coupling may be truncated and still yield virtually the same transmission as for infinite coupling length. The required coupling length is indicated by a comparison of the ideal expression with the results of numerical integration of the coupled-mode equations. Hyperbolic secant coupling can be particularly useful for the design of short low-loss broad-band bends, twists, and mode-selective couplers in overmoded waveguide. Results of tests on 90-degree bends in rectangular and corrugated circular waveguide are consistent with the theory.

[Click on title for a complete paper.](#)



Abstracts

Technology Summaries for Microwave Theory and Techniques--1983

B.E. Spielman. "Technology Summaries for Microwave Theory and Techniques--1983." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1372-1378.

This paper consists of compendia of advances for the calendar year 1983 in four selected technical areas of interest to the microwave community. These four areas are Hybrid MIC's, Microwave and Millimeter-Wave Solid-State Devices, Microwave Field Theory, and Microwave Systems.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A New Microstrip Dispersion Model (Short Papers)

P. Bhartia and P. Pramanick. "A New Microstrip Dispersion Model (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1379-1384.

A new unified analysis technique is presented for dispersion in microstrip at high frequencies. The technique exploits the fact that the dispersion in microstrips is due to coupling between a surface-wave mode and the LSE mode of an appropriate model of the microstrip. The analysis uses an effective dielectric constant (EDC) approach to evaluate the mode coupling in the LSE model. Unlike previously reported models, all the parameters of the model are exactly determined from the quasistatic parameters of the microstrip, which takes the fringing field into account. Approximate closed-form equations are derived for the prediction of microstrip dispersion. The results agree within 1.50 percent with the experimental and previously published data over a wide useful range of microstrip dimensions and substrate permittivities.

[Click on title for a complete paper.](#)

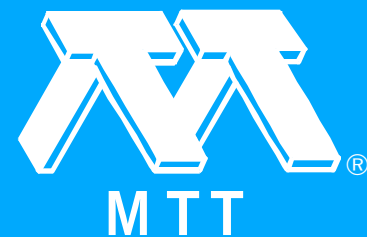


Abstracts

Microwave Point Contact Diode Responsivity Improvement through Surface Effects in Vacuum (Short Papers)

N.S. Kopeika, I. Hirsh and M. Ravfogel. "Microwave Point Contact Diode Responsivity Improvement through Surface Effects in Vacuum (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1384-1387.

Desorption of air atoms from point contact diode surfaces via exposure to vacuum can give rise to significant changes in electronic characteristics. In the example considered, exposure of an X-band detector to a modest vacuum gives rise to a responsivity increase of about 80 percent for video and heterodyne detection. Experiments indicate that vacuum desorption of minority surface impurities increases the barrier height and decreases tunneling probability, thus increasing diode nonlinearity and making the diodes more nearly "ideal." The resulting relative increase of the thermionic emission current should decrease the effective shot-noise temperature, thus increasing the signal-to-noise ratio (SNR) even further.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Effect of Inner Conductor Offset in a Coplanar Waveguide (Short Papers)

K. Koshiji and E. Shu. "Effect of Inner Conductor Offset in a Coplanar Waveguide (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1387-1390.

This paper reports on the effect of structural offset in a coplanar waveguide on the characteristic impedance and fine loss. This effect can be an appreciable factor in designing highly precise circuits, such as MIC's using coplanar waveguide, or a coplanar-type standing-wave detector. The electric field over the cross section of the line is analyzed by assuming a TEM mode of wave propagation, and solving a two-dimensional Laplace's equation by means of the successive over-relaxation method. In the analysis, an approximate solution based on symmetry is employed. Also, measurements are made, to confirm the results thus obtained.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

E-Plane Integrated Circuit Filters with Improved Stopband Attenuation (Short Papers)

F. Arndt, J. Bornemann, R. Vahldieck and D. Grauerholz. "E-Plane Integrated Circuit Filters with Improved Stopband Attenuation (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1391-1394.

Improved stopband attenuation is achieved by thick strips, by reduced waveguide sidewall dimensions, and by double planar integrated circuits. In contrast to thick strips which may cause high passband insertion losses and filters with reduced waveguide dimensions which require additional tapers, double planar E-plane integrated circuit filters combine the advantages of low costs, high stopband, and low passband insertion losses. Computer-aided design of a four-resonator Ka -band double metal insert filter achieves a calculated stopband attenuation between 40 and 60 GHz of more than 50 dB, the calculated minimum passband insertion loss is 0.43 dB (measured 1.8 dB). Higher order mode excitation and finite thicknesses of the inserts are included in the calculations.

[Click on title for a complete paper.](#)



Abstracts

A Comparison of IMPATT Oscillator Power and Frequency Above 100 GHz with Results Derived from Theoretical Models (Short Papers)

B.D. Bates. "A Comparison of IMPATT Oscillator Power and Frequency Above 100 GHz with Results Derived from Theoretical Models (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1394-1398.

A comparison is made of experimentally determined IMPATT oscillator frequency and power characteristics in the 90-140-GHz band with values obtained from detailed theoretical models. The results show encouraging agreement and demonstrate the potential of the modeling approach for oscillator design.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Generation of High-Frequency Radiation by Quasi-Optical Gyrotron at Harmonics of the Cyclotron Frequency (Short Papers)

B. Levush and W.M. Manheim. "Generation of High-Frequency Radiation by Quasi-Optical Gyrotron at Harmonics of the Cyclotron Frequency (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1398-1401.

A quasi-optical gyrotron can operate, in principle, at high harmonics of the electron-cyclotron frequency, as well as at the fundamental. Lower harmonics are suppressed by exploiting their larger diffraction losses. The radiation-field amplitude is kept below the breakdown value by taking advantage of the focusing properties of the quasi-optical resonator. Cavity design parameters and starting currents are presented which characterize the operation of the quasi-optical gyrotron at the eighth harmonic of gyrofrequency.



IEEE

Contents

Publications

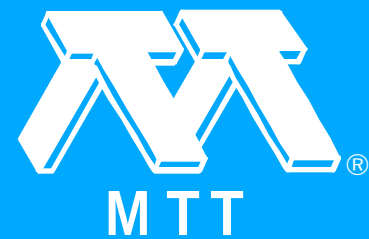
Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Theory and Analysis of GaAs MESFET Mixers (Short Papers)

S.A. Maas. "Theory and Analysis of GaAs MESFET Mixers (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1402-1406.

A generalized analysis of the GaAs MESFET mixer is presented. Its advantage is that many of the simplifying assumptions in previous approaches have been substantially eliminated. Using this approach, the nonlinearities of any number of elements in the FET equivalent circuit may be included, any number of local oscillator (LO) harmonics and mixing products may be considered, unusual mixers such as subharmonic mixers, upconverters, and mixers with high IF frequencies can be analyzed. The theory has been verified experimentally. Two mixers are described: one exhibits 11.5-dB conversion gain with + 9-dBm LO power, 5.6-dB minimum noise figure and + 15-dBm third-order intermodulation intercept, and another which exhibits 500-MHz bandwidth, 6-dB minimum gain, 5.5-dB maximum noise figure, and + 12-dBm third-order intercept at + 6-dBm LO power.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Microwave Hyperthermic Distributions in a Layered Living Body with Nonlinear Thermoregulatory Properties (Short Papers)

S. Caorsi. "Microwave Hyperthermic Distributions in a Layered Living Body with Nonlinear Thermoregulatory Properties (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1406-1411.

In this paper, the microwave heating of biological systems with nonlinear thermoregulatory properties is considered. Temperature distributions are calculated in a layered biological model exposed to uniform plane waves. The external surfaces of such a model are cooled and its thermoregulatory properties are assumed to be nonlinear functions of the local temperature. The calculation of the space-time evolution of the temperature is performed using a numerical program that has been developed by applying the finite-difference method. In this numerical program, the nonlinear thermoregulatory functions are given either by a segment-linearization process or by an arbitrary analytical form or by a transformation of an input sample set. The mean power density of the incident electromagnetic wave and the coolant temperature are also taken time-dependent.

Click on title for a complete paper.



Abstracts

Numerical Study of the Current Distribution on a Post in a Rectangular Waveguide (Short Papers)

Y. Leviatan, D.-H. Shau and A.T. Adams. "Numerical Study of the Current Distribution on a Post in a Rectangular Waveguide (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1411-1415.

A recently developed, rapidly converging moment solution for electromagnetic scattering by a single inductive post in a rectangular waveguide is extended to include the current induced on the post surface. The results are represented by a Fourier series and the first few terms are compared with available data. The excellent agreement demonstrates that this approach can yield an accurate solution. This rather simple procedure is even more attractive when other waveguide obstacles such as thick irises and posts of arbitrary shape, which require, in general, more than just a few Fourier terms for their current representation, are encountered.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Modes in Anisotropic Rectangular Waveguides: An Accurate and Simple Perturbation Approach (Short Papers)

A. Kumar, M.R. Shenoy and K. Thyagarajan. "Modes in Anisotropic Rectangular Waveguides: An Accurate and Simple Perturbation Approach (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1415-1418.

We present a simple and accurate perturbation method for obtaining the propagation characteristics of anisotropic rectangular waveguides described by a diagonal dielectric constant tensor. Comparison with the results of finite-element technique shows an excellent agreement.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

The Interdigitated Three-Strip Coupler (Short Papers)

S.M. Perlow and A. Presser. "The Interdigitated Three-Strip Coupler (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1418-1422.

A general design procedure for three-strip interdigitated couplers with arbitrary coupling values is presented. These results are then applied, for various coupling values, to both stripline and microstrip media to check the physical realizability. The dimensions of the coupler can be substantially affected by allowing a small degree of impedance mismatching.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Coaxial Transmission Lines, Related Two-Conductor Transmission Lines, Connectors, and Components: A U.S. Historical Perspective (Corrections)

J.H. Bryant. "Coaxial Transmission Lines, Related Two-Conductor Transmission Lines, Connectors, and Components: A U.S. Historical Perspective (Corrections)." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1422-1422.

While revising and editing the above paper, Fig. 5 was inadvertently duplicated. The result of this oversight can be seen on p. 980, where the illustrations for Figs. 4 and 5 are the same. The intended Fig. 4, with its caption, is shown below.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Patent Abstracts (Oct. 1984 [T-MTT])

"Patent Abstracts (Oct. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1422-1425.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

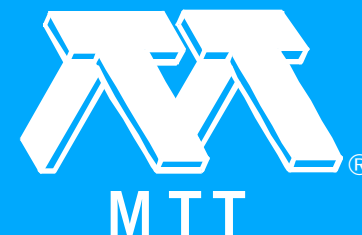
Click on title for a complete paper.



Abstracts

IEEE Conference Records (Advertisement) (Oct. 1984 [T-MTT])

"IEEE Conference Records (Advertisement) (Oct. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): 1426-1426.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

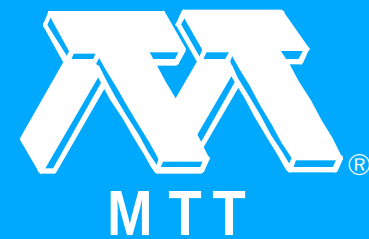
Click on title for a complete paper.



Abstracts

Back Cover (Oct. 1984 [T-MTT])

"Back Cover (Oct. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.10 (Oct. 1984 [T-MTT]): b1-b2.



- Contents
- Publications
- Issues
- Papers
- Authors

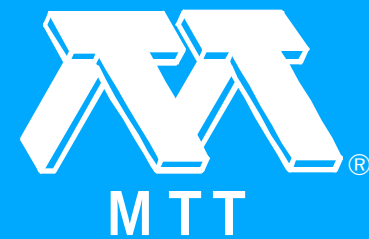
Click on title for a complete paper.



Abstracts

Front Cover (Nov. 1984 [T-MTT])

"Front Cover (Nov. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.11 (Nov. 1984 [T-MTT]): f1-f2.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

A Generalized Formulation of Electromagnetically Coupled Striplines

B.N. Das. "A Generalized Formulation of Electromagnetically Coupled Striplines." 1984 Transactions on Microwave Theory and Techniques 32.11 (Nov. 1984 [T-MTT]): 1427-1433.

This paper presents a method of derivation of general expression for coupling which can be applied to coplanar as well as noncoplanar strips of equal and unequal widths arbitrarily located between ground planes and filled with layered substrate. Assuming TEM-mode propagation, the coupling coefficient is determined in terms of self and mutual inductances. The method of derivation of these circuit parameters is also presented. The expressions for the fields required for analysis are obtained from Green's function formulation. Comparison of the numerical data with those obtained by other methods is presented.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Amplification by Interdigital Excitation of Space-Charge Waves in Semiconductors

H. Baudrand, T. El Khoury and D. Lilonga. "Amplification by Interdigital Excitation of Space-Charge Waves in Semiconductors." 1984 Transactions on Microwave Theory and Techniques 32.11 (Nov. 1984 [T-MTT]): 1434-1441.

A new concept of amplification of the electromagnetic (EM) wave as a consequence of its interaction with a space-charge wave in a semiconductor is analyzed. The EM wave is applied to an interdigital line which in turn excites a space-charge wave in a high-resistivity silicon. The theoretical calculations are carried out by means of the least-square boundary residual method, where a theoretical gain of 84 dB is obtained at synchronism of the third harmonic of the wave. The experimental device exhibits a net gain of 13 dB at synchronism. The mobility of the carriers in the semiconductor is deduced out of the experimental results.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

The Electrostatic Field of Conducting Bodies in Multiple Dielectric Media

S.M. Rao, T.K. Sarkar and R.F. Harrington. "The Electrostatic Field of Conducting Bodies in Multiple Dielectric Media." 1984 Transactions on Microwave Theory and Techniques 32.11 (Nov. 1984 [T-MTT]): 1441-1448.

A method for computing the electrostatic fields and the capacitance matrix for a multiconductor system in a multiple dielectric region is presented. The number of conductors and the number of dielectrics in this analysis are arbitrary. Some of the conductors maybe of finite volume and others may be infinitesimally thin. The conductors can be either above a single ground plane or between two parallel ground planes. The formulation is obtained by using a free-space Green's function in conjunction with total charge on the conductor-to-dielectric interfaces and polarization charge on the dielectric-to-dielectric interfaces. The solution is effected by the method of moments using triangular subdomains with piecewise constant expansion functions and point matching for testing. Computed results are given for some finite-length conducting lines, compared to previous results obtained by two-dimensional analysis.

[Click on title for a complete paper.](#)



Abstracts

A True Elliptic-Function Filter Using Triple-Mode Degenerate Cavities

W.-C. Tang and S.K. Chaudhuri. "A True Elliptic-Function Filter Using Triple-Mode Degenerate Cavities." 1984 Transactions on Microwave Theory and Techniques 32.11 (Nov. 1984 [T-MTT]): 1449-1454.

A six-pole triple-mode filter capable of a true elliptic-function response has been synthesized and experimentally realized. This was achieved by using a new intercavity iris structure that can control three intercavity-mode couplings simultaneously.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Accurate Hybrid-Mode Finline Configurations Including Analysis of Various Multilayered Dielectrics, Finite Metallization Thickness, and Substrate Holding Grooves

R. Vahldieck. "Accurate Hybrid-Mode Finline Configurations Including Analysis of Various Multilayered Dielectrics, Finite Metallization Thickness, and Substrate Holding Grooves." 1984 Transactions on Microwave Theory and Techniques 32.11 (Nov. 1984 [T-MTT]): 1454-1460.

An accurate analysis of various finline configurations is introduced. The method of field expansion into suitable eigenmodes used considers the effects of finite metallization thickness as well as waveguide wall grooves to fix the substrate. Especially for millimeter-wave range applications, the propagation constant of the fundamental mode is found to be lower than by neglecting the finite thickness of metallization. For increasing groove depth in cases of asymmetrical and "isolated finline," higher order mode excitation reduces the monomode bandwidth significantly. In contrast to hitherto known calculations, this parameter only causes negligible influence on a fundamental mode if the groove depth is lower than half of the waveguide height.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Regenerative Frequency Division with a GaAs FET

C. Rauscher. "Regenerative Frequency Division with a GaAs FET." 1984 Transactions on Microwave Theory and Techniques 32.11 (Nov. 1984 [T-MTT]): 1461-1468.

The circuit concept to be described accomplishes regenerative frequency division by employing a GaAs FET which is biased near pinchoff. The concept aims at efficient utilization of basic device characteristics, providing well-behaved divider performance and easy circuit designability. This is exemplified with the help of an experimental 16-to-8-GHz divider circuit whose output response is studied for single-tone CW, RF-pulsed, and two-tone CW excitations.

Click on title for a complete paper.



Abstracts

Coupled-Mode Theory of Two Nonparallel Dielectric Waveguides

M.A. McHenry and D.C. Chang. "Coupled-Mode Theory of Two Nonparallel Dielectric Waveguides." 1984 Transactions on Microwave Theory and Techniques 32.11 (Nov. 1984 [T-MTT]): 1469-1475.

A general theory for treating the coupling between two nonparallel dielectric waveguides is developed using the coupled-mode assumption. This theory is used to analyze directional couplers consisting of two circularly curved, single-mode dielectric slab waveguides. By assuming continuous coupling between the two waveguides rather than only between adjacent segments on the two waveguides, the present theory avoids the awkwardness of having to specify in a somewhat arbitrary manner the separation between these segments, as is the case for existing theories reported in the literature. It is shown that this over-simplification results often in an overestimate of the power transfer in a directional coupler by 10-20 percent, compared to this theory.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Even- and Odd-Mode Impedances of Coupled Elliptic Arc Strips (Short Papers)

B.N. Das and K.V.S.V.R. Prasad. "Even- and Odd-Mode Impedances of Coupled Elliptic Arc Strips (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.11 (Nov. 1984 [T-MTT]): 1475-1479.

A derivation of the expression for even- and odd-mode impedances of coupled elliptic arc strips between grounded, confocal elliptic cylinders, and above a grounded elliptic cylinder, symmetrically located with the minor axis, is presented. The analysis is based on TEM-mode approximation. Green's function formulation is used to obtain variational expressions for the even- and odd-mode capacitances for the more general case of different dielectrics on the two sides of the coupled strips. Numerical results are presented for coupled elliptic and circular cylindrical arc strips. It is also shown that the formulation can be used to find the effect of environmental changes on an otherwise planar structure.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Computer-Optimized Multisection Transformers Between Rectangular Waveguides of Adjacent Frequency Bands (Short Papers)

F. Arndt, U. Tucholke and T. Wriedt. "Computer-Optimized Multisection Transformers Between Rectangular Waveguides of Adjacent Frequency Bands (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.11 (Nov. 1984 [T-MTT]): 1479-1484.

Design data are given for multisection double-plane step transformers between X- (8.2-12.4 GHz), Ku- (12.4-18 GHz), K- (18-26.5 GHz), and Ka- (26.5-40 GHz) band waveguides. The calculations, based on a field expansion into orthogonal eigenmodes, take into account the influence of higher order modes. For frequency ranges other than the bands given, simple scaling formulas based on the optimized data yield transformer designs with sufficiently low VSWR. Optimum short transformers are possible if the total transformer length is included within the error function to be optimized. Measurements agree with theory.

[Click on title for a complete paper.](#)



Abstracts

Analysis of Finline with Finite Metallization Thickness (Short Papers)

T. Kitazawa and R. Mittra. "Analysis of Finline with Finite Metallization Thickness (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.11 (Nov. 1984 [T-MTT]): 1484-1487.

In this paper, we present a method for analyzing finline structures with finite metallization thickness. The method is based on a hybrid mode formulation but it by-passes the lengthy process of formulating the determinantal equation for the unknown propagation constant. Some numerical results are presented to show the effect of the metallization thickness for unilateral and bilateral finlines.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

An Evanescent Mode Waveguide Bandpass Filter at Q Band (Short Papers)

N.P. Akers and P.D. Allan. "An Evanescent Mode Waveguide Bandpass Filter at Q Band (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.11 (Nov. 1984 [T-MTT]): 1487-1489.

Evanescent-mode filters have previously been restricted in frequency to X band or below. Here, the performance of an evanescent-mode waveguide bandpass filter with a center frequency in the 26-40-GHz band (Q band) is reported.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Extension of Levy's Large-Aperture Design Formulas to the Design of Circular Irises in Coupled-Resonator Waveguide Filters (Short Papers)

A. Jennings and R.L. Gray. "Extension of Levy's Large-Aperture Design Formulas to the Design of Circular Irises in Coupled-Resonator Waveguide Filters (Short Papers)." 1984 *Transactions on Microwave Theory and Techniques* 32.11 (Nov. 1984 [T-MTT]): 1489-1493.

This paper extends some results for waveguide irises to obtain accurate design formulas for the design of circular waveguide irises in coupled-resonator rectangular waveguide filters. Experimental results confirm the improved accuracy of the new design formulas. The new approach has been successfully applied to the design of a 12-GHz waveguide filter in WR90 waveguide for satellite transponder studies. Improved accuracy in the iris design enabled the filter to meet stringent group delay specifications.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Technique to Identify Electromagnetic Modes in Oversize Waveguides (Short Papers)

Y. Carmel, K.R. Chu, M.E. Read, V.L. Granatstein, G. Faillon, P. Boulanger, E. Kammerer and G. Mourier. "A Technique to Identify Electromagnetic Modes in Oversize Waveguides (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.11 (Nov. 1984 [T-MTT]): 1493-1495.

There are problems associated with the multimode character of oversize waveguides. This paper reports on a novel, direct way to identify modes in an oversize waveguide by looking at the field map on a liquid crystal sheet inserted in the waveguide. The local temperature change in the liquid crystal due to absorbed microwave energy is translated to a color change in such a way that a map of the local power flow is observed on the sheet. Mode identification is very important in gyrotrons, for example, where the microwave energy generating device is subject to severe problems from mode competition.

[Click on title for a complete paper.](#)



Abstracts

Waveguide Modes Via an Integral Equation Leading to a Linear Matrix Eigenvalue Problem (Short Papers)

G. Conciauro, M. Bressan and C. Zuffada. "Waveguide Modes Via an Integral Equation Leading to a Linear Matrix Eigenvalue Problem (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.11 (Nov. 1984 [T-MTT]): 1495-1504.

A numerical method for determining the modes of a rectangular or a circular waveguide strongly perturbed by axial cylindrical conducting objects is presented. The method is based upon an integral equation which leads to a matrix eigenvalue problem by using the Galerkin procedure. Cutoff wavenumbers are simultaneously calculated with very good precision for a number of modes near to the order of the matrix eigenvalue problem. Excellent results are obtained also when the perturbed waveguide section exhibits reentrant parts or edges. Computing time is short and storage requirements are moderate. The method is also applicable for waveguides of arbitrary cross section.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Quasi-Optical Method for Measuring the Complex Permittivity of Materials (Corrections)

F.I. Shimabukuro. "Quasi-Optical Method for Measuring the Complex Permittivity of Materials (Corrections)." 1984 Transactions on Microwave Theory and Techniques 32.11 (Nov. 1984 [T-MTT]): 1504-1504.

In the above paper, in Column 1 of Table II on page 663, Reference [9] should read [10] and Reference [10] should read [12].

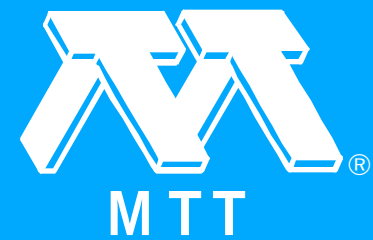
[Click on title for a complete paper.](#)



Abstracts

Patent Abstracts (Nov. 1984 [T-MTT])

"Patent Abstracts (Nov. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.11 (Nov. 1984 [T-MTT]): 1505-1509.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Asian Abstracts (Nov. 1984 [T-MTT])

"Asian Abstracts (Nov. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.11 (Nov. 1984 [T-MTT]): 1510-1519.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

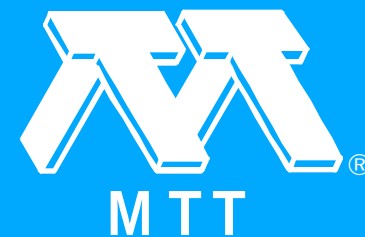
Click on title for a complete paper.



Abstracts

IEEE Annual Combined Index (Advertisement) (Nov. 1984 [T-MTT])

"IEEE Annual Combined Index (Advertisement) (Nov. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.11 (Nov. 1984 [T-MTT]): 1520-1520.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

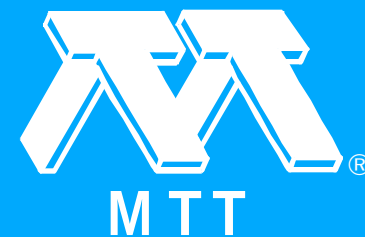
Click on title for a complete paper.



Abstracts

IEEE Standard Dictionary (Advertisement) (Nov. 1984 [T-MTT])

"IEEE Standard Dictionary (Advertisement) (Nov. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.11 (Nov. 1984 [T-MTT]): 1521-1521.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

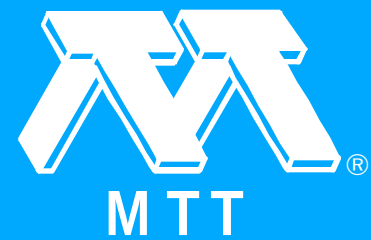
Click on title for a complete paper.



Abstracts

IEEE on Microfilm (Advertisement) (Nov. 1984 [T-MTT])

"IEEE on Microfilm (Advertisement) (Nov. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.11 (Nov. 1984 [T-MTT]): 1522-1522.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (Nov. 1984 [T-MTT])

"Back Cover (Nov. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.11 (Nov. 1984 [T-MTT]): b1-b2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

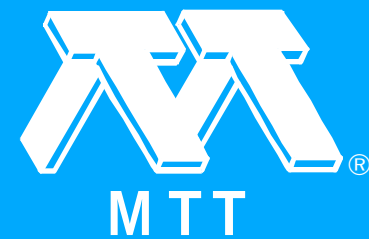
Click on title for a complete paper.



Abstracts

Front Cover (Dec. 1984 [T-MTT])

"Front Cover (Dec. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): f1-f2.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

Table of Contents (Dec. 1984 [T-MTT])

"Table of Contents (Dec. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1523-1524.



MTT



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Editor's Overview (Dec. 1984 [T-MTT])

E.J. Crescenzi, Jr.. "Editor's Overview (Dec. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1525-1526.

San Francisco and the surrounding greater Bay Area is noted for its international character, the excellence of its academic institutions, and a unique environment which encourages the growth of high-technology industries. The 1984 MTT-S International Microwave Symposium was hosted in San Francisco and, in retrospect, was complementary to these traditions. The success of this year's dynamic Symposium reflected the dedication of those who served on the Steering Committee and the Technical Program Committee, but was more fundamentally derived from the vigor of the microwave industry and the Microwave Theory and Techniques Society as a whole.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

1984 MTT-S International Microwave Symposium (Dec. 1984 [T-MTT])

S.F. Adam. "1984 MTT-S International Microwave Symposium (Dec. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1527-1534.

The San Francisco/Santa Clara Valley MTT-S Chapter had the honor of hosting the IEEE's Centennial year International Microwave Symposium and Workshops. The conference was held in the Civic Auditorium of San Francisco, with the exhibits in the adjoining, Brooks Hall. The Hyatt Regency Hotel of San Francisco at the Embarcadero Center served as the headquarters hotel. Six other major hotels were also occupied by conference attendees. This was the first time that hotels were scattered across a major city, separated from the conference. A practically continuous shuttle bus service and BART and MUNI (local rapid transit systems) operated very smoothly, with minimal inconvenience.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

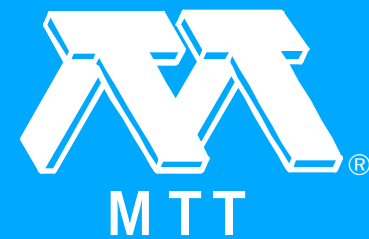
Click on title for a complete paper.



Abstracts

Awards (Dec. 1984 [T-MTT])

"Awards (Dec. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1535-1541.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.

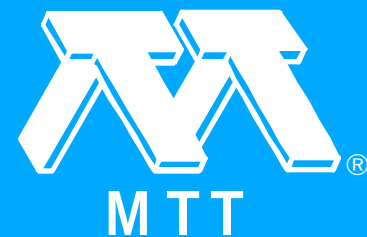


Abstracts

1984 IEEE MTT-S International Microwave Symposium Keynote Address (Dec. 1984 [T-MTT])

J.A. Young. "1984 IEEE MTT-S International Microwave Symposium Keynote Address (Dec. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1541-1544.

The theme of the 1984 MTT-S International Microwave Symposium was "Expanding Microwave Horizons." The conference theme was a most appropriate one. Today's working engineers need to stretch their thinking, but in some nontechnical directions, because the factors most crucial to their success--and their industry's future--are not solely or even primarily technical in nature.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

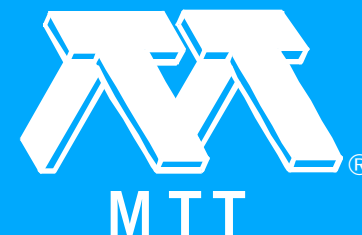
Click on title for a complete paper.



Abstracts

Table of Contents, 1984 MTT Symposium Digest (Dec. 1984 [T-MTT])

"Table of Contents, 1984 MTT Symposium Digest (Dec. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1545-1550.



IEEE

Contents

Publications

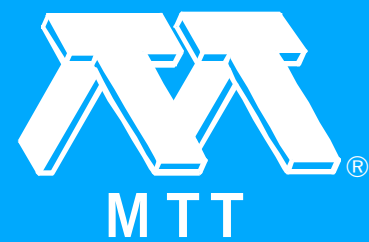
Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

A 26-GHz High-Performance MIC Transmitter/Receiver for Digital Radio Subscriber Systems (Dec. 1984 [T-MTT])

H. Ogawa, K. Yamamoto and N. Imai. "A 26-GHz High-Performance MIC Transmitter/Receiver for Digital Radio Subscriber Systems (Dec. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1551-1556.

A high-performance 26-GHz microwave integrated circuit (MIC) transmitter/receiver using frequency-shift-keying (FSK) modulation has been developed. All RF components are fabricated using MIC technology and integrated into a single compact module. Newly developed MIC components include an FSK modulator, a time division multiple access (TDMA) switch, and a single-balanced mixer. The FSK modulator is composed of an IMPATT diode, a varactor diode, and a dielectric resonator. A high-frequency stability of 50 ppm is obtained in the temperature range of -10-45°C. The configuration and performance of the TDMA switch with a high ON/OFF ratio and a low insertion loss are described. A transmitting power of 21 dBm and a receiving noise figure of 8.7 dB are obtained. The bit error rate is measured to evaluate the overall transmitter/receiver performance. The required carrier-to-noise ratio (CNR) has been considerably improved by adopting FSK modulation and by using the MIC transmitter/receiver described in this paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Analysis and Design of a Single-Resonator GaAs FET Oscillator with Noise Degeneration

Z. Galani, M.J. Bianchini, R.C. Waterman, Jr., R. DiBiase, R.W. Laton and J.B. Cole.

"Analysis and Design of a Single-Resonator GaAs FET Oscillator with Noise Degeneration."
1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1556-1565.

This paper presents an analysis of a low-noise dielectric resonator GaAs FET oscillator in a frequency-locked loop (FLL), which is used for FM noise degeneration. In this circuit, one resonator serves both as the frequency-determining element of the oscillator and as the dispersive element of the discriminator. The results of the analysis are used to generate design guidelines. These guidelines were followed in an experimental realization of an X-band circuit. The measured FM noise was -120 and -142 dBc/Hz at 10- and 100-kHz offset frequencies, respectively, and corresponded closely to predicted results.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

RF Spectrum of Thermal Noise and Frequency Stability of a Microwave Cavity-Oscillator

B. Villeneuve, P. Tremblay, A. Michaud and M. Tetu. "RF Spectrum of Thermal Noise and Frequency Stability of a Microwave Cavity-Oscillator." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1565-1572.

The spectral distribution of the thermal noise within a microwave cavity equipped with an external feedback loop has been calculated and measured. An equivalent electrical model is established from which the noise spectral density can be calculated at any point in the system. The effect of the gain and phase of the loop on the spectral distribution is measured with a spectrum analyzer through a heterodyne technique and comparison with theoretical calculations shows good agreement. Also, the modified cavity Q and resonant frequency is measured for various loop parameters. An experimental setup allowing precise measurement of frequency stability and FM noise close to carrier of microwave oscillators is presented and discussed. Preliminary measurements of the short-term frequency stability of the system when operated as a microwave cavity-oscillator show a predominant flicker frequency noise. The measured FM noise close to carrier is related to time-domain measurements of frequency stability and to RF spectrum of the cavity-oscillator.

[Click on title for a complete paper.](#)



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Self-Consistent GaAs FET Models for Amplifier Design and Device Diagnostics

W.R. Curtice and R.L. Camisa. "Self-Consistent GaAs FET Models for Amplifier Design and Device Diagnostics." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1573-1578.

A procedure has been developed for producing accurate and unique small-signal equivalent circuit models for carrier-mounted GaAs FET's. The procedure utilizes zero drain-source bias S parameter tests to determine accurate values of carrier parasitics, and dc measurements to evaluate the FET's gate, source, and drain resistances. Subsequent S-parameter measurements at full bias are then used to resolve the FET into an equivalent circuit model that has only 8 unknown elements out of a possible 16. A technique for evaluating the frequency range of accurate data is presented and the FET model shown is useful well above the maximum frequency of measurement. Examples of device diagnostics are presented for RCA flip-chip mounted GaAs FET's.

[Click on title for a complete paper.](#)



Abstracts

The Measured and Computed Performance of a 140--220 GHz Schottky Diode Mixer

P.H. Siegel and A.R. Kerr. "The Measured and Computed Performance of a 140--220 GHz Schottky Diode Mixer." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1579-1590.

In this paper, we compare the measured and theoretical performance of a room-temperature single-ended Schottky diode mixer in the WR-5 (140-220-GHz) waveguide band. Using the computer program GISSMIX, combined with measurements made on a 100X scale model of the WR-5 mixer, we have been able to predict the millimeter-wave mixer performance over a wide tuning range with unprecedented accuracy. In addition we have examined the sensitivity of the mixer performance to various diode and mount characteristics. Our measured conversion loss and mixer noise temperature, single sideband, are 5.7 dB and 750 K at 180 GHz, and 5.7 dB and 500 K at 150 GHz, which we believe to be the best reported for a room-temperature mixer at these frequencies.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)

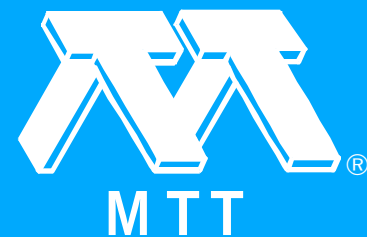


Abstracts

Impedance Measurement in Frequency-Halving Networks Using a Two-Frequency Synthetic Loading Technique

R.G. Harrison and G.A. Kalivas. "Impedance Measurement in Frequency-Halving Networks Using a Two-Frequency Synthetic Loading Technique." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1591-1597.

A technique is described which removes a major difficulty in the design of wide-band frequency-halving networks: the accurate characterization of the "pumped" input output impedances at the plane of the varactors. The procedure permits the use of realistic input, output power levels with the input at twice the output frequency.



[Contents](#)

[Publications](#)

[Issues](#)

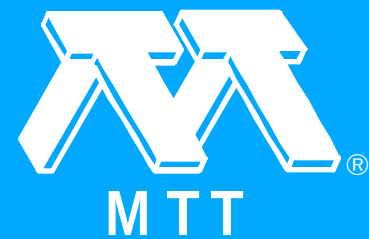
[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Dielectric Measurements of Millimeter-Wave Materials

M.N. Afsar. "Dielectric Measurements of Millimeter-Wave Materials." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1598-1609.

It is no longer necessary to use extrapolated microwave dielectric data when designing millimeter-wave components, devices, and systems. Precision measurements can now be made to generate highly accurate millimeter-wave (5 to 1/2 mm) continuous spectra on complex refractive index, complex dielectric permittivity, and loss tangent for a variety of materials such as common ceramics, semiconductors, crystalline, and glassy materials. The continuous spectra reveal an increase in dielectric loss with increase in frequency in this wavelength range for most materials. Reliable measurements also reveal that the method of preparation of nominally identical specimens can change the dielectric losses by many factors. These broad-band measurements were carried out employing dispersive Fourier transform spectroscopy applied to a modular two-beam polarization interferometer. Data obtained with Fabry-Perot open resonator methods at wavelengths of 5 mm and longer will also be compared.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

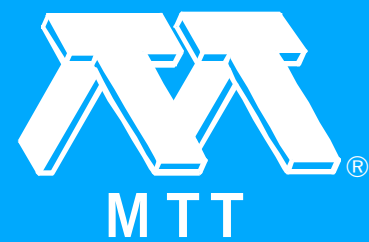
Computed Modal Field Distributions for Isolated Dielectric Resonators

D. Kajfez, A.W. Glisson and J. James. "Computed Modal Field Distributions for Isolated Dielectric Resonators." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1609-1616.

Electric- and magnetic-field patterns for five of the lowest resonant modes in cylindrical dielectric resonators are displayed in various planes of intersection. The computational procedure is based on a method moments solution of the surface integral equation for bodies of revolution. Improvement of the numerical stability through the normalization of the matrix is discussed, and an algorithm for the evaluation of the modal field components is described.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

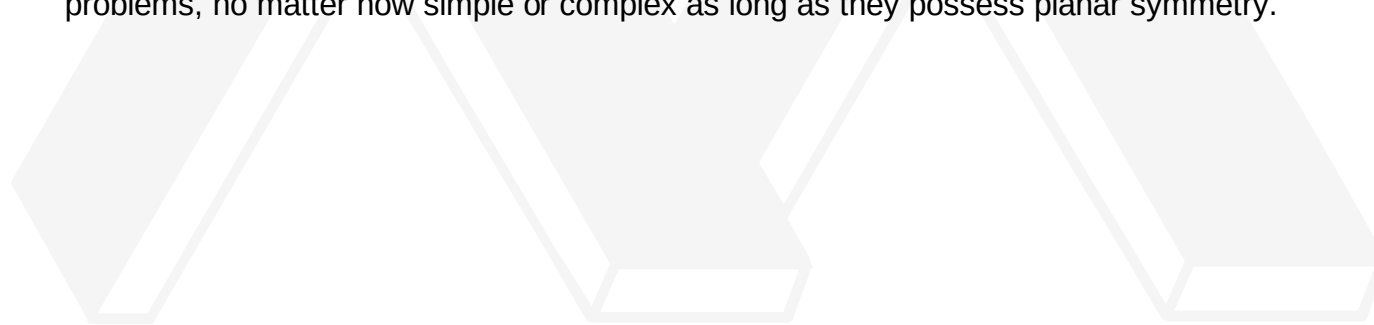
[Papers](#)

[Authors](#)

Fourier Transformed Matrix Method of Finding Propagation Characteristics of Complex Anisotropic Layered Media (Dec. 1984 [T-MTT])

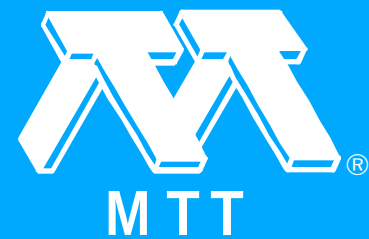
C.M. Krowne. "Fourier Transformed Matrix Method of Finding Propagation Characteristics of Complex Anisotropic Layered Media (Dec. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1617-1625.

A planar structure having arbitrarily located conductor lines immersed in complex anisotropic media presents one with a very general guided wave problem. This problem is solved here by a rigorous formulation technique characterizing each layer by a 6×6 tensor and finding the appropriate Fourier transformed Green's function matrix G of $2n \times 2n$ size. From G , a method-of-moments solution for the propagation characteristics follows, including propagation constant eigenvalues and field eigenvectors at all spatial locations. The method is very versatile and can handle a huge class of microwave or millimeter-wave integrated circuit or monolithic circuit problems, no matter how simple or complex as long as they possess planar symmetry.



[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Space-Domain Decoupling of LSE and LSM Fields in Generalized Planar Guiding Structures

A.S. Omar and K. Schunemann. "Space-Domain Decoupling of LSE and LSM Fields in Generalized Planar Guiding Structures." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1626-1632.

LSE and LSM fields in generalized planar guiding structures are shown to be coupled only by means of the edge condition, which can be fulfilled as the final step in the analysis. This is utilized by applying the singular integral equation technique to finlines. Modes up to the thirtieth are thus easily and quickly computed.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

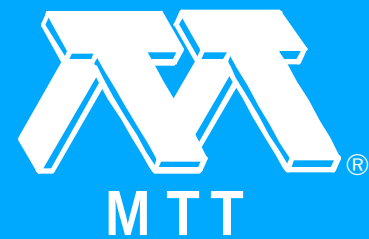
Transverse Resonance Analysis Discontinuities of Finline

R. Sorrentino and T. Itoh. "Transverse Resonance Analysis Discontinuities of Finline." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1633-1638.

A method of analysis is proposed for characterizing finline discontinuities. Two conducting or magnetic planes are inserted at some distances away from the discontinuity so as to obtain a closed resonant structure. A transverse resonance technique is then used to compute the resonant frequencies and, from these, the equivalent circuit parameters of the discontinuity. In the particular case when the discontinuity is removed, the method can be used to characterize uniform finlines.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Synthesis of Optimum Finline Tapers Using Dispersion Formulas for Arbitrary Slot Widths and Locations

C. Schieblich, J.K. Piotrowski and J.H. Hinken. "Synthesis of Optimum Finline Tapers Using Dispersion Formulas for Arbitrary Slot Widths and Locations." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1638-1645.

The theory of TEM matching sections has been modified so that it can be applied to finline tapers. A step-by-step procedure is given to calculate the taper contour for a given maximum VSWR. The taper is optimum in the sense that its length is the shortest possible for the required VSWR. To achieve fast convergence, a transversal resonance method was developed to calculate finline dispersion, which is valid for arbitrary slot widths and slot locations. The finline can be unilateral as well as bilateral, and the slot may be off-centered. The dispersion data are compared with values found in the literature, and the calculated taper performance with the authors' own measurements, both showing good agreement.

[Click on title for a complete paper.](#)



Abstracts

Quarter-Wave Matching of Waveguide-to-Finline Transitions (Short Papers)

C.J. Verver and W.J.R. Hoefer. "Quarter-Wave Matching of Waveguide-to-Finline Transitions (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1645-1648.

This paper presents closed-form expressions for the design of a quarter-wave transition-matching transformer. This structure takes the form of a notch or protrusion cut in the finline substrate at the waveguide-to-finline interface. The dimensions of the transformer are calculated using a homogeneous waveguide model for the partially loaded sections. The characteristics of this model are found with perturbation theory. Several transformers were designed and measured. A 5-dB improvement in return loss over a full waveguide band is typical.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Theoretical and Experimental Investigation of Asymmetric Coplanar Waveguides (Short Papers)

V.F. Hanna and D. Thebault. "Theoretical and Experimental Investigation of Asymmetric Coplanar Waveguides (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1649-1651.

Conformal mapping techniques are used to obtain analytic closed-form expressions for the characteristic impedance and the relative effective dielectric constant of asymmetric coplanar waveguide with infinite or finite dielectric thickness. The line asymmetry leads to a decrease of its characteristic impedance and to an increase of its relative effective dielectric constant. Six asymmetric coplanar waveguides are realized and their characteristic impedances are measured using time-domain reflectometry techniques. The experimental results show very good agreement with the theoretical ones.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Planar Circuit Analysis of Microstrip Radial Stub (Short Papers)

F. Giannini, R. Sorrentino and J. Vrba. "Planar Circuit Analysis of Microstrip Radial Stub (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1652-1655.

Radial-line stubs have been found to work better than low-impedance rectangular stubs when an accurate localization of a zero-point impedance is needed. In this paper, microstrip radial-line stubs are analyzed using a planar circuit technique and characterized for design purposes. Experiments performed on various structures are in excellent agreement with the theory and confirm the suitability of such a structure as an alternative to a conventional straight stub.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Broad-Band Millimeter-Wave E-Plane Bandpass Filters (Short Papers)

L.Q. Bui, D. Ball and T. Itoh. "Broad-Band Millimeter-Wave E-Plane Bandpass Filters (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1655-1658.

An accurate method to obtain starting estimates for an E-plane bandpass filter CAD program recently developed by Shih, Itoh, and Bui is presented. Results agree very well with exact values for filter design with relative bandwidths exceeding 10 percent at W-band and D-band and 20 percent at lower frequencies.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Design of Nonradiative Dielectric Waveguide Filters (Short Papers)

T. Yoneyama, F. Kuroki and S. Nishida. "Design of Nonradiative Dielectric Waveguide Filters (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1659-1662.

An efficient design technique of nonradiative dielectric waveguide filters for use at millimeter wavelengths is developed. Filter structures considered here are a gap-coupled type and an alternating-width type. According to present theory, 3-pole, 0.1-dB Chebyshev ripple bandpass filters with a 2-percent bandwidth at a center frequency of 49.5 GHz were designed and fabricated with Teflon dielectric. Calculated and measured filter responses agree quite well, and excess insertion losses are found to be as small as 0.3 dB for both types of the fabricated filter circuits.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

60-GHz Integrated-Circuit High Data Rate Quadriphase Shift Keying Exciter and Modulator (Short Papers)

A. Grote and K. Chang. "60-GHz Integrated-Circuit High Data Rate Quadriphase Shift Keying Exciter and Modulator (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1663-1667.

An integrated-circuit quadriphase shift keying (QPSK) exciter and modulator have demonstrated excellent performance directly modulating a carrier frequency of 60 GHz with an output phase error of less than 3 degrees and maximum amplitude error of 0.5 dB. The circuit consists of a 60-GHz Gunn VCO phase-locked to a low-frequency reference source, a 4th subharmonic mixer, and a QPSK modulator packaged into a small volume of 1.8x2.5x0.35 in. The use of microstrip has the advantages of small size, light-weight, and low-cost fabrication. The unit has the potential for multigigabit data rate applications.

[Click on title for a complete paper.](#)



Abstracts

Fundamental-Mode Pierce Oscillators Utilizing Bulk-Acoustic-Wave Resonators in the 250--300-MHz Range (Short Papers)

S.G. Burns and R.S. Ketcham. "Fundamental-Mode Pierce Oscillators Utilizing Bulk-Acoustic-Wave Resonators in the 250--300-MHz Range (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1668-1673.

Fundamental-mode Pierce oscillators in the 250-300-MHz range have been realized utilizing a unique form of a bulk-acoustic-wave (BAW) resonator. Phase noise greater than -100 dBc/Hz (1-kHz offset) has been extrapolated from data collected on oscillators operating at -22 and -24 dBm. Higher power levels to +6 dBm have been achieved. A linear-model design was used. The circuit topology used and resonator fabrication technique shows great promise for the creation of MMIC circuits in the 200-MHz-2-GHz range.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

YIG Oscillators: Is a Planar Geometry Better? (Short Papers)

R.L. Carter, J.M. Owens and D.K. De. "YIG Oscillators: Is a Planar Geometry Better? (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1671-1674.

Two yttrium-iron-garnet (YIG) oscillator technologies are compared: the more mature YIG sphere oscillator technology which is based on the uniform (resonant) precession of the electron spins in a small sphere of YIG, and the new planar YIG technology which utilizes the propagation of magnetostatic waves in an epitaxial film of YIG. The YIG sphere technology has been used for microwave oscillators for more than 25 years, but has two significant areas of difficulty in applications the alignment of the YIG sphere in the magnetic bias field coupling cavity requires great precision and the gain element requires a negative resistance element to sustain oscillation. The MSW technology is much newer and less well understood, but the resonator elements are fabricated using a 50- μm line width planar technology making it an appealing candidate. Both technologies are reviewed herein with regard to resonant element theory, temperature, and noise characteristics. New data and theory are presented on MSW resonator optimization.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Injection Laser Modulation at 2 Gbit/s by Monolithic Silicon Multiplexer (Short Papers)

U. Langmann, D. Daniel and B.G. Bosch. "Injection Laser Modulation at 2 Gbit/s by Monolithic Silicon Multiplexer (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1675-1677.

Direct laser-diode pulse-code modulation at 2 Gbit/s (NRZ) is performed by a fast Si monolithic integrated bipolar circuit (2.5- μ m design rules, p-n-junction isolation, $f_{\text{sub 1/}}/\text{spl ap/}$ 7 GHz at $V_{\text{sub CE}}=1$ V). The current-switch output stage of a 4:1-time-division multiplexer IC feeds a modulation current swing of 8 mA into a CSP injection laser biased above threshold. Measured optical responses of the laser are reported.



MTT



IEEE

Contents

Publications

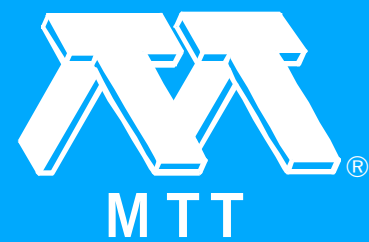
Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

A New Method for Six-Port Swept Frequency Automatic Network Analysis (Short Papers)

L. Kaliouby and R.G. Bosisio. "A New Method for Six-Port Swept Frequency Automatic Network Analysis (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1678-1682.

Six-port automatic network analyzers measure the reflection coefficient Γ by means of four power detectors. The amplitude and phase of Γ are then calculated using the values of the four power readings and the calibration constants at the frequency of measurement. This technique is generally used in a point-by-point measurement method. This paper presents a new method to obtain real-time swept frequency reflection coefficient measurements by using a six-port amplitude chart (SPAC) and a six-port phase chart (SPPC) plotted on a computer screen. The charts are precalculated for each frequency window, which manually (or automatically) scan the test band. Both six-port charts are plotted on the computer screen along with the analog signal from which is measured the modulus and phase of Γ within the frequency window. This method effectively allows frequency swept measurements of Γ across the test band. Such measurements are most important for the detection of spurious resonances or for fine circuit adjustments. Once the swept frequency tests of the microwave circuit are done, the usual six-port measurements may then be made at preselected frequency points with the assurance that no spurious response exists in between the frequency test points, and that circuit tuning has been optimized.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Dual Six-Port Automatic Network Analyzer and its Performance (Short Papers)

N.S. Chung, J.H. Kim and J. Shin. "A Dual Six-Port Automatic Network Analyzer and its Performance (Short Papers)." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1683-1686.

A computer-controlled six-port automatic network analyzer (ANA) capable of measuring complex reflection coefficients of one-port devices, effective efficiencies of power sensors, and S-parameters of two-port devices over 2-18 GHz is described. System calibration based on the TRL technique is discussed and performance tests on measuring effective efficiencies, reflection coefficients, and S-parameters are summarized.

[Click on title for a complete paper.](#)

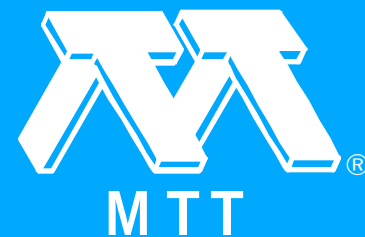


Abstracts

Foreword (Dec. 1984 [T-MTT])

W.R. Wisseman. "Foreword (Dec. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1687-1687.

The 1984 IEEE Microwave and Millimeter-Wave Monolithic Circuits Symposium was held May 29-30 in San Francisco in conjunction with the IEEE MTT-S International Microwave Symposium. A total of 693 people attended this, the third, Monolithic Symposium. This represents a 28-percent increase in attendance over last year's Symposium. I believe that the continuing growth of the Symposium is indicative of the increasing importance of monolithic circuit technology.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Si Monolithic Microwave Prescaler

S. Watanabe, S. Shinozaki, N. Kusama, S.-I. Miyazaki and T.-a. Nakata. "Si Monolithic Microwave Prescaler." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1688-1692.

This paper describes an Si monolithic microwave prescaler IC with a toggle frequency of 3.9 GHz. To optimize circuit parameters and to determine the dominant transistor parameters, a precise computer simulation has been used. An improved IC manufacturing process was developed to achieve the desired parameters and to obtain a transistor cutoff frequency of 10 GHz.

Click on title for a complete paper.



Abstracts

A 2--18-GHz Monolithic Distributed Amplifier Using Dual-Gate GaAs FET's

W. Kennan, T. Andrade and C.C. Huang. "A 2--18-GHz Monolithic Distributed Amplifier Using Dual-Gate GaAs FET's." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1693-1698.

This paper describes a 2--18-GHz monolithic distributed amplifier with over 6-dB gain, ± 0.5 -dB gain flatness, and less than 2.0:1 VSWR. Measured noise figure is below 7.5 dB, and power output capability is greater than 17 dBm. The amplifier is designed with dual-gate GaAs FET's instead of single-gate FET's for maximum gain over the design bandwidth. Cascaded amplifier performance will also be presented.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



A Monolithic Direct-Coupled GaAs Amplifier with 12-GHz Bandwidth

S.B. Moghe, H.-J. Sun, T. Andrade, C.C. Huang and R. Goyal. "A Monolithic Direct-Coupled GaAs Amplifier with 12-GHz Bandwidth." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1698-1704.

A two-stage feedback amplifier with direct connection between two stages has been developed for the 0.1-12-GHz frequency band. The measured gain is 10 ± 1 dB with 2.5:1 input and 1.7:1 output VSWR. The measured minimum power output at 1-dB gain compression and maximum noise figure are 14 dBm and 9 dB, respectively, from 2 to 12 GHz. The chip size is less than 0.5×1.0 mm² and this area contains complete RF and bias circuitry. The amplifier also provides more than 25 dB of AGC capability.

Abstracts

Capacitively Coupled Traveling-Wave Power Amplifier (Dec. 1984 [T-MTT])

Y. Ayasli, S.W. Miller, R. Mozzi and L.K. Hanes. "Capacitively Coupled Traveling-Wave Power Amplifier (Dec. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1704-1709.

A new circuit concept which significantly improves the power-handling capability of a traveling-wave amplifier by coupling the active devices to the input gate line through discrete series capacitors is described. The approach is applied to a 1-W, 2-8-GHz monolithic amplifier design.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Wide-Band Monolithic Phase Shifter

Y. Ayasli, S.W. Miller, R. Mozzi and L.K. Hanes. "Wide-Band Monolithic Phase Shifter." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1710-1714.

A wide-band monolithic phase shifter operating in the 2-8 GHz frequency range is described. Six GaAs FET's per bit are used as switch elements in a bridge configuration which alternatively becomes a high-pass or a low-pass section. Their low-impedance state is modeled as a resistor, the high-impedance state as a combination of capacitors and resistors. In the design approach, the high-impedance state equivalent shunt capacitor is not resonated. Instead, these capacitors become part of the resulting high-pass, low-pass sections. In this way, the maximum theoretical bandwidth that a high-pass, low-pass section can provide is achieved despite the nonideal switching elements.





[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

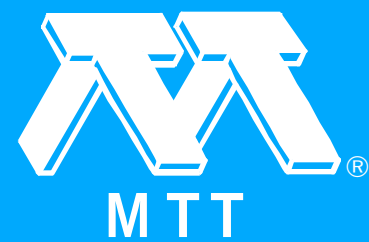
Analysis of Crosstalk in Very High-Speed LSI/VLSI's Using a Coupled Multiconductor MIS Microstrip Line Model

S. Seki and H. Hasegawa. "Analysis of Crosstalk in Very High-Speed LSI/VLSI's Using a Coupled Multiconductor MIS Microstrip Line Model." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1715-1720.

Crosstalk in very high-speed LSI/VLSI's is analyzed using a coupled multiconductor metal-insulator-semiconductor (MIS) microstrip line model. Loss in the substrate is ignored for simplicity. A periodic boundary condition is used, and the mode analysis is done using the Green's function method. Effects of line length spacing, substrate thickness, and output impedance of gates are investigated. The "lumped capacitance" approximation for interconnections is shown to be inadequate for crosstalk evaluation when the circuit speed is less than 200-300 ps in LSI circuits. The result indicates that crosstalk considerations based on a transmission-line model is very important in the design of very high-speed LSI/VLSI circuits. Provisions of adjacent shield lines are shown to be significantly effective in reducing crosstalk but at the risk of dynamic ringing and at the sacrifice of wiring capacity. A shielded multilevel interconnect scheme is proposed for reduction of crosstalk without reduction of wiring capacity.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Analysis of Interconnection Delay on Very High-Speed LSI/VLSI Chips Using an MIS Microstrip Line Model

H. Hasegawa and S. Seki. "Analysis of Interconnection Delay on Very High-Speed LSI/VLSI Chips Using an MIS Microstrip Line Model." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1721-1727.

Using an MIS (metal-insulator-semiconductor) microstrip-line model for interconnection and its equivalent circuit representation, on-chip interconnection delay in very high-speed LSI/VLSI's is analyzed in the time domain, changing interconnection geometry, substrate resistivity, and terminal conditions. The results show the following 1) the "lumped capacitance" approximation is inapplicable for interconnections in very high-speed LSI/VLSI's (t_{pd} of below 100-200 ps); 2) as compared to the semi-insulating substrate, the presence of the slow-wave mode and mode transition in the semiconducting substrates causes 1.5-2 times increase in the delay time and 2-10 times increase in the rise time and 3) in order to realize propagation delay times of less than 100 ps per gate at LSI/VLSI levels, the effective signal source resistance of the gate should be less than 500 Ω so as to long interconnections.

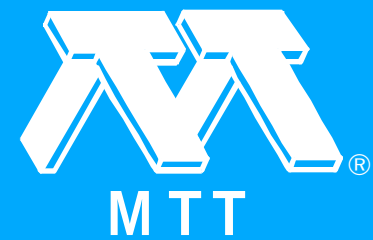
Click on title for a complete paper.



Abstracts

Patent Abstracts (Dec. 1984 [T-MTT])

"Patent Abstracts (Dec. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1728-1732.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

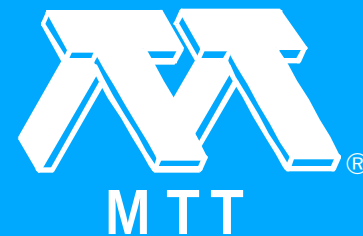
Click on title for a complete paper.



Abstracts

Index, IEEE Transactions on Microwave Theory and Techniques, Volume MTT-32, 1984

*"Index, IEEE Transactions on Microwave Theory and Techniques, Volume MTT-32, 1984."
1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984
Symposium Issue)): i1-i22.*



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (Dec. 1984 [T-MTT])

"Back Cover (Dec. 1984 [T-MTT])." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): b1-b2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

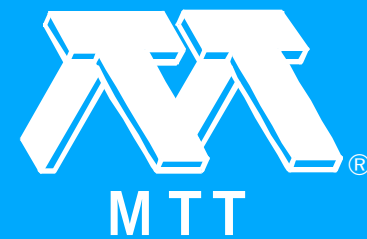
Click on title for a complete paper.



Abstracts

Front Cover (Jan. 1985 [T-MTT])

"Front Cover (Jan. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): f1-f2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Editorial (Jan. 1985 [T-MTT])

T. Itoh. "Editorial (Jan. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): 1-1.

For many readers and contributors to the Transactions, accessibility to a number of publications is difficult. To circumvent this problem, the Asian Abstracts cover many papers that appear in Australian, Indian, and Japanese periodicals. These Abstracts are published every year in one of the fall issues of the Transactions. This service is rendered by an extensive effort of the Associate Editor for Asian Abstracts.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Impedance Transformation and Matching for Lumped Complex Load with Nonuniform Transmission Line

I. Endo, Y. Nemoto and R. Sato. "Impedance Transformation and Matching for Lumped Complex Load with Nonuniform Transmission Line." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): 2-8.

New nonuniform transmission-line matching networks for a class of lumped complex loads are presented. A parabolic (or reciprocal parabolic) tapered transmission line, whose exact equivalent circuit is represented by a mixed lumped and distributed circuit, can transform the lumped series RC (or parallel RL) loads into different lumped impedances which are more convenient than the original load impedances for ordinary matching network design. Simple design procedures are described and useful design charts are given. Also, numerical examples are shown including experimental verification.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Lossy Inductive-Post Obstacles in Lossy Waveguide

P.G. Li and A.T. Adams. "Lossy Inductive-Post Obstacles in Lossy Waveguide." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): 9-15.

Post and wall losses are treated for inductive obstacles in rectangular waveguide. Post losses are treated rigorously by moment methods and wall losses are obtained by perturbational methods. Losses may be taken into account by a modified equivalent circuit and a lossy transmission line. Post losses may be comparable to wall losses.

[Click on title for a complete paper.](#)

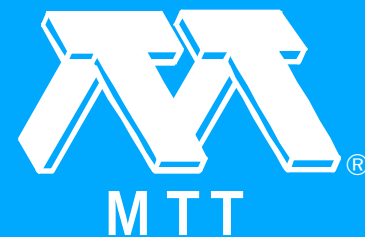


Abstracts

Complex Propagation Constants of Bent Hollow Waveguides with Arbitrary Cross Section

M. Miyagi. "Complex Propagation Constants of Bent Hollow Waveguides with Arbitrary Cross Section." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): 15-19.

An integral representation of the complex propagation constant has been derived from Maxwell's equations for cylindrical, hollow, bent, oversized waveguides with uniform curvature and with arbitrary cross sections. The method makes the calculations much simpler than the conventional method, i.e., the characteristic-equation method, although it has not yet been tried for three-dimensional bent waveguides.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Noise Due to Pulse-to-Pulse Incoherence in Injection-Locked Pulsed-Microwave Oscillators. Part II-Effects of Phase-Locking Dynamics

D.G. Anderson, M. Lisak and P.T. Lewin. "Noise Due to Pulse-to-Pulse Incoherence in Injection-Locked Pulsed-Microwave Oscillators. Part II-Effects of Phase-Locking Dynamics." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): 20-24.

The problem of noise due to partial pulse-to-pulse coherence in phase-locked pulsed oscillators is investigated. In particular, the analysis includes the dynamic time variation of the phase-locking process. The signal-to-noise ratio of such a system is found to increase as $(\gamma\tau)^2$, where γ is the frequency locking bandwidth and τ is the pulse length. This result corrects a previous conjecture of an exponential dependence on $\gamma\tau$.

[Click on title for a complete paper.](#)



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Accurate Analysis Equations and Synthesis Technique for Unilateral Finlines

P. Pramanick and P. Bhartia. "Accurate Analysis Equations and Synthesis Technique for Unilateral Finlines." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): 24-30.

Accurate analysis equations and synthesis techniques are presented for unilateral finlines, valid over a wide range of structural parameters and substrate dielectric constants ($1 \leq \epsilon_r \leq 3.75$). These expressions are usable for computing the cutoff wavelength to within ± 0.6 percent, the guided wavelength to within ± 2 percent, and the characteristic impedance (based on the power-voltage definition) to within ± 2 percent, of the spectral-domain method, over the normalized frequency range $0.25 \leq b/\lambda \leq 0.6$.

[Click on title for a complete paper.](#)



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

General Stability Analysis of Periodic Steady-State Regimes in Nonlinear Microwave Circuits

V. Rizzoli and A. Lipparini. "General Stability Analysis of Periodic Steady-State Regimes in Nonlinear Microwave Circuits." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): 30-37.

The problem of analyzing the stability of periodic equilibrium regimes in nonlinear microwave circuits is tackled by a general-purpose computer-aided approach. By means of a perturbation technique, the search for instabilities is reduced to a generalized eigenvalue equation expressed in matrix form, and is then carried out by Nyquist's analysis. The use of a vector processor allows the computer time requirements to be kept well within reasonable limits, even in the case of large-size problems. In perspective, this could open the way to the complementation of existing nonlinear CAD packages by an on-line facility for automatic stability analysis.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Hybrid-Mode Analysis of Coupled Microstrip-Slot Resonators

K. Kawano. "Hybrid-Mode Analysis of Coupled Microstrip-Slot Resonators." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): 38-43.

An advanced microwave and millimeter-wave integrated circuit element, that is, a coupled microstrip resonator with a tuning slot, or a coupled microstrip-slot resonator, has been developed. As special cases, a microstrip-slot resonator, coupled microstrip resonator, and microstrip resonator have been investigated. A hybrid-mode analysis is presented for obtaining resonant frequencies. It is based upon Galerkin's method in the Fourier transform domain. The Green functions in this domain, which are versatile and applicable to other microstrip-slot structures, are shown in simple form. Computed resonant frequencies and measured resonant values are compared for aluminum substrates in the 3-7-GHz frequency range.

[Click on title for a complete paper.](#)



Abstracts

A Continuous Comparison at 97 GHz Radiometer

C.R. Predmore, N.R. Erickson, G.R. Huguenin and P.F. Goldsmith. "A Continuous Comparison at 97 GHz Radiometer." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): 44-51.

A continuous comparison radiometer has been implemented at 97 GHz using quasi-optical techniques for local oscillator (LO) injection and realization of a 90° hybrid. Cryogenically cooled Schottky-diode mixers and FET amplifiers give a double-sideband (DSB) system temperature of 250 K. The system is self-calibrating and optimized under computer control. The root-mean-square (rms) fluctuations due to the receiver are less than 0.025 K with a 1-s integration time.



[Contents](#)

[Publications](#)

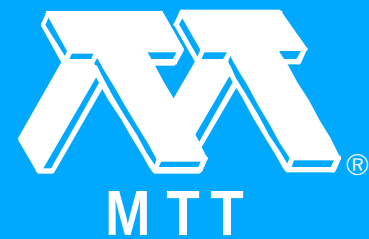
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Active Stabilization of Crystal Oscillator FM Noise at UHF Using a Dielectric Resonator (Short Papers)

A.G. Mann. "Active Stabilization of Crystal Oscillator FM Noise at UHF Using a Dielectric Resonator (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): 51-53.

A low-noise 600-MHz crystal oscillator circuit is described. It uses a dielectric oscillator as the dispersive element of a discriminator in an active frequency stabilization loop which reduces the near-carrier FM noise. The innovation in the circuit is an essentially noiseless active carrier suppression loop, which allows maximum utilization of a low-noise RF amplifier to reduce the discriminator threshold ($\Delta f_{\text{sub rms}}$) to 2.5×10^{-5} Hz in a 1-Hz bandwidth. The FM noise 1 kHz from the carrier was reduced by 44 dB to this threshold, equivalent to a phase-noise spectral density of -152 dBc/Hz.

[Click on title for a complete paper.](#)



Abstracts

140-GHz Finline Components (Short Papers)

W. Menzel and H. Callsen. "140-GHz Finline Components (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): 53-56.

A balanced mixer and a p-i-n diode switch based on finline technique for the frequency range around 140 GHz are described. The mixer exhibits a conversion loss of 7 to 8 dB, whereas the p-i-n diode switch shows an insertion loss of 2 dB and a maximum attenuation of 33 dB.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Radial-Line/Coaxial-Line Stepped Junction (Short Papers)

A.G. Williamson. "Radial-Line/Coaxial-Line Stepped Junction (Short Papers)." 1985 *Transactions on Microwave Theory and Techniques* 33.1 (Jan. 1985 [T-MTT]): 56-59.

A radial-line/coaxial-line junction having a step in the inner conductor in the coaxial aperture is considered. It is shown that the stepped junction may be modeled by an equivalent circuit obtained by a simple modification of that for the unstepped junction. Comparison of theoretical and experimental results has established this representation to be very accurate over a wide frequency range.

[Click on title for a complete paper.](#)



Abstracts

New Analysis of Semiconductor Isolators: The Modified Spectral Domain Analysis (Short Papers)

S. Tedjini and E. Pic. "New Analysis of Semiconductor Isolators: The Modified Spectral Domain Analysis (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): 59-64.

This paper addresses semiconductor isolators of the field displacement effect type. The semiconductor is modeled by its surface impedance tensor. This description allows an extension of the well-known spectral domain method to the analysis of the semiconductor isolators. Different configurations are studied and numerical results are given. The finline isolator with InSb is shown to be the best choice—indeed, insertion loss is less than 3 dB/cm and isolation is greater than 18 dB/cm. Experimental results supporting these calculations will be published in a following paper.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Biological Tissues Characterization at Microwave Frequencies (Short Papers)

B.D. Karolkar, J. Behari and A. Prim. "Biological Tissues Characterization at Microwave Frequencies (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): 64-66.

The present work is concerned with the measurement of dielectric permittivity and conductivity of various high loss tissues from freshly sacrificed animals. The measurement makes use of the 'infinite sample' technique which involves mounting of the sample in a rectangular waveguide system excited in the TE/sub10/ mode at 9.4 GHz. A more complex system consisting of skin-fat-muscle combination is also studied. An evacuation of relaxation times is made in all the cases. It is hoped that these data will be relevant in further quantifying the available results in this frequency range.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Higher Order Mode Cutoff in Polygonal Transmission Lines (Short Papers)

H.E. Green and J.D. Cashman. "Higher Order Mode Cutoff in Polygonal Transmission Lines (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): 67-69.

This paper provides an analytical solution to the problem of determining the cutoff wavelength of the first higher order mode in any transmission line having as its conductors a pair of coaxial, similar, similarly oriented regular polygons. The method is based on the cross-sectional resonance technique. It is shown that, under certain circumstances, the requirement that the polygons be coaxial can be relaxed and a solution still obtained in this way.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

An Explicit Six-Port Calibration Method Using Five Standards (Short Papers)

J.D. Hunter and P.I. Somlo. "An Explicit Six-Port Calibration Method Using Five Standards (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): 69-72.

A six-port reflectometer calibration method using five standards is developed, and gives explicit unambiguous expressions for the calibration constants. The standards are restricted only in that their impedances may neither all have the same magnitude nor all have the same argument. The method permits exact (nonidealized) descriptions of the standards to be used, and the redundancy inherent in the analysis is utilized to reduce the problems associated with measurement noise.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Theory and Measurement of Back Bias Voltage in IMPATT Diodes (Comments)

S.C. Tiwari. "Theory and Measurement of Back Bias Voltage in IMPATT Diodes (Comments)." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): 72-74.

In the above paper; back bias voltage in IMPATT diodes has been discussed in detail; however, some previous work on this problem has gone unnoticed. Bracket first pointed out that RF-induced negative resistance was responsible for low-frequency instability which was ten times or so higher in GaAs as compared to Si diodes. Using sinusoidal RF voltage, he considered rectification in the avalanche region which showed that the dc operating voltage decreased with increasing RF voltage amplitude. Lee et al. first discussed anomalous rectification in dc current when second-order terms in voltage were considered in their analysis. We have also independently found the existence of abnormal rectification in our self-consistent nonlinear avalanche region analysis. It is the purpose of this paper to briefly report relevant results.

[Click on title for a complete paper.](#)



Abstracts

Theory and Application of Coupling Between Curved Transmission Lines (Corrections)

M. Abouzahra and L. Lewin. "Theory and Application of Coupling Between Curved Transmission Lines (Corrections)." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): 74-75.

In the above paper, the following corrections should be made.



MTT



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Coupling of Degenerate Modes on Curved Dielectric Slab Sections and Application to Directional Couplers (Corrections)

M.D. Abouzahra and L. Lewin. "Coupling of Degenerate Modes on Curved Dielectric Slab Sections and Application to Directional Couplers (Corrections)." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): 75-75.

In the above paper the following corrections should be made.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

Patent Abstracts (Jan. 1985 [T-MTT])

"Patent Abstracts (Jan. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): 76-79.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

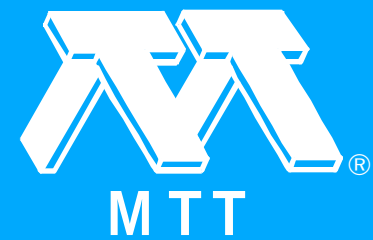
Click on title for a complete paper.



Abstracts

IEEE on Microfilm (Advertisement) (Jan. 1985 [T-MTT])

"IEEE on Microfilm (Advertisement) (Jan. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): 80-80.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Copyright Form (Jan. 1985 [T-MTT])

"Copyright Form (Jan. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): 81-82.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

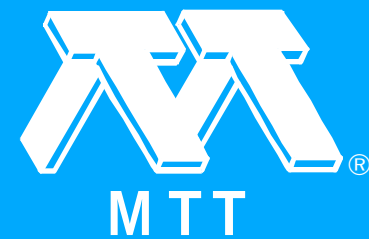
Click on title for a complete paper.



Abstracts

Membership Application (Jan. 1985 [T-MTT])

"Membership Application (Jan. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): 83-83.



- Contents
- Publications
- Issues
- Papers
- Authors

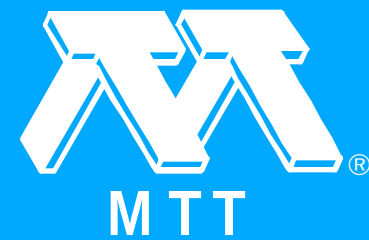
Click on title for a complete paper.



Abstracts

Table of Contents, Preview of February (Jan. 1985 [T-MTT])

"Table of Contents, Preview of February (Jan. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): 84-84.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

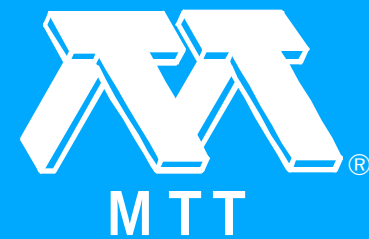
Click on title for a complete paper.



Abstracts

Back Cover (Jan. 1985 [T-MTT])

"Back Cover (Jan. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.1 (Jan. 1985 [T-MTT]): b1-b2.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Front Cover (Feb. 1985 [T-MTT])

"Front Cover (Feb. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Power-Handling Capabilities of Circular Dielectric Waveguide at Millimeter Wavelengths

D.G. Jablonski. "Power-Handling Capabilities of Circular Dielectric Waveguide at Millimeter Wavelengths." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 85-89.

The power-handling capabilities of a circular dielectric waveguide propagating the single HE/sub 11/ mode are discussed. Simple calculations illustrate the limits imposed by dielectric heating and dielectric breakdown. Examples are presented for polystyrene and polytetrafluoroethylene (PTFE) guides at 70 GHz. The results suggest that maximum power levels for circular dielectric waveguide in the millimeter-wave spectrum will be of the orders of 10 to 100 W and that dielectric heating is the limiting phenomenon.

[Click on title for a complete paper.](#)



Abstracts

85--115-GHz Receivers for Radio Astronomy

D.P. Woody, R.E. Miller and M.J. Wengler. "85--115-GHz Receivers for Radio Astronomy." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 90-95.

Low-noise receivers for radio astronomy have been built using Pb alloy superconducting tunnel junction mixers operating at 4.5 K. They have been used for 85-115-GHz astronomy with double-sideband receiver noise temperature between 70 and 200 K. Junction fabrication and receiver construction, operation, and performance are described herein.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Field Theory Design of Rectangular Waveguide Broad-Wall Metal-Insert Slot Couplers for Millimeter-Wave Applications

F. Arndt, B. Koch, H.-J. Orlok and N. Schroder. "Field Theory Design of Rectangular Waveguide Broad-Wall Metal-Insert Slot Couplers for Millimeter-Wave Applications." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 95-104.

A design theory for broad-wall metal-insert slot couplers suitable for an inexpensive and very accurate metal-etching manufacturing technique is described. The method of field expansion into suitable eigenmodes used considers the effects of finite insert thickness and higher order mode interaction at the step discontinuities. Computer-optimized design data for -3-dB couplers in the Ka- and W-bands are given. The data of the Ka -band design are transferable into the U- and V-bands by suitable frequency scaling calculation. Since the metal-etching technique is also advantageously applicable for couplers in the centimeter wavelength range, optimized design data for E-plane slot couplers in the often used Ku- and R120-waveguide-bands are included in the tables given. A Ku-band metal-etched four-slot coupler prototype achieves a ± 1 dB bandwidth of the -3-dB coupling of about 2 GHz, together with -36-dB isolation. The measurements show good agreement with theory.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

12-GHz-Band GaAs Dual-Gate MESFET Monolithic Mixers

T. Sugiura, K. Honjo and T. Tsuji. "12-GHz-Band GaAs Dual-Gate MESFET Monolithic Mixers." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 105-110.

12-GHz-band GaAs dual-gate MESFET monolithic mixers have been developed for use in direct broadcasting satellite receivers. In order to reduce chip size, a buffer amplifier has been connected directly after a mixer IF port, instead of employing an IF matching circuit. The mixer and the buffer were fabricated on separate chips, so that individual measurements could be achieved. Chip size is 0.96X 1.26 mm for the mixer and 0.96X0.60 mm for the buffer. A dual-gate FET for the mixer, as well as a single-gate FET for the buffer, has a closely spaced electrode structure. Gate length and width are 1 μm and 320 μm , respectively. The mixer with the buffer provides 2.9 ± 0.4 -dB conversion gain with 12.3 ± 0.3 dB SSB noise figure in the 11.7-12.2-GHz RF band. Local oscillator (LO) frequency is 10.8 GHz. A low-noise converter was constructed by connecting a monolithic preamplifier, an image rejection filter, and a monolithic IF amplifier to the mixer. The converter provides 46.8 ± 1.5 -dB conversion gain with 2.8 ± 0.2 -dB SSB noise figure in the same frequency band.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Variational Analysis of Ridged Waveguide Modes

Y. Utsumi. "Variational Analysis of Ridged Waveguide Modes." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 111-120.

Brief expressions of eigenvalue problems, normal modes, and electric-field profiles for all odd TE and TM modes of ridged waveguides, and the guide wavelength and characteristic impedance for the TE/sub 10/ dominant mode, are presented in this paper. In this analysis, the computation time can be reduced by getting simple approximated variational expressions for eigenvalue equations by using a trial function which satisfies the right-angled edge condition of a ridge. These theoretical results are in good agreement with the experimental results and the several references employed.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

The Electric-Field Problem of an Interdigital Transducer in a Multilayered Structure

P.M. van den Berg, W.J. Ghijsen and A. Venema. "The Electric-Field Problem of an Interdigital Transducer in a Multilayered Structure." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 121-129.

A computational technique for the determination of the potential distribution of an interdigital transducer in a layered nonpiezoelectric environment is presented. Firstly, the problem is reduced to a dual boundary value problem for the potential distribution and the jump in the current density in the place of the interdigital transducer. Secondly, an iteration scheme to solve this dual boundary value problem is outlined. It is based upon an iterative minimization of the integrated square error made in the boundary conditions on the transducer fingers. Finally, numerical results for some representative configurations are presented.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Computer Calculation of Large-Signal GaAs FET Amplifier Characteristics

A. Materka and T. Kacprzak. "Computer Calculation of Large-Signal GaAs FET Amplifier Characteristics." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 129-135.

A simple and efficient method of GaAs FET amplifier analysis is presented. The FET is represented by its circuit-type nonlinear dynamic model taking into account the device's main nonlinear effects including gate-drain voltage breakdown. An identification procedure for extraction of the model parameters is described in detail and examples are given. The calculation of the amplifier response to a single-input harmonic signal is performed using the piecewise harmonic balance technique. As this technique is rather time-consuming in its original form, the optimization routine used to solve the network equations was replaced by the Newton-Raphson algorithm. Characteristics calculated with the use of the proposed method are compared with experimental data taken for a microwave amplifier using a 2SK273 GaAs FET unit. Good agreement at 9.5 GHz over wide ranges of bias voltage and input power levels are observed.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Short Millimeter Low Local Wavelength Mixer with Oscillator Power

W. Hant. "Short Millimeter Low Local Wavelength Mixer with Oscillator Power." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 135-142.

This paper discusses development, for the 240-GHz region, of whisker contacted diode mixers with LO powers between 10 and 50 μ W. Mixer requirements for low parasitic diodes, situated in high-embedding impedance circuits are described and appropriate RF and IF circuit designs presented. A capacitive post RF matching circuit for a full-height waveguide is developed with superior bandwidth characteristics at high impedance levels and greater ease of fabrication than usual matching circuits in reduced height guide. Corroborating experimental results are presented for an X-band model and for a 235-GHz mixer.

[Click on title for a complete paper.](#)



Abstracts

Exact Wave Resistance of Coaxial Regular Polygonal Conductors (Short Papers)

R. Terakado. "Exact Wave Resistance of Coaxial Regular Polygonal Conductors (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 143-145.

There are various cases in which one can evaluate exactly the wave resistance of coaxial conductors such that each of the inner and outer conductors is a regular polygon. They are obtained by conformal mapping using complete elliptic integrals. Such typical examples each with exact wave resistances are shown.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Analysis of the Transmission Characteristics of Inhomogeneous Grounded Finline (Short Papers)

A. Beyer. "Analysis of the Transmission Characteristics of Inhomogeneous Grounded Finline (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 145-149.

This paper describes a concept for an efficient design of finline tapers that is especially useful in cases when certain quantities have been prescribed with respect to reflection loss and bandwidth. Since abrupt discontinuities are neglected, the analysis is applicable to smooth finline tapers only. Various contour functions are investigated for the taper optimization. Experimental results for optimized tapers confirm the design theory.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Phase-Matched Waveguide Using the Artificial Anisotropic Structure and its Application to a Mode Converter (Short Papers)

T. Mizumoto, H. Yamazaki and Y. Naito. "Phase-Matched Waveguide Using the Artificial Anisotropic Structure and its Application to a Mode Converter (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 149-152.

Phase matching by the artificial anisotropic structure and its application to a mode converter are proposed for millimeter-wave dielectric circuitry. A phase-matched dielectric planar waveguide is designed and mode conversion characteristics are studied. An experimental result of the nonreciprocal mode converter are presented to show the usefulness of the structure.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

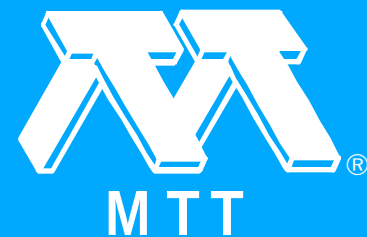


Abstracts

A Design Method of Bandpass Filters Using Dielectric-Filled Coaxial Resonators (Short Papers)

M. Sagawa, M. Makimoto and S. Yamashita. "A Design Method of Bandpass Filters Using Dielectric-Filled Coaxial Resonators (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 152-157.

Design formulas for capacitively coupled bandpass filters using dielectric-filled coaxial resonators are derived and experimentally verified. The most important advantage of this filter is its ability to provide wide stopband characteristics for harmonics suppression. Its features can be obtained from the configuration using both quarter-wavelength uniform impedance resonators (UIR's) and stepped impedance resonators (SIR's).



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Conservation Laws for Distributed Four-Ports (Short Papers)

O. Schwelb and R. Antepyan. "Conservation Laws for Distributed Four-Ports (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 157-160.

Condition of reciprocity, losslessness, bilateral symmetry, transversal symmetry, and semireciprocity is given for a four-port in terms of its impedance, admittance, scattering, and transfer representation. Corresponding conditions are also presented for the system coupling matrix of a uniform distributed circuit. The results are applied to an anisotropic stratified waveguide.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

A Broad-Band Directional Coupler for Both Dielectric and Image Guides (Short Papers)

R.J. Collier and G. Hjjpieris. "A Broad-Band Directional Coupler for Both Dielectric and Image Guides (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 161-163.

A four-port directional coupler is presented for use in dielectric and image guides. Simple design equations are derived and the subsequent results are in good agreement with theory. Broad-band performance has been achieved over the entire conventiortal waveguide bandwidth (26-40 GHz).



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

[Click on title for a complete paper.](#)

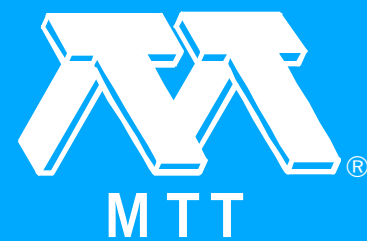


Abstracts

An Iterative Moment Method for Analyzing the Electromagnetic Field Distribution Inside Inhomogeneous Lossy Dielectric Objects (Short Papers)

M.F. Sultan and R. Mittra. "An Iterative Moment Method for Analyzing the Electromagnetic Field Distribution Inside Inhomogeneous Lossy Dielectric Objects (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 163-168.

An iterative method is proposed for solving the electromagnetic deposition inside lossy inhomogeneous dielectric bodies. The technique uses the conventional method of moments to formulate the problem in matrix form. The resulting system of linear equations is solved iteratively by the method of conjugate gradients. The main advantage of the method is that the iterative procedure does not require the storage of any matrix, thus offering the possibility of solving larger problems compared to conventional inversion or Gaussian elimination schemes. Another important advantage is that monotonic convergence to a solution is ensured and accomplished within a fixed number of iterations, not exceeding the total number of basis functions, independently of the initial guess for the solution. Preliminary examples involving two-dimensional cylinders of fat and muscle are illustrated. The iterative method is expendable and applicable to the three-dimensional case.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

On the Graceful Degradation Performance of Multiple-Device Oscillators (Short Papers)

S. Sarkar and M.C. Agrawal. "On the Graceful Degradation Performance of Multiple-Device Oscillators (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 168-170.

Kurokawa's theory of multiple-device oscillators is extended to an analysis of the graceful degradation performance (GD) of the power-combined oscillators. The analysis shows that the failure of some of the constituent devices of a multiple-device oscillator results in a load-pull effect on the operating devices along with a degradation of power-combining efficiency of the oscillator circuit. A tradeoff exists between power output and circuit improvement of the GD.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

EM Local Heating with HF Electric Fields (Comments)

M.J. Hagmann. "EM Local Heating with HF Electric Fields (Comments)." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 171-171.

The above paper recently described a synthesis procedure that is intended for use in designing multisection capacitor-plate applicators for treatment by hyperthermia. The distribution of potentials on the subelectrodes is determined in order to obtain a specified pattern of energy deposition. While the derivation in that paper appears to be sound, considerable care must be used if the procedure is to be applied for the design of a practical applicator for use in patient treatment.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

On the Definition of Parameters in Ferrite-Electromagnetic Wave Interactions (Comments)

E.M.A. Eid. "On the Definition of Parameters in Ferrite-Electromagnetic Wave Interactions (Comments)." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 172-173.

In the above paper, Bolle and Lewin discuss definitions of some parameters characterizing the material in ferrite-electromagnetic wave interactions. According to this discussion, the direction of propagation, and not the direction of magnetization, is recommended as a reference direction. In this letter, it is shown, however, that this is not generally valid. Some examples are used to show instants where the parameters are better referred to the direction of magnetization in order to avoid unnecessary confusion.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Short History of Microwave Acoustics (Corrections)

J.H. Collins. "A Short History of Microwave Acoustics (Corrections)." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 173-173.

In regard to Section III of the above paper, John Eshbach has brought to my attention that the original experiments on microwave magnetoelastic YIG delay lines were performed by him on disc-shaped geometries and published in 1962 . His 1963 paper gave the first details of the electromagnetic --> spin --> acoustic conversion process for a YIG disc, which is shown in Fig. 5 of the above paper for a YIG rod. Premium in space precluded a full description of the entire conversion process for an axially magnetically biased YIG rod which is electromagnetic --> magnetostatic --> spin (exchange) --> acoustic. This was originally proposed by B. Yazgan in her 1966 Ph.D. thesis submitted to Glasgow University and subsequently developed by J. H. Collins and experimentally verified by B. A. Auld et al. Reference to the caption in Fig. 5 of the above paper allows references [3] and [4] to be traced.

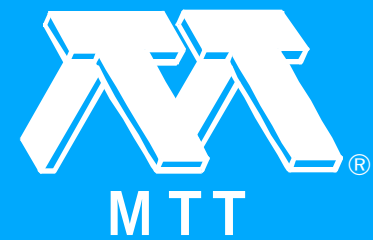
[Click on title for a complete paper.](#)



Abstracts

Patent Abstracts (Feb. 1985 [T-MTT])

"Patent Abstracts (Feb. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 175-177.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

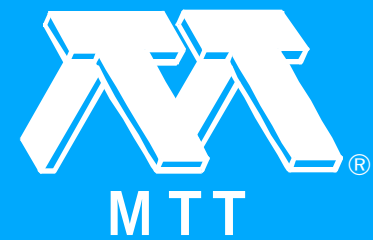
Click on title for a complete paper.



Abstracts

IEEE on Microfilm (Advertisement) (Feb. 1985 [T-MTT])

"IEEE on Microfilm (Advertisement) (Feb. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 178-178.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

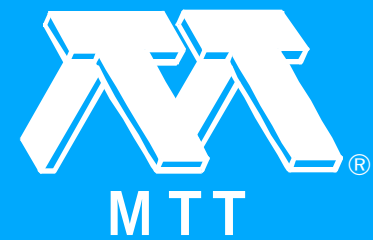
Click on title for a complete paper.



Abstracts

Membership Application (Feb. 1985 [T-MTT])

"Membership Application (Feb. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 179-179.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

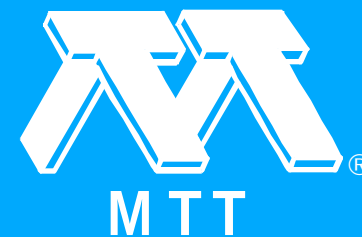
Click on title for a complete paper.



Abstracts

Table of Contents, Preview of March (Feb. 1985 [T-MTT])

"Table of Contents, Preview of March (Feb. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): 180-180.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Back Cover (Feb. 1985 [T-MTT])

"Back Cover (Feb. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.2 (Feb. 1985 [T-MTT]): b1-85.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (Mar. 1985 [T-MTT])

"Front Cover (Mar. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

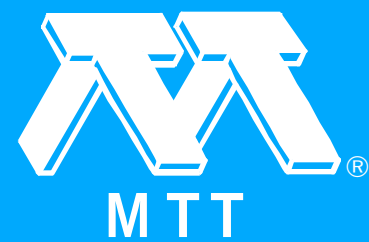
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Theoretical and Experimental Studies of Gain Compression of Millimeter-Wave Self-Oscillating Mixers

F.R. Pantoja and E.T. Calazans, Jr.. "Theoretical and Experimental Studies of Gain Compression of Millimeter-Wave Self-Oscillating Mixers." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 181-186.

A general theory for a heterodyne Gunn self-oscillating mixer is developed to explain the experimentally observed phenomenon of "beat output power compression," i.e., an increase of down conversion gain with a decrease of millimeter injected power. Adler's general differential equation has been used, with some pertinent modifications and proper boundary conditions. This differential equation has been modified to allow the self-oscillating mixer to be frequency modulated. The solution of the new equation has been obtained through a perturbational technique, where the frequency of the self-oscillating mixer is assumed to be outside the locking range of the injected signal. The theory has been based on the fact that, owing to the bias perturbation of the (voltage tunable) self-oscillating mixer, the oscillator is modulated, both in amplitude and in angle. The functional dependence obtained depends, primarily, on the order of magnitude of the "induced" frequency of modulation. This semi-quantitative theory agrees quite well with experiments performed with both InP and GaAs Gunn diodes in the frequency range 75-100 GHz.



Abstracts

On the Graphical Representation of Electric Field Lines in Waveguide

P.E. Moller and R.H. MacPhie. "On the Graphical Representation of Electric Field Lines in Waveguide." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 187-192.

A method is presented for illustrating the time-varying behavior of electric field lines in the neighborhood of a parallel-plate waveguide E-plane step discontinuity. Sequences of electric field plots illustrating the time-varying behavior for several E-plane step heights are included. The method presented is applicable to analogous junctions in rectangular waveguide and can be extended to more complex waveguide structures.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Optical Fiber Delay-Line Signal Processing

K.P. Jackson, S.A. Newton, B. Moslehi, M. Tur, C.C. Cutler, J.W. Goodman and H.J. Shaw. "Optical Fiber Delay-Line Signal Processing." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 193-210.

Single-mode optical fiber is an attractive delay medium for processing microwave frequency signals due to its extremely low loss (<0.1 dB/ μ s) and large available time-bandwidth product (in excess of $10/\sup 5$). Recent progress in the efficient tapping of light from single-mode fibers has made it possible to construct recirculating and nonrecirculating (tapped) delay-line structures that can perform a variety of important signal processing functions. These functions include coded sequence generation, convolution, correlation, matrix-vector multiplication, and frequency filtering. This paper presents the fundamental properties of single-mode fiber delay lines and reviews recent experimental results that demonstrate the feasibility of fiber delay-line devices for broad-band signal-processing applications.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Graphic Design of Matching and Interstage Lossy Networks for Microwave Transistor Amplifier

J.C. Villar and F. Perez. "Graphic Design of Matching and Interstage Lossy Networks for Microwave Transistor Amplifier." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 210-215.

A graphical design method for lossless and lossy gain-compensating networks is presented, and the advantages of the use of this technique in the construction of microwave transistor amplifiers are discussed. The method is based on the use of a set of constant S_{ij} circles plotted on the Smith Chart, and is easily automated on a personal computer. Two applications are presented: a two-stage amplifier with 20 dB in the 100-1100-MHz band and an ultra-broad-band lossy matched amplifier stage with 4 dB in the dc-16-GHz band.

[Click on title for a complete paper.](#)



Abstracts

Field Analysis of a Millimeter-Wave GaAs Double-Drift IMPATT Diode in the Traveling-Wave Mode

Y. Fukuoka and T. Itoh. "Field Analysis of a Millimeter-Wave GaAs Double-Drift IMPATT Diode in the Traveling-Wave Mode." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 216-222.

An analysis of a realistic model of distributed IMPATT structures is described. Wave equations are solved with all losses included. The results show that net gain is produced at frequencies just above the avalanche resonance, while the propagation becomes slow at high frequencies. The results compare favorably with experiment.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

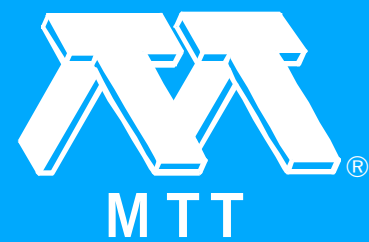
Coupling Parameters Between a Dielectric Resonator and a Microstripline

P. Guillon, B. Byzery and M. Chaubet. "Coupling Parameters Between a Dielectric Resonator and a Microstripline." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 222-226.

The coupling coefficient between a microstripline and the dipolar magnetic ($TE_{0\gamma\delta}$) mode of a cylindrical dielectric resonator is evaluated by using two methods numerical and analytical. Theoretical and experimental external quality factors, as well as the scattering matrix parameters which consider the substrate material, the ground plane, and the distance between the line and the resonator, are presented.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Improved Finite-Element Formulation in Terms of the Magnetic Field Vector for Dielectric Waveguides

M. Koshiba, K. Hayata and M. Suzuki. "Improved Finite-Element Formulation in Terms of the Magnetic Field Vector for Dielectric Waveguides." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 227-233.

An improved finite-element method for the analysis of dielectric waveguides is formulated in terms of all three components of the magnetic field H . In this approach, the spurious, nonphysical solutions do not appear anywhere above the "air-line," and therefore the present formulation is very useful for the analysis of the surface-wave modes of dielectric waveguides. The application of this improved finite-element method to the dielectric waveguides with perfect electric and magnetic conductors is also discussed. In particular, the discussion is how to use the conditions on a boundary surface of a perfect electric or magnetic conductor whose normal direction is not coincident with the direction of a coordinate axis. Application of these boundary conditions for perfect conductors to the dielectric waveguides with planes of symmetry reduces the matrix size. The strength of this approach to boundary conditions is not just the economical use of computer memory but the elimination of spurious solutions through rigorous enforcement of boundary conditions as well.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Analysis of Noise Upconversion in Microwave FET Oscillators

H.J. Siweris and B. Schiek. "Analysis of Noise Upconversion in Microwave FET Oscillators." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 233-242.

The upconversion of low-frequency noise in microwave FET oscillators is investigated. The theoretical analysis is presented in two forms, a general and a simplified one. The latter version yields closed-form expressions for amplitude and phase noise, which are discussed with regard to the physics of the upconversion process. Application of the method is demonstrated with an example.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Design Consideration for Frequency-Stabilized MIC IMPATT Oscillators in the 26-GHz Band

N. Imai and K. Yamamoto. "Design Consideration for Frequency-Stabilized MIC IMPATT Oscillators in the 26-GHz Band." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 242-248.

A 26-GHz frequency-stabilized MIC IMPATT oscillator using a dielectric resonator has been developed. In designing such an oscillator in the high-frequency range, many parameters affecting frequency stability should be considered. This paper discusses oscillation frequency variations caused by deviations in the resonant frequency of dielectric resonators, in diode reactance, and in the electrical length between the diode and resonator, all of which are due to temperature variation. Design criteria for a highly frequency-stabilized oscillator are also presented. With these techniques, we have obtained an MIC IMPATT oscillator with frequency stability of less than $\pm 5.0 \times 10^{-5}$, output power deviation of less than ± 2.0 dB, and output power of more than 23 dBm over the temperature range of 0°C to 50°C.

[Click on title for a complete paper.](#)



Abstracts

Boundary Element Method Approach Magnetostatic Wave Problems

K. Yashiro, M. Miyazaki and S. Ohkawa. "Boundary Element Method Approach Magnetostatic Wave Problems." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 248-253.

In this paper, the technique for application of the boundary element method (BEM) to analysis of magnetostatic waves (MSW'S) is established. To show the availability of the technique, two types of waveguides for the MSW are studied one is a waveguide constituting a YIG slab shielded with metal plates and the other is a waveguide consisting of an unshielded YIG slab. With the former structure the results obtained by the present technique are compared with the analytical solutions, and with the latter the BEM is compared with Marcatili's approximate method since there is no analytical solution in this case. Those comparisons are performed successfully for both cases. The paper concludes that the BEM is useful and effective for analysis of a wide range of MSW problems.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

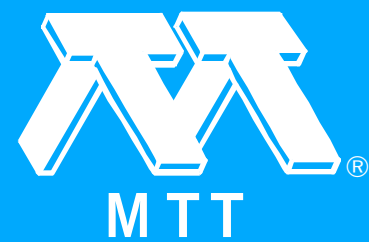
Locking Behavior of a Microwave Multiple-Device Ladder Oscillator

S. Nogi and K. Fukui. "Locking Behavior of a Microwave Multiple-Device Ladder Oscillator." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 253-262.

This paper presents a detailed discussion on the injection-locking property of a microwave ladder oscillator which is essentially an array of diode mount-pairs in a rectangular waveguide cavity. It is shown both analytically and experimentally that the use of a ladder structure is advantageous both in obtaining a large locking figure of merit (i.e., $2Q_{\text{sub}} \text{ ex//sup } -1/$) and in rapidity of the transient response to the PSK signal injection.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Coaxial E-Field Probe for High-Power Microwave Measurement (Short Papers)

S. Burkhart. "Coaxial E-Field Probe for High-Power Microwave Measurement (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 262-265.

Open-ended semirigid coaxial cable is characterized for use as a coupling element for the measurement of high-power microwaves. There are many high-power microwave experiments where a high vacuum must be maintained, and yet it is necessary to measure the power and frequency of the microwave energy in a cavity or waveguide. Semirigid coaxial cable which is left open-ended and inserted no more than flush with the inner waveguide wall is a convenient way to couple out a known sample of the power. The cable is inserted into the waveguide in a direction parallel to the electric field. The coupling value is expressed in terms of an area multiplier which is applied to the area of the end of the center conductor. The induced charge Q on the center conductor is then determined from $Q = \int D \cdot n \cdot (\text{effective area})$, and the coupled power is calculated from $P = (\omega Q)^2 / (2Z_0)$. For a flush mounted $Z_0 = 50 - j\Omega$ with PTFE dielectric, the area multiplier is shown to be 3.846 theoretically and 3.77 experimentally. The area multiplier is also determined for various withdrawal depths of the coax into the waveguide wall.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Computation of Inductance of Simple Vias Between Two Striplines Above a Ground Plane (Short Papers)

A.R. Djordjevic and T.K. Sarkar. "Computation of Inductance of Simple Vias Between Two Striplines Above a Ground Plane (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 265-269.

In this paper, an analysis is developed for calculating the lumped inductance of a simple via connecting two infinitely thin striplines, located above a perfectly conducting ground plane. The striplines are oriented in the same direction, and the via is assumed to be in the form of an infinitely thin vertical plate, connecting the two lines. This system is analyzed by a hybrid partial-element and circuit-theory approach. Numerical results are presented to illustrate the application of this technique.

[Click on title for a complete paper.](#)



Abstracts

Analyzing Lossy Radial-Line Stubs (Short Papers)

S.L. March. "Analyzing Lossy Radial-Line Stubs (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 269-271.

Equations for the design and analysis of lossless radial-line stubs are available in the literature. However, when actually fabricated in microstrip or stripline, these stubs possess finite conductor loss. This attenuation must be included if these components are to be properly integrated with other lossy transmission-line elements as part of a microwave computer-aided design program, such as Super-Compact®. New equations for open-circuited radial-line stubs, which include the effects of conductor loss are presented.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Plot of Modal Field Distribution in Rectangular and Circular Waveguides (Short Papers)

C.S. Lee, S.W. Lee and S.L. Chuang. "Plot of Modal Field Distribution in Rectangular and Circular Waveguides (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 271-274.

The earliest plots of modal field distribution in rectangular/circular waveguides were given by Southworth (1936), Barrow (1936), Schelkunoff (1937), and Chu and Barrow (1937).



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Computations of Frequencies and Intrinsic Q Factors of TE/sub 0nm/ Modes of Dielectric Resonators (Short Papers)

J. Krupka. "Computations of Frequencies and Intrinsic Q Factors of TE/sub 0nm/ Modes of Dielectric Resonators (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 274-277.

The Rayleigh-Ritz method is described, which is used to calculate the resonant frequencies and intrinsic Q factors due to dielectric losses of quasi TE/sub 0nm/ modes of dielectric resonators. Electromagnetic fields of an auxiliary post dielectric resonator are taken as an electrodynamics basis for approximate solutions of this problem. The method provides upper bounds for true resonant frequencies. Numerical results are compared with previously published complementary calculations. The influence of a dielectric substrate on resonant frequencies and intrinsic Q values is demonstrated.

[Click on title for a complete paper.](#)



Abstracts

Cross-Coupled Coaxial-Line/Rectangular-Waveguide Junction (Short Papers)

A.G. Williamson. "Cross-Coupled Coaxial-Line/Rectangular-Waveguide Junction (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 277-280.

The analysis of a cross-coupled coaxial-line/rectangular-waveguide junction having dissimilar coaxial lines is presented. An equivalent circuit is deduced for the case where the TE/sub 10/ mode is the only propagating waveguide mode. Experimental/theoretical comparisons are also reported which show the analysis to be very accurate.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Accurate Six-Port Operation with Uncalibrated Nonlinear Diodes Digital (Short Papers)

P.I. Somlo, J.D. Hunter and D.C. Arthur. "Accurate Six-Port Operation with Uncalibrated Nonlinear Diodes Digital (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 281-282.

A new mode of six-port operation is described, in which uncalibrated semiconductor diodes operating at a constant level are used as power sensors. Each diode is used in turn as a leveling loop detector, and the resulting changes in source output power are measured by a single linear power meter.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Scalar Variational Analysis of Single-Mode Waveguides with Rectangular Cross Section (Short Papers)

P.K. Mishra, A. Sharma, S. Labroo and A.K. Ghatak. "Scalar Variational Analysis of Single-Mode Waveguides with Rectangular Cross Section (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 282-286.

We use the variational method to analyze single-mode optical waveguides with rectangular cross section. In particular, we propose a new trial field and show that it gives much better results and involves less computational effort as compared to other trial functions.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

A Rigorous Technique for Measuring the Scattering Matrix of a Multiport Device with a Two-Port Network Analyzer (Comments) (Mar. 1985 [T-MTT])

E. Van Lil. "A Rigorous Technique for Measuring the Scattering Matrix of a Multiport Device with a Two-Port Network Analyzer (Comments) (Mar. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 286-287.

In the above paper, Tippet and Speciale gave expressions for the correction to be made on the S matrix to account for the mismatches on the ports not connected to the network analyzer.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

High-Temperature Microwave Characterization of Dielectric Rods (Corrections)

J.C. Araneta, M.E. Brodwin and G.A. Kriegsmann. "High-Temperature Microwave Characterization of Dielectric Rods (Corrections)." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 287-288.

In the above paper, the fourth and fifth sentences in the third paragraph from the bottom of the right-half of p. 1332, should read: The bisection method is used twice; once to find the roots of $G(\text{Beta})$, and secondly to find the roots of $F(\text{Beta})$. In looking for the roots of $F(\text{Beta})$, the real part of the numerical value of $y_{\text{sub } c} - y_{\text{sub } m}$ is monitored.

[Click on title for a complete paper.](#)



Abstracts

Accurate Wide-Range Design Equations for the Frequency-Dependent Characteristics of Parallel Coupled Microstrip Lines (Corrections)

M. Kirschning and R.H. Jansen. "Accurate Wide-Range Design Equations for the Frequency-Dependent Characteristics of Parallel Coupled Microstrip Lines (Corrections)." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 288-288.
In the above paper, the following misprints have to be corrected.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Patent Abstracts (Mar. 1985 [T-MTT])

"Patent Abstracts (Mar. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 289-294.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

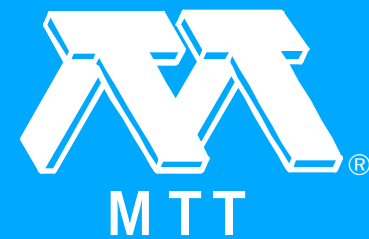
Click on title for a complete paper.



Abstracts

Membership Application (Mar. 1985 [T-MTT])

"Membership Application (Mar. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 295-295.



IEEE

Contents

Publications

Issues

Papers

Authors

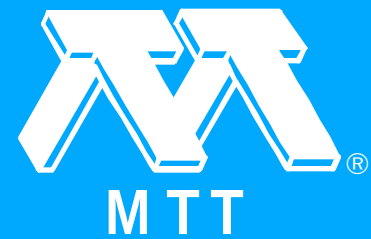
Click on title for a complete paper.



Abstracts

Table of Contents, Preview of April (Mar. 1985 [T-MTT])

"Table of Contents, Preview of April (Mar. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): 296-296.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (Mar. 1985 [T-MTT])

"Back Cover (Mar. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.3 (Mar. 1985 [T-MTT]): b1-b2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (Apr. 1985 [T-MTT])

"Front Cover (Apr. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.4 (Apr. 1985 [T-MTT]): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Editorial (Apr. 1985 [T-MTT])

T. Itoh. "Editorial (Apr. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.4 (Apr. 1985 [T-MTT]): 295-295.

Four years ago, Dr. Reinhard Knerr, then the Transactions Editor, started a new section, Patent Abstracts, in each issue of the Transactions. This section has been acclaimed by many readers. Such accomplishments are due to the effort and dedication of Mr. Norman R. Dietrich. Now Norman is retiring from this Associate Editor position and Mr. John J. Daly will take over the job.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Waveguide and Cavity Oscillations in the Presence of Nonlinear Media

D. Censor. "Waveguide and Cavity Oscillations in the Presence of Nonlinear Media." 1985 Transactions on Microwave Theory and Techniques 33.4 (Apr. 1985 [T-MTT]): 296-301.

This paper deals with the problem of waves in metallic structures containing nonlinear media. Problems of this kind are encountered in the analysis of microwave devices operated at high power levels, or when the constitutive parameters of nonlinear materials are investigated by means of microwave measurements. The Volterra series are the functional analog of the well-known Taylor series for functions. This mathematical tool is adequate for a description of constitutive relations in dispersive nonlinear media. For practical purposes, we deal with weak nonlinearity, such that the series can be truncated. Weak nonlinearity also denotes the absence of shock waves, such that all spectral components of a wave are phase matched (i.e., propagate with the same phase velocity). The main effect of nonlinearity are the production of harmonics, and the dependence of the dispersion equation on the field amplitudes. These are incorporated into the present model. The development of the present model involves some heuristic assumptions which facilitate the derivation of an algebraic dispersion equation. Therefore, the range of validity of the present model will have to be determined by experimental results, when these are available. In waveguides, and cavities in particular, the question of the effect of the geometry and boundary conditions arises, too. It is shown here that nonlinearity induces harmonic modes in rectangular structures. In cylindrical and spherical structures, the geometry affects the budget of harmonics and produces mode coupling.



Abstracts

Functional Approach to Microwave Postproduction Tuning

J.W. Bandler and A.E. Salama. "Functional Approach to Microwave Postproduction Tuning." 1985 Transactions on Microwave Theory and Techniques 33.4 (Apr. 1985 [T-MTT]): 302-310.

This paper deals with the postproduction tuning problem in microwave circuits using the functional approach. The main aspects of the problem are addressed. In particular, we consider the choice of the critical samples of the response, the choice of the most effective tunable parameters, and the description of two functional tuning algorithms. Minimax optimization is used to identify the tuning frequencies, and least-one optimization is employed to minimize the number of tunable parameters. Worst-case analysis is utilized to reduce the size of the problem. The different concepts, definitions, and techniques are illustrated on a simple two-section transformer example. Recent, well-documented, and highly efficient optimization packages are utilized to implement the least-one and minimax optimization problems.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Highly Stable Dielectric Resonator FET Oscillators (Short Papers)

C. Tsironis. "Highly Stable Dielectric Resonator FET Oscillators (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.4 (Apr. 1985 [T-MTT]): 310-314.

The long-term frequency drift of GaAs FET oscillators with temperature has been analyzed theoretically and experimentally in view of stabilization using dielectric resonators. It was found that the dielectric material stability and quality factor should be within certain limits, and, in addition, that the resonance frequency over the temperature characteristic should be quite linear. Such a material has been developed on the basis of BaTi/sub 4/O/sub 9/ and Ba/sub 2/Ti/sub 9/O/sub 20/ , and ultra-stable DRO's with frequency drifts of around ± 100 kHz for -50 to 100°C at 11 GHz (ap ± 0.06 ppm/K) have been realized.

[Click on title for a complete paper.](#)



Abstracts

The Annular Slot Antenna in a Lossy Biological Medium (Short Papers)

R.D. Nevels, C.M. Butler and W. Yablon. "The Annular Slot Antenna in a Lossy Biological Medium (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.4 (Apr. 1985 [T-MTT]): 314-319.

An integral equation is formulated for a coaxially fed annular aperture antenna. The integral equation in terms of the unknown tangential aperture electric field is solved numerically by the Method of Moments. The coaxial feed line is air filled while the exterior region consists of i) air, ii) fat or bone, and iii) muscle. Results are given for the aperture electric field, apparent input admittance, and contours of constant power absorption when the excitation frequency is 2.45 GHz.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Mathematical Expression of the Loading Characteristics of Microwave Oscillators and Injection-Locking Characteristics (Short Papers)

K. Fukumoto, M. Nakajima and J.-I. Ikenoue. "Mathematical Expression of the Loading Characteristics of Microwave Oscillators and Injection-Locking Characteristics (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.4 (Apr. 1985 [T-MTT]): 319-323.

Most of the studies concerning microwave oscillators have so far been based on the Van der Pol oscillator model. However, this model is too simple to obtain good agreement between observation and theory. Our previous paper proposed a new mathematical model which describes the loading characteristics of oscillators more accurately than the Van der Pol model does. In this paper, we have investigated injection-locked microwave oscillators using the mathematical model to find out the relation between the loading and injection-locking characteristics.

[Click on title for a complete paper.](#)



Abstracts

A New Cylindrical Electron Gun for Low-Power Tunable Gyrotrons with High Magnetic Compression Ratios (Short Papers)

J.Y.L. Ma. "A New Cylindrical Electron Gun for Low-Power Tunable Gyrotrons with High Magnetic Compression Ratios (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.4 (Apr. 1985 [T-MTT]): 323-327.

Because of the high magnetic compression ratio required, electrons in the Sydney University tunable gyrotron undergo multiple reflections before entering the resonant cavity. This results in unstable and unpredictable operation. A new cylindrical gun has been designed and fabricated. Computer simulations have predicted favorable broad-band behavior, and this has been confirmed by testing in the tunable gyrotron.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Probe Mutual Impedance in a Rectangular Waveguide (Short Papers)

A. Ittipiboon and L. Shafai. "Probe Mutual Impedance in a Rectangular Waveguide (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.4 (Apr. 1985 [T-MTT]): 327-335.

The mutual impedance between two probes, arbitrarily located on the broad walls of a rectangular waveguide, is derived by using the reaction concept. This mutual impedance is found to depend on the location and height of the probes and their separation distance. For probes of equal height, it reduces to the probe self impedance, as the probe separation distance approaches zero. The convergence of the solution and the effects of a terminating short circuit on the mutual impedance are also studied and discussed.

[Click on title for a complete paper.](#)



Abstracts

Slow-Wave Propagation in Two Types of Cylindrical Waveguides Loaded with a Semiconductor (Short Papers)

C.M. Krowne. "Slow-Wave Propagation in Two Types of Cylindrical Waveguides Loaded with a Semiconductor (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.4 (Apr. 1985 [T-MTT]): 335-339.

For a parallel-plate waveguide and a microstripline loaded with a semiconductor slab of resistive (or active) character, the complex propagation constant γ is determined. γ is found for higher order branches for microwave and millimeter-wave frequencies between 10 and 140 GHz, representing a study of phase velocity slowing (and attenuation).



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Adjustment of In-Phase Mode in Circulators Using Turnstile Junctions (Short Papers)

J. Helszajn and J. Sharp. "Adjustment of In-Phase Mode in Circulators Using Turnstile Junctions (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.4 (Apr. 1985 [T-MTT]): 339-343.

The adjustment of the counter-rotating modes of waveguide circulators using weakly magnetized turnstile junctions is fairly well understood, but some uncertainty about the definition of the in-phase mode still remains. The purpose of this paper is to remedy this situation by experimentally evaluating the in-phase eigenvalue $s_{0/}$ for different filling factors and radial wavenumbers of the in-phase resonator. This is done by using the unitary condition to derive four possible relationships between the in-phase and counter-rotating eigenvalues $s_{0/}$ and $s_{1/}$, and the scattering variable $S_{11/}$, and using one or another of them to form $s_{0/}$. The situation for which $s_{0/}$ is in anti-phase to $s_{1/}$ corresponds to the first classic circulation condition of this class of device and is also derived.

[Click on title for a complete paper.](#)



Abstracts

Optical Injection Locking of BARITT Oscillators (Comments)

A.J. Seeds and J.R. Forrest. "Optical Injection Locking of BARITT Oscillators (Comments)." 1985 Transactions on Microwave Theory and Techniques 33.4 (Apr. 1985 [T-MTT]): 343-344.

We were interested to read the above short paper, but would like to point out that experimental results on the optical injection locking of IMPATT oscillators have indeed been obtained. Over the last few years, reports of such experiments have appeared in the literature from groups in both Europe and the U.S.A.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Integration Method of Measuring Q of the Microwave Resonators (Further Comments)

P.L. Overfelt and D.J. White. "Integration Method of Measuring Q of the Microwave Resonators (Further Comments)." 1985 Transactions on Microwave Theory and Techniques 33.4 (Apr. 1985 [T-MTT]): 344-344.

In reply to our comments concerning his paper.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

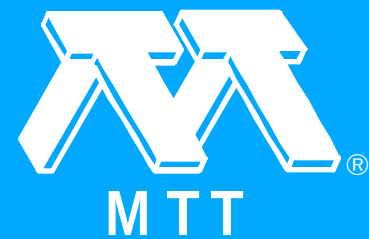
New Narrow-Band Dual-Mode Bandstop Waveguide Filters (Comments)

R.V. Snyder. "New Narrow-Band Dual-Mode Bandstop Waveguide Filters (Comments)." 1985 Transactions on Microwave Theory and Techniques 33.4 (Apr. 1985 [T-MTT]): 344-345.

I have read the above paper with interest, but find some possible discrepancies between the data presented in Fig. 4 and the data presented in Fig. 6. It seems to me that the data in Fig. 4 is probably accurate, reflecting as it does the rejection obtainable through a single pair of ports coupling to a dominant mode propagating waveguide. No matter how the multiple pole filter is synthesized in the concept discussed by the authors, the shunt coupled bandpass filter is coupled only by a pair of couplings to the main line. Thus, the limitation on the depth of the obtainable rejection is determined by two factors: 1) orthogonality of the two coupling irises, and 2) return loss of the two coupling irises.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Fast-Fourier-Transform Method for Calculation of SAR Distributions in Finely Discretized Inhomogeneous Models of Biological Bodies (Comments)

A. Taflov and K.R. Umashankar. "Fast-Fourier-Transform Method for Calculation of SAR Distributions in Finely Discretized Inhomogeneous Models of Biological Bodies (Comments)." *1985 Transactions on Microwave Theory and Techniques* 33.4 (Apr. 1985 [T-MTT]): 345-346.

In the above paper, Borup and Gandhi state in their Section IV that, in addition to their FFT method, "Thus far, the only technique available to compute SAR distributions for models of man is the method of moments (MOM)." In this letter, we would like to point out that there exists a viable alternative numerical approach which has been the subject of intense research and numerous publications over the past ten years. In fact, some nine years ago, an article in the same MTT Transactions discussed the application of this approach to a three-dimensional tissue geometry having 14 079 space cells for purposes of computing the SAR distribution as well as the induced temperatures.

[Click on title for a complete paper.](#)



Abstracts

Application of Boundary-Element Method to Electromagnetic Field Problems (Comments)

N. Morita. "Application of Boundary-Element Method to Electromagnetic Field Problems (Comments)." 1985 Transactions on Microwave Theory and Techniques 33.4 (Apr. 1985 [T-MTT]): 346-347.

The above paper has explained a general formulation of the boundary-element method (BEM) for analyzing two-dimensional electromagnetic fields, and has presented numerical examples for some boundary shapes to show that the BEM is a very powerful numerical method for solving electromagnetic field problems. It gives accurate results with far fewer nodes than the finite-element method, and can also treat field problems in unbounded regions without any additional complications.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)

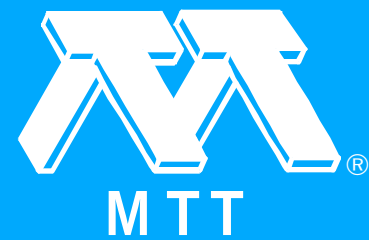


Abstracts

Limitations of the Cubical Block Model of Man in Calculating SAR Distributions (Comments)

M.J. Hagmann. "Limitations of the Cubical Block Model of Man in Calculating SAR Distributions (Comments)." 1985 Transactions on Microwave Theory and Techniques 33.4 (Apr. 1985 [T-MTT]): 347-350.

The above paper raised some serious questions regarding the accuracy of three-dimensional block model solutions obtained using a pulse-function basis. While I am in qualitative agreement with about half of the numerical results presented in the paper, I most strongly disagree with most of the interpretations which the authors have made using those results. It is my belief that it is possible to obtain high accuracy with block model solutions if sufficient care is used in their implementation. I have chosen to use a pulse-function basis with block models of man since this appears to allow the model to have much greater detail than is possible with more elaborate bases.



[Contents](#)

[Publications](#)

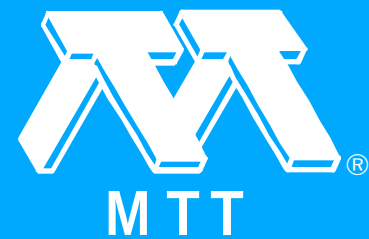
[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Interaction of the Near-Zone Fields of a Slot on a Conducting Sphere with a Spherical Model of Man (Corrections)

S.-G. Zhu and K.M. Chen. "Interaction of the Near-Zone Fields of a Slot on a Conducting Sphere with a Spherical Model of Man (Corrections)." 1985 Transactions on Microwave Theory and Techniques 33.4 (Apr. 1985 [T-MTT]): 350-351.

In the above the conducting paper, we have assumed that on the surface of sphere, the electric field exists only on the slot aperture and zero field elsewhere. This assumption is unrealistic. For a realistic conducting sphere, the slot field can excite a normal component of the electric field on the spherical surface, implying the existence of induced surface charge. With the modified assumption, of the above paper should be modified as follows.

[Click on title for a complete paper.](#)



Abstracts

Technology Summaries for Microwave Theory and Techniques--1983 (Corrections)

J.B. Horton. "Technology Summaries for Microwave Theory and Techniques--1983 (Corrections)." 1985 Transactions on Microwave Theory and Techniques 33.4 (Apr. 1985 [T-MTT]): 351-351.

In the October 1984 IEEE Transactions on Microwave Theory and Techniques, the above paper, a technology summary edited by B. E. Spielman, was published. This paper included inputs from the Technical Committees MTT-6, MTT-7, MTT-15, and MTT-16. A correction should be made to the "Microwave Systems--1983" section of the paper, pp. 1377-1378.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Patent Abstracts (Apr. 1985 [T-MTT])

"Patent Abstracts (Apr. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.4 (Apr. 1985 [T-MTT]): 352-355.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

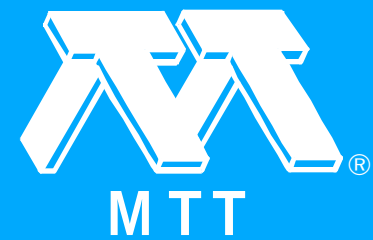
Click on title for a complete paper.



Abstracts

Membership Application (Apr. 1985 [T-MTT])

"Membership Application (Apr. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.4 (Apr. 1985 [T-MTT]): 356-357.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

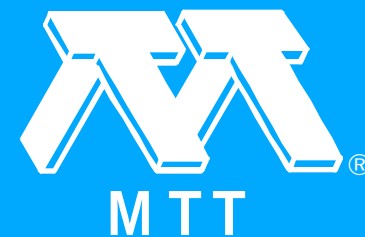
Click on title for a complete paper.



Abstracts

IEEE Annual Combined Index (Advertisement) (Apr. 1985 [T-MTT])

"IEEE Annual Combined Index (Advertisement) (Apr. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.4 (Apr. 1985 [T-MTT]): 357-357.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

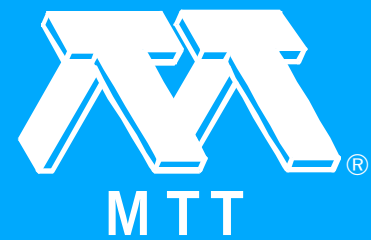
Click on title for a complete paper.



Abstracts

Table of Contents, Preview of May (Apr. 1985 [T-MTT])

"Table of Contents, Preview of May (Apr. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.4 (Apr. 1985 [T-MTT]): 358-358.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

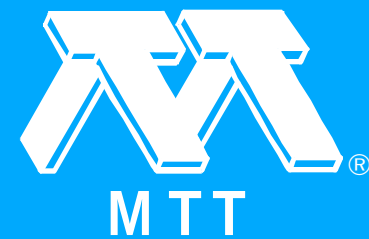
Click on title for a complete paper.



Abstracts

Back Cover (Apr. 1985 [T-MTT])

"Back Cover (Apr. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.4 (Apr. 1985 [T-MTT]): b1-b2.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

Front Cover (May 1985 [T-MTT])

"Front Cover (May 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

The Reflection from an Open-Ended Rectangular Waveguide Terminated by a Layered Dielectric Medium

V. Teodoridis, T. Sphicopoulos and F.E. Gardiol. "The Reflection from an Open-Ended Rectangular Waveguide Terminated by a Layered Dielectric Medium." 1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): 359-366.

The measurement of reflection from an open-ended waveguide is a simple and nondestructive technique for determining the dielectric properties of materials. A flange-mounted waveguide is considered, the flange being pressed on an unknown material which may be of finite or infinite thickness. The relationship linking the reflection coefficient to the dielectric properties is obtained from a theoretical analysis of the electromagnetic field in the vicinity of the aperture. The theory includes the effects of both cross polarization and higher order modes. An integral equation is obtained, the kernel of which is the dyadic Green function in each medium. The method of characteristic modes is used for the numerical computation. The theoretical results are in good agreement with experimental measurements. Furthermore, a simple and handy technique for data inversion is provided.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Fast Microwave Detectors Based on the Interaction of Holes with Phonons

L.F. Jelsma. "Fast Microwave Detectors Based on the Interaction of Holes with Phonons." 1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): 367-372.

Experimental results and a proposed model are discussed in this paper on a new microwave detector which has subnanosecond response times and a pulsed power measuring capability between 0.5 W and >10 kW for a frequency band larger than 0-50 GHz. Our model suggests that electromagnetic energy is absorbed by holes in p-type germanium (Ge). This absorption increases the mobile hole temperature above the lattice temperature. The absorbed energy is determined by measuring the change in average mobility of the holes in the nonequilibrium state. We experimentally observed greater than > 50-V output pulses for kilowatt microwave input pulses to the detector and a bias current of 1 A. The detector exhibited a linear response between 0.5 W and 1 kW. We propose that the voltage pulses in the p-type Ge detector are caused by nonequilibrium holes exchanging energy with the phonons in the crystal lattice. This energy exchange modulates the hole mobility.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Double Dielectric-Slab-Filled Waveguide Phase Shifter

F. Arndt, A. Frye, M. Wellnitz and R. Wirsing. "Double Dielectric-Slab-Filled Waveguide Phase Shifter." 1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): 373-381.

A field theory method based on the orthogonal expansion into eigenmodes is presented for the design of double dielectric-slab-filled waveguide phase shifters with linearly tapered sections. Prototypes of 90° differential phase shift with reference to a corresponding empty waveguide of the same length achieved typically about $\pm 4^\circ$ phase error and less than -30-dB input reflection within ± 5 -percent bandwidth, for WR 102-band (7-11 GHz) through WR 28-band (26.5-40 GHz) waveguides. Design curves for differential phase shifts of 12.25°, 22.5°, 45°, 90°, 180°, and 270° are given. Utilizing the differential phase compensation effect of the dispersive behavior of the dielectric-filled and empty reference waveguides, the phase error is only $\pm 1^\circ$ within ± 8.5 -percent bandwidth. Further investigations include composite phase shifters, mechanical lateral displacement, and tolerance influences. An experimental 90° phase shifter for 14-GHz midband frequency shows good agreement between theory and measurements.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Synthesis of Quarter-Wave Coupled Junction Circulators with Degrees 1 and 2 Complex Gyrator Circuits

J. Helszajn. "Synthesis of Quarter-Wave Coupled Junction Circulators with Degrees 1 and 2 Complex Gyrator Circuits." 1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): 382-390.

The complex gyrator immittance of circulators for which the in-phase eigennetwork is commensurate with those of the degenerate counter-rotating ones, and which may be idealized by a frequency-independent open- or short-circuited boundary condition, may be realized as a 1-port STUB-resistor network of degree 1. If the frequency variation of this eigennetwork cannot be neglected compared to those of the other two, the gyrator circuit is of degree 2. There are altogether eight possible complex gyrator circuits, each of which explicitly exhibits the eigennetworks of the device. A knowledge of that, applicable in any given situation, is mandatory for design.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Rigorous Hybrid-Mode Analysis of the Transition from Rectangular Waveguide to Shielded Dielectric Image Guide

J. Strube and F. Arndt. "Rigorous Hybrid-Mode Analysis of the Transition from Rectangular Waveguide to Shielded Dielectric Image Guide." 1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): 391-401.

The transition waveguide to shielded and dielectric image guide is analyzed by the rigorous hybrid-mode field expansion technique where higher order mode coupling effects are taken into account directly, also below the corresponding cutoff frequency. The solution of the related eigenvalue problem includes waves with a complex propagation constant although the guide is assumed to be lossless. Calculated diagrams of the propagation constant as a function of frequency, as well as of the permittivity, illustrate the complicated mode conversion between evanescent modes, complex waves, backward waves, and propagating waves. For the three-dimensional scattering problem, the calculated magnitude of the input reflection coefficient agrees well with measurements, whereas the transmission-line theory applied to this structure leads to wrong results.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Predistortion Techniques for Multicoupled Resonator Filters (Short Papers)

A.E. Williams, W.G. Bush and R.R. Bonetti. "Predistortion Techniques for Multicoupled Resonator Filters (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): 402-407.

This paper presents predistorted, lossy design techniques as applied to general, multicoupled, resonator networks. The analytical procedure predistorts the poles of the transfer function to recover the lossless passband flatness at the expense of insertion loss. Experimental results on 4- and 6-pole elliptic-function filters confirm the validity of the theory. These techniques should lead to significant system efficiencies in applications such as satellite transponder input multiplexer.

[Click on title for a complete paper.](#)



Abstracts

Singularity Extraction from the Electric Green's Function for a Spherical Resonator (Short Papers)

M. Bressan and G. Conciauro. "Singularity Extraction from the Electric Green's Function for a Spherical Resonator (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): 407-414.

The electric dyadic Green's function for a spherical resonator is expressed as a sum of two dyadics given in closed form and a dyadic given in the form of a series. The first two dyadics diverge at the source point and they represent a low-frequency approximation for the Green's function, valid up to frequencies moderately lower than the resonant frequency of the dominant mode. The dyadic given in the form of a series is finite at the source and takes into account cavity resonances. It is given either as a one-index series, whose terms are transcendental functions of the frequency, or as a double series, whose terms are rational functions of the frequency. Both series have very good converging properties everywhere inside the cavity.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Characteristic Impedance Design Considerations for a High-Speed Superconducting Packaging System (Short Papers)

J. Temmyo and H. Yoshikiyo. "Characteristic Impedance Design Considerations for a High-Speed Superconducting Packaging System (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): 414-417.

The characteristic impedance influences of superconducting packaging systems (in particular, Josephson packaging) on the degradation in transmitted signal rise time, amplitude distortions and crosstalk, signal propagation delay, and amplitude decay at the inductive and resistive connectors with matched capacitors are quantitatively evaluated by using the ASTAP computer simulation. The present choice of the characteristic impedance $Z_0 = 10-12 \Omega$ for a superconducting stripline is inadequate. Higher impedances of $Z_0 = 40-50 \Omega$ are useful from the standpoint of noise performance improvement. At the same time, a higher impedance choice can make the ground connector numbers of each connector decrease, which is preferable for a large-scale packaging system.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Calculation of High-Resolution SAR Distributions in Biological Bodies Using the FFT Algorithm and Conjugate Gradient Method (Short Papers)

D.T. Borup and O.P. Gandhi. "Calculation of High-Resolution SAR Distributions in Biological Bodies Using the FFT Algorithm and Conjugate Gradient Method (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): 417-419.

A new method for the calculation of absorption in inhomogeneous, lossy dielectrics is presented. In this method, the convolutional nature of the electric-field integral equation is exploited by use of the FFT algorithms and the conjugate gradient method (CGM). The method is illustrated by solving for the SAR distribution for an anatomical cross transsection through the human eyes at 1 GHz.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Characteristic Impedance of the Slab Line with an Anisotropic Dielectric (Short Papers)

H. Shibata, Y. Kikuchi and R. Terakado. "Characteristic Impedance of the Slab Line with an Anisotropic Dielectric (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): 419-421.

The characteristic impedance of the slab line with a circular conductor having an anisotropic dielectric is presented by rising the affine and conformal transformations. Moreover, a simpler approximate formula of the impedance expressed in term of $\epsilon_{\parallel}$, $\epsilon_{\perp}$, and r/h is also presented, where $\epsilon_{\parallel}$, $\epsilon_{\perp}$, r , and h , are the principal axes-relative dielectric constants of the anisotropic dielectric, the inner conductor radius, and the half length between ground planes, respectively.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Edge-Guided Magnetostatic Mode in a Ridged-Type Waveguide (Short Papers)

M. Miyazaki, K. Yashiro and S. Ohkawa. "Edge-Guided Magnetostatic Mode in a Ridged-Type Waveguide (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): 421-424.

A ridged-type magnetostatic waveguide is analyzed using the boundary element method. A bias magnetic field is applied perpendicularly to the surface of an yttrium-iron-garnet (YIG) film grown on a gadolinium-gallium-garnet (GGG) substrate. The dispersion curves and the potential profiles obtained in this paper show that the mode has a strong nonreciprocal property and is a kind of edge-guided mode which propagates along either side of the ridge, depending upon the direction of the bias field and the direction of the wave propagation. In addition, the authors emphasize the fact that the boundary element method is useful for analysis of a complex structure in the field of magnetostatic wave (MSW) devices.

[Click on title for a complete paper.](#)

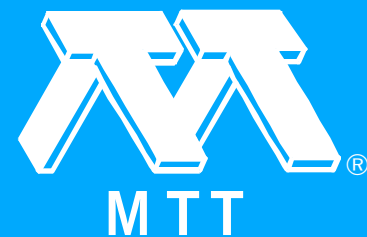


Abstracts

A New Recurrence Method for Determining the Green's Function of Planar Structures with Arbitrary Anisotropic Layers (Short Papers)

R. Marques, M. Horno and F. Medina. "A New Recurrence Method for Determining the Green's Function of Planar Structures with Arbitrary Anisotropic Layers (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): 424-428.

A method to determine the Green's functions in the spectral domain is developed. It is suitable for solving the matrix Green's function numerically for an arbitrary anisotropic N-layered dielectric structure. The method is suitable for computation of the characteristic parameters of MIC lines having anisotropic multilayered substrates or superstrates. As an application, the phase velocities of single and coupled microstrips, with a constant gradient of anisotropy along the normal to the interfaces, have been calculated.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Theoretical and Experimental Study of a Novel H-Guide Transverse Slot Antenna (Short Papers)

M. Kisliuk and A. Axelrod. "Theoretical and Experimental Study of a Novel H-Guide Transverse Slot Antenna (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): 428-433.

Transverse slots in the "upper" plate of a dielectric-loaded parallel plane waveguide (H-guide) operating in the dominant mode (zero cutoff frequency) are proposed as slot antennas. A new theoretical approach to the analysis of a single-slot antenna is presented, leading to explicit expressions for the antenna input impedance and radiation efficiency. The computed values of the VSWR and radiation efficiency are in good agreement with laboratory measurements. The radiation efficiency of a single slot exceeds 10 percent in the 8-11-GHz frequency band, reaching a 50-percent theoretically predicted maximum at the slot resonance frequency, when the guide is terminated by a matched load. Experimental checks prove that the leakage, or parasitic, radiation power level is less than -40 dB relative to the measured radiated power.

[Click on title for a complete paper.](#)



Abstracts

Large-Signal Equivalent-Circuit Model of a GaAs Dual-Gate MESFET Mixer (Short Papers)

R.E. Miles and M.J. Howes. "Large-Signal Equivalent-Circuit Model of a GaAs Dual-Gate MESFET Mixer (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): 433-436.

A large-signal equivalent-circuit model of a GaAs MESFET mixer containing twelve elements, of which eight are voltage-dependent, is solved in the time domain for local oscillator and frequencies of 9.5 GHz and 10.0 GHz, respectively. The results variation of conversion gain with local oscillator and signal power and are in good agreement with measured values. The model is formulated in such a way that material/device/circuit interactions can be yielding information on the preferred device structures and biasing conditions.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Single-Post Inductive Obstacle in Rectangular Waveguide (Comments)

J.H. Cloete. "Single-Post Inductive Obstacle in Rectangular Waveguide (Comments)." 1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): 437-437.

Leviatan et al. have made, in the above paper, an important contribution to the theory of posts in rectangular waveguide, but unfortunately failed to reference the key paper by Abele. Abele's technique was found to yield excellent results when used to design inductive posts for rectangular waveguide bandpass filters, and should be brought to the attention of readers of the Transactions.

[Click on title for a complete paper.](#)



Abstracts

A New Method for Calculating TE and TM Cutoff Frequencies of Uniform Waveguides with Lunar or Eccentric Annular Cross Section (Comments)

P.A.A. Laura and R.H. Gutierrez. "A New Method for Calculating TE and TM Cutoff Frequencies of Uniform Waveguides with Lunar or Eccentric Annular Cross Section (Comments)." 1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): 437-437.

The purpose of the present Letter is twofold: first, to congratulate the author for his excellent paper and, second, to discuss briefly the accuracy of some of his results in light of some numerical experiments performed by the authors.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

E-Plane Integrated Circuit Filters with Improved Stopband Attenuation (Comments)

F. Arndt, J. Bornemann, R. Vahldieck and D. Grauerholz. "E-Plane Integrated Circuit Filters with Improved Stopband Attenuation (Comments)." 1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): 437-437.

In the above paper, in rows 1 and 2 of Table 1 on p. 1392, the optimized design data should read as given below. These data relate to the filter performances shown in Figs. 3 and 4 (midband frequency $f_{\text{sub } 0} = 38.66 \text{ GHz}$). The data originally reportedl pertain to filters not presented in the figures, with a midband frequency of $f_{\text{sub } 0} = 39.5 \text{ GHz}$.

Click on title for a complete paper.



Abstracts

Patent Abstracts (May 1985 [T-MTT])

"Patent Abstracts (May 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): 438-442.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Call for Papers - Phased Arrays for Hyperthermia Treatment of Cancer (May 1985 [T-MTT])

"Call for Papers - Phased Arrays for Hyperthermia Treatment of Cancer (May 1985 [T-MTT])."
1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): 443-443.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

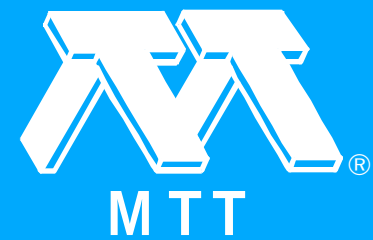
Click on title for a complete paper.



Abstracts

IEEE Annual Combined Index (Advertisement) (May 1985 [T-MTT])

"IEEE Annual Combined Index (Advertisement) (May 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): 444-444.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

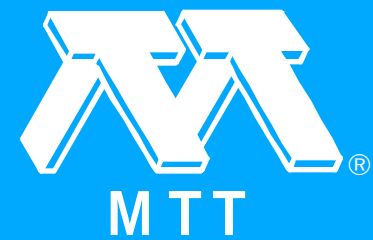
Click on title for a complete paper.



Abstracts

Membership Application (May 1985 [T-MTT])

"Membership Application (May 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): 445-445.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

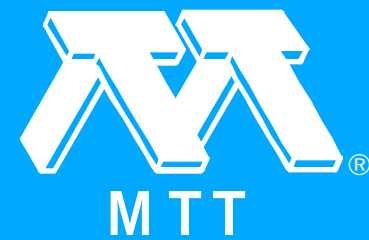
Click on title for a complete paper.



Abstracts

Table of Contents, Preview of June (May 1985 [T-MTT])

"Table of Contents, Preview of June (May 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): 446-446.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

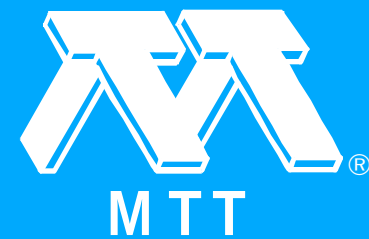
Click on title for a complete paper.



Abstracts

Back Cover (May 1985 [T-MTT])

"Back Cover (May 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.5 (May 1985 [T-MTT]): b1-b2.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Front Cover (Jun. 1985 [T-MTT])

"Front Cover (Jun. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.6 (Jun. 1985 [T-MTT]): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Responses of Electric-Field Probes Near a Cylindrical Model of the Human Body

D. Misra and K.-M. Chen. "Responses of Electric-Field Probes Near a Cylindrical Model of the Human Body." 1985 Transactions on Microwave Theory and Techniques 33.6 (Jun. 1985 [T-MTT]): 447-452.

A theoretical and experimental study on the response of an E-field probe near a cylindrical model of the human body has been conducted. The body is simulated with a long cylindrical dielectric shell filled with saline water, and a single E-field probe oriented in various directions, or an orthogonal probe is heated near its surface. The model with the probe is illuminated by a TE or TM plane EM wave. The response of the probe was found to be strongly dependent on the probe location with respect to the direction of the incident EM wave, the probe separation from the model surface, the probe orientation and the polarization of the incident EM wave. The effect due to the dielectric shell on the probe response, with and without the presence of saline water, was carefully investigated. In all cases, the agreement between theory and experiment was found to be very good.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

A Technique for Extending the Dynamic Range of the Dual Six-Port Network Analyzer

J.R. Juroshek and C.A. Hoer. "A Technique for Extending the Dynamic Range of the Dual Six-Port Network Analyzer." 1985 Transactions on Microwave Theory and Techniques 33.6 (Jun. 1985 [T-MTT]): 453-459.

The dynamic range of the six-port type of automatic network analyzer is typically limited to measuring two-port devices with a transmission coefficient S_{12} in the range of 0 to -60 dB. The following describes a subcarrier approach for extending the dynamic range of the dual six-port network analyzer. The subcarrier is generated by inserting a 10-kHz, biphasic modulator ahead of one of the six-ports. With the subcarrier approach, measurements of S_{12} in the range of -60 to -100 dB can be made. Test results are presented showing measurements of $S_{12} = -80$ dB with a precision of ± 0.05 dB or better, and an accuracy of ± 0.16 dB or better at 3 GHz. Measurement results are also presented showing the dynamic range achievable with thermistor and barretter detectors. Key Words: barretter power detectors; diode power detectors; impedance measurements; microwave network analyzer; six-port network analyzer; thermistor power detectors.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

The Intrinsic Noise Figure of the MESFET Distributed Amplifier

C.S. Aitchison. "The Intrinsic Noise Figure of the MESFET Distributed Amplifier." 1985 Transactions on Microwave Theory and Techniques 33.6 (Jun. 1985 [T-MTT]): 460-466.

This paper calculates the intrinsic noise figure of the MESFET distributed amplifier assuming, for simplicity, only the Van der Ziel gate and drain noise sources, and produces an expression for the noise figure of a distributed amplifier containing n identical devices. For large gain and large n , a simple expression exists for the product $nZ/\pi g$, where $Z/\pi g$ is the π -characteristic impedance of the gate line, which minimizes the overall noise figure of the amplifier. This approximate expression is compared with the corresponding expression for a resonant amplifier using the same MESFET with the same noise sources and with the optimum source impedance for minimum noise figure. Although the resonant amplifier has a slightly lower noise figure, the need to use a circulator to remove the mismatch associated with the optimum source impedance removes this slight advantage.

[Click on title for a complete paper.](#)

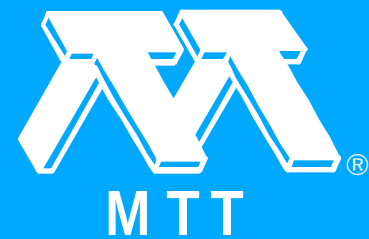


A Vlasov Description of the Gridded Gap-Electron Flow Interaction

S.A. Kheifets, J. Jaeger and S.S. Yu. "A Vlasov Description of the Gridded Gap-Electron Flow Interaction." 1985 Transactions on Microwave Theory and Techniques 33.6 (Jun. 1985 [T-MTT]): 467-476.

Self-consistent solutions of the system of Vlasov equations are found for the case when the electric field in the gap does not depend on the longitudinal coordinate, The solution is valid: a) for an arbitrary nonrelativistic particle distribution in velocity and time at the gap entrance, b) for any gap length, c) for any beam current, and d) for a broad class of field dependence on time. In the region of applicability of the small-signal approximation (small beam current, small transit angle of the gap), the solution derived reproduces the results of the small-signal approximation. Numerical results for the input klystron cavity and for an idler cavity are given and compared with the calculations in small-signal approximation. Possible applications of this formulation are discussed. In particular, we argue that the Vlasov description provides a suitable framework for developing one-dimensional models of a multiple-cavity klystron. These models will be valid for huge signals, and are useful therefore for predicting the performance of high-power klystrons.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

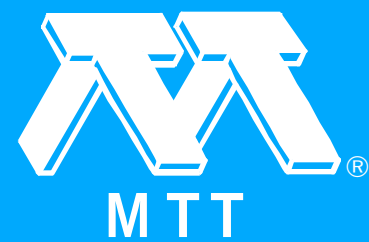
On the Variational Reaction Theory for Dielectric Waveguides

R.-B. Wu and C.H. Chen. "On the Variational Reaction Theory for Dielectric Waveguides." 1985 Transactions on Microwave Theory and Techniques 33.6 (Jun. 1985 [T-MTT]): 477-483.

By the reaction concept, a variational theory is established for treating the scattering and propagation problem associated with a dielectric waveguide which is illuminated by an obliquely incident plane wave. The theory is characterized by properly absorbing radiation and continuity conditions into the variational equation. This equation is then solved by the finite-element method together with the frontal solution technique. In this paper, the propagation constants of the guide are obtained by the procedure of searching for the poles of the scattering coefficients when an inhomogeneous wave is incident. Two most attractive features of this approach are the avoidance of the spurious modes and the accuracy of the results even for the modes near cutoff. Although the proposed theory may be applied to dielectric waveguides of arbitrary cross section, only the one with rectangular shape is investigated in detail. Also included in this study are numerical results for the propagation constants in discussing the effects due to differences in refractive indices, aspect ratios, and index profiles.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Magnetostatic Surface-Wave Propagation in Ferrite Thin Films with Arbitrary Variations of the Magnetization Through the Film Thickness

N.E. Buris and D.D. Stancil. "Magnetostatic Surface-Wave Propagation in Ferrite Thin Films with Arbitrary Variations of the Magnetization Through the Film Thickness." 1985 Transactions on Microwave Theory and Techniques 33.6 (Jun. 1985 [T-MTT]): 484-491.

A variational formulation for the magnetostatic problem in an anisotropic and inhomogeneous region bounded by perfect conductors is described. The method is applied to the special case of magnetostatic surface-wave (MSSW) modes propagating in a ferrite thin film with arbitrary variations of the saturation magnetization through the film thickness. Methods for calculating dispersion relations, delay characteristics, and magnetostatic potential functions are discussed. The functional that is minimized is interpreted in terms of contributions to the mode energy. Also, concepts pertaining to homogeneous films such as mode bandwidth and dimensional scaling effects are extended to the general inhomogeneous case. Calculations for a two-layer film with a gradual transition region and an ion-implanted film are presented as numerical examples.

Click on title for a complete paper.

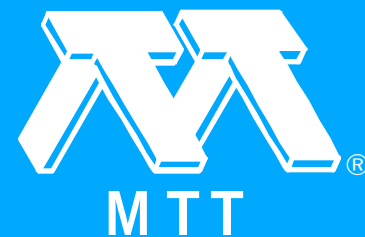


Abstracts

Active Matching with Common-Gate MESFET's

K.B. Niclas. "Active Matching with Common-Gate MESFET's." 1985 Transactions on Microwave Theory and Techniques 33.6 (Jun. 1985 [T-MTT]): 492-499.

The electrical performance of the common-gate MESFET input stage across multi-octave frequency bands has been analyzed. Based on the device's common-source parameters, formulas for the circuit's admittance and noise parameters have been derived that allow one to calculate its gain, reflection coefficients, and noise figure. The influence of the circuit elements on the input stage's performance, especially on the noise figure, are studied. Finally, the electrical behavior of a two-stage unit consisting of a common-gate input stage followed by a common-source amplifier stage is discussed.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Characteristic Modes for Aperture Problems

R.F. Harrington and J.R. Mautz. "Characteristic Modes for Aperture Problems." 1985 Transactions on Microwave Theory and Techniques 33.6 (Jun. 1985 [T-MTT]): 500-505.

A theory of characteristic modes is developed for problems consisting of two regions coupled by an aperture. The modes are derived from a weighted eigenvalue equation whose eigenfunctions define a set of real expansion functions for the equivalent magnetic current over the aperture region and whose eigenvalues are the modal aperture admittances. A modal solution is obtained for an aperture of arbitrary size and shape coupling two regions of arbitrary size and shape. The theory provides a rigorous basis for the augmentation of the Bethe-hole theory by radiation conductance terms, for its extension to apertures of larger electrical size, and for its extension to apertures in nonplanar conducting surfaces.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Experimental Study of Dielectric Waveguide Y-Junctions for Millimeter-Wave Integrated Circuits

K. Ogusu. "Experimental Study of Dielectric Waveguide Y-Junctions for Millimeter-Wave Integrated Circuits." 1985 Transactions on Microwave Theory and Techniques 33.6 (Jun. 1985 [T-MTT]): 506-509.

Symmetric and asymmetric Y-junctions have been fabricated from rectangular dielectric image line, and the transmission and reflection characteristics have been measured in the 20-26-GHz range. The tested symmetric Y-junction operates as a near 3-dB power divider for the junction half-angle below $\sim 20^\circ$. The maximum allowable junction angle of the symmetric Y-junction is discussed, which is very important for millimeter-wave integrated-circuit applications. It is shown that the asymmetric Y-junction can be used as a directional coupler because of the controllable splitting ratio and high isolation. The results for the asymmetric Y-junction with a gap are also presented.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

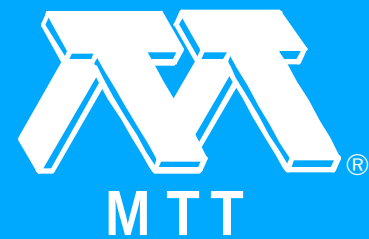
800-MHz High-Performance SAW Filter Using New Resonant Configuration

M. Hikita, H. Kojima, T. Tabuchi and Y. Kinoshita. "800-MHz High-Performance SAW Filter Using New Resonant Configuration." 1985 Transactions on Microwave Theory and Techniques 33.6 (Jun. 1985 [T-MTT]): 510-518.

A new high-performance surface-acoustic-wave (SAW) filter for use in mobile telephones is presented in this paper. The design for the actual realization of the new filter is examined, from the new filter configuration to the final device operation. A low-loss weighting technique in an interdigital transducer (IDT), a new resonant structure, computer simulation procedures, and material properties are treated. Experimental results with this SAW filter included an 830-MHz center frequency, 3-percent bandwidth, insertion loss of as low as 3.5 ~ 4.0 dB, and 50-dB sidelobe suppression filter.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Measurements of Microwave Conductivity and Dielectric Constant by the Cavity Perturbation Method and Their Errors

S.-H. Chao. "Measurements of Microwave Conductivity and Dielectric Constant by the Cavity Perturbation Method and Their Errors." 1985 Transactions on Microwave Theory and Techniques 33.6 (Jun. 1985 [T-MTT]): 519-526.

The theory and technique of the cavity perturbation method for measuring the conductivity and dielectric constant of materials are reviewed. An analytical formula for calculating the errors of the conductivity and dielectric constant caused by the measured error in the resonant frequency and quality factor are derived. This formula can be used for both rectangular and cylindrical cavities. The results of measurements on silicon samples are presented to illustrate this analysis.

[Click on title for a complete paper.](#)



Abstracts

Analysis of Multilayer Interconnection Lines for a High-Speed Digital Integrated Circuit

Y. Fukuoka, Q. Zhang, D.P. Neikirk and T. Itoh. "Analysis of Multilayer Interconnection Lines for a High-Speed Digital Integrated Circuit." 1985 Transactions on Microwave Theory and Techniques 33.6 (Jun. 1985 [T-MTT]): 527-532.

A general method for the analysis of multilayer interconnection lines is presented. This method is capable of predicting frequency dispersion of the transmission-line parameters and is useful for accurately investigating the coupling phenomena among adjacent lines and the input and output impedance relations.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

High-Output, Single- and Dual-Diode, Millimeter-Wave Frequency Doublers

J.W. Archer and M.T. Faber. "High-Output, Single- and Dual-Diode, Millimeter-Wave Frequency Doublers." 1985 Transactions on Microwave Theory and Techniques 33.6 (Jun. 1985 [T-MTT]): 533-538.

A balanced, dual-diode varactor frequency doubler for 85-116 GHz is described and its performance compared to that of a single-diode device. The balanced doubler can provide a minimum of 18 mW between 85 and 116 GHz for 190-mW maximum safe input power, while the single-diode doubler using the same diode-type exhibits a minimum output power of 10 mW over the same frequency range for a maximum safe input power of 90 mW. An improved single-diode design using a higher break-down voltage diode has achieved a minimum output power of 18 mW between 97 and 116 GHz for a maximum safe input power of 150 mW. These devices have been used in cascade with a frequency tripler to implement a 6X multiplier chain to 310-350 GHz with a minimum output power in this submillimeter band of 0.6 mW.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Transition from Rectangular to Nonradiating Dielectric Waveguide (Short Papers)

J.A.G. Malherbe, J.H. Cloete and I.E. Losch. "A Transition from Rectangular to Nonradiating Dielectric Waveguide (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.6 (Jun. 1985 [T-MTT]): 539-543.

A transition between standard X-band waveguide and non-radiating dielectric (NRD) waveguide is described. It consists of a transition from air-filled rectangular waveguide to reduced-width dielectric-filled waveguide, cascaded with a transition to NRD. Both transitions are theoretically designed to provide both mode matching as well as a low reflection coefficient. The composite transition can be used for measurements in NRD while making use of conventional waveguide test equipment.

[Click on title for a complete paper.](#)



Abstracts

A Low-Noise GaAs Monolithic Broad-Band Amplifier Using a Drain Current Saving Technique (Short Papers)

K. Osafune, N. Kato, T. Sugeta and Y. Yamao. "A Low-Noise GaAs Monolithic Broad-Band Amplifier Using a Drain Current Saving Technique (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.6 (Jun. 1985 [T-MTT]): 543-545.

A low-noise and low-power GaAs monolithic broad-band amplifier is proposed and has been developed, which has a new cascade connection with a large gate-width input FET and the other circuits in such a way that the output stage current flows through the input FET. The fabricated amplifier operates on +5-V single supply voltage, and provides a 3.3-dB noise figure, less than 180-mW power dissipation, and a 10-MHz--2.0-GHz bandwidth with 16-dB gain.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Polygonal Coaxial Line with Round Center Conductor (Short Papers)

W. Lin. "Polygonal Coaxial Line with Round Center Conductor (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.6 (Jun. 1985 [T-MTT]): 545-550.

The complex potential function $W = A (\ln z + C / \sum_{n=1}^N 1/z^n)$ generates a zero-potential line approximating a regular polygon of N sides very closely, except in the nearly field-free region. By means of this function we work out the characteristic impedance, the power-carrying capacity, and the attenuation constant of the polygonal line of N sides with a round inner coaxial conductor in a closed form of elementary functions with good accuracy compared to more complex solutions. Results for $N = 3$ are believed to be nearly as good as those available in the literature.

[Click on title for a complete paper.](#)



Abstracts

Impedance of an Elliptic Conductor Arbitrarily Located Between Ground Planes Filled with Two Dielectric Media (Short Papers)

K.V.S. Rao and B.N. Das. "Impedance of an Elliptic Conductor Arbitrarily Located Between Ground Planes Filled with Two Dielectric Media (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.6 (Jun. 1985 [T-MTT]): 550-554.

This paper presents a method of determining the characteristic impedance of an ellipse arbitrarily located between parallel conducting planes when the region between the planes is filled with two different dielectric media. The same generalized formulation is then extended to the case when one of the ground planes is moved to infinity. The impedance data for various locations of the dielectric interface with respect to the conductor of elliptic and circular cross sections are presented. The results of some of the special cases are compared with those available in the literature.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

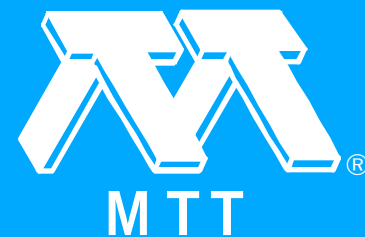


Abstracts

An Evanescent Mode Waveguide Bandpass Filter at Q-Band (Comments)

J. Howard. "An Evanescent Mode Waveguide Bandpass Filter at Q-Band (Comments)." 1985 Transactions on Microwave Theory and Techniques 33.6 (Jun. 1985 [T-MTT]): 555-556.

It was with considerable surprise that I discovered my results published in the above paper. The design, development of the Craven (Evanescent waveguide)-type filter published in the forementioned paper was solely my effort. The required testing was done mainly by M. Noyes, presently with RCA Astro Electronics, Princeton, NJ. Mr. Noyes also contributed to the mechanical changes necessary for both the ease of tuning, the reduction of loss from the filter. The work was completed on April 16, 1982.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Single-Post Inductive Obstacle in Rectangular Waveguide (Reply to Comments)

Y. Leviatan, P.G. Li, A.T. Adams and J. Perini. "Single-Post Inductive Obstacle in Rectangular Waveguide (Reply to Comments)." 1985 Transactions on Microwave Theory and Techniques 33.6 (Jun. 1985 [T-MTT]): 556-556.

In reply to the above comment, we would like to say that a more complete survey of previous work with inductive posts, which includes that of Abele, is presented in our paper on multiple-post inductive obstacles.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Patent Abstracts (Jun. 1985 [T-MTT])

"Patent Abstracts (Jun. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.6 (Jun. 1985 [T-MTT]): 557-561.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

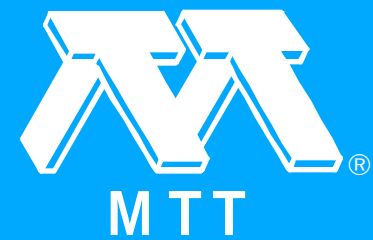
Click on title for a complete paper.



Abstracts

Table of Contents, Preview of July (June 1985 [T-MTT])

"Table of Contents, Preview of July (June 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.6 (Jun. 1985 [T-MTT]): 562-562.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Back Cover (Jun. 1985 [T-MTT])

"Back Cover (Jun. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.6 (Jun. 1985 [T-MTT]): b1-b2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (Jul. 1985 [T-MTT])

"Front Cover (Jul. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.7 (Jul. 1985 [T-MTT]): f1-f2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

A New Four-Port Automatic Network Analyzer: Part I-- Description and Performance

K. Brantervik and E.L. Kollberg. "A New Four-Port Automatic Network Analyzer: Part I-- Description and Performance." 1985 Transactions on Microwave Theory and Techniques 33.7 (Jul. 1985 [T-MTT]): 563-568.

A four-port automatic network analyzer based upon a new concept has been tested in the 8-12-GHz range. An essential feature of this analyzer, compared with the six-port systems, is that only one detector is used, and one electronically adjustable reference load is added. In this paper, an electronically adjustable short circuit is used as the reference load. Hence, the analyzer is comparatively simple and compact since only a few components are required. Moreover, the quality of the components can be moderate. A small desk-top computer (HP 85) is satisfactory for handling measurement data, adjusting the short circuit, and presenting the result. A simplified theory required for the calibration and measurement procedure for the determination of the magnitude and the phase of an unknown load is included in this report, and experiments illustrate how the accuracy is improved when the calibration is gradually refined. The expected accuracy of the network analyzer is discussed in some detail. The simple design and the moderate demands on the component quality means that it should be ideal for millimeter-wave frequencies.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A New Four-Port Automatic Network Analyzer: Part II--Theory

K. Brantervik. "A New Four-Port Automatic Network Analyzer: Part II--Theory." 1985 Transactions on Microwave Theory and Techniques 33.7 (Jul. 1985 [T-MTT]): 569-575.

This paper presents a comprehensive theory of the new four-port network analyzer using only one power detector and one electronically adjustable reference load, (e.g., an adjustable short circuit or a varactor diode) described in a companion paper. A method based on annihilation operators for describing an n-port is introduced. This method is found convenient for analyzing different measurement situations. Hence, schemes for reflection measurements and transmission measurements are analyzed in detail. For evaluation of the reflection (or transmission) coefficient, it is shown that seven (or five) parameters defining the system have to be determined. Calibration schemes for precision reflection and transmission measurements are described.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

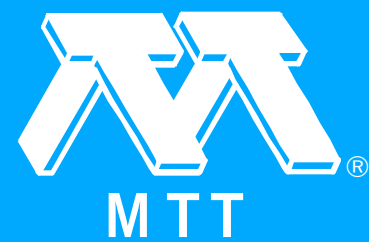
Finite-Element Analysis of Dielectric Waveguides with Curved Boundaries

D. Welt and J. Webb. "Finite-Element Analysis of Dielectric Waveguides with Curved Boundaries." 1985 Transactions on Microwave Theory and Techniques 33.7 (Jul. 1985 [T-MTT]): 576-585.

The modes of dielectric waveguides with curved boundaries are computed efficiently using a curved-sided (isoparametric) second-order finite element rather than the more usual triangular element. A novel way of placing the virtual boundary is described. Results are obtained for dielectric rod and elliptical waveguides, and compared with earlier results. The method is used to analyze a single-mode fiber-optical coupler.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Microwave Measurement of Dielectric Properties of Low-Loss Materials by the Dielectric Rod Resonator Method

Y. Kobayashi and M. Katoh. "Microwave Measurement of Dielectric Properties of Low-Loss Materials by the Dielectric Rod Resonator Method." 1985 Transactions on Microwave Theory and Techniques 33.7 (Jul. 1985 [T-MTT]): 586-592.

Improvements both in accuracy and speed are described for the technique of measuring the microwave dielectric properties of low-loss materials by using a dielectric rod resonator short-circuited at both ends by two parallel conducting plates. A technique for measuring the effective surface resistance R_{eff} of the conducting plates is proposed to allow the accurate measurement of the loss tangent $\tan \delta$. By means of the first-order approximation, the expressions are analytically derived for estimating the errors of the measured values of relative permittivity ϵ_r , $\tan \delta$, and R_{eff} , for measuring the temperature coefficient of ϵ_r , and for determining the required size of the conducting plates. Computer-aided measurements are realized by using these expressions. It is shown that the temperature dependence of R_{eff} , should be considered in the $\tan \delta$ measurement. The copper plates used in this experiment have the relative conductivity of 91.0 ± 2.7 percent at 20°C , estimated from the measured R_{eff} value. For a 99.9-percent alumina ceramic rod sample, the results measured at 7.69 GHz and 25°C show that $\epsilon_r = 9.687 \pm 0.003$ and $\tan \delta = (1.6 \pm 0.2) \times 10^{-5}$. The temperature coefficients measured between 25 and 100°C are $112 \times 10^{-6}/^\circ\text{C}$ for ϵ_r , and $23 \times 10^{-6}/^\circ\text{C}$ for $\tan \delta$.

Click on title for a complete paper.



Stability of the Oscillation Mode in a Multiple-Oscillator System

S. Hamaya. "Stability of the Oscillation Mode in a Multiple-Oscillator System." 1985 Transactions on Microwave Theory and Techniques 33.7 (Jul. 1985 [T-MTT]): 593-599.

By using the Rieke diagram in terms of traveling waves, we discuss the stability conditions for an oscillation mode in a multiple-oscillator system which clearly indicate the reason why it is difficult for a multiple-oscillator system to obtain a single-mode operation. Further, we proposed a combining power system of oscillators which can give a stable operation free from the moding problem. Experimental observations are found to be in good agreement with the conclusions of the analytical approach.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Circuit Analysis and Design of Radial Pretuned Modules Used for Millimeter-Wave Oscillators

A.C. Derycke and G. Salmer. "Circuit Analysis and Design of Radial Pretuned Modules Used for Millimeter-Wave Oscillators." 1985 Transactions on Microwave Theory and Techniques 33.7 (Jul. 1985 [T-MTT]): 600-609.

This paper summarizes the use of the radial pretuned module for the realization of millimeter-wave IMPATT or Gunn oscillators. Circuit analysis and derivation of an analytical model for the prediction of the characteristics of this type of oscillator are reviewed and the design of optimal structures is reported. Experimental results are also presented in order to justify the assumptions, which have been done to determine the range of validity of this model. This is done either by direct measurements or by the study of the behavior of millimeter-wave oscillators. Finally, we summarize the typical results obtained with this modular approach and its advantages versus classical ones.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Continuously Tunable 65--115-GHz Gunn Oscillator

J.E. Carlstrom, R.L. Plambeck and D.D. Thornton. "A Continuously Tunable 65--115-GHz Gunn Oscillator." 1985 Transactions on Microwave Theory and Techniques 33.7 (Jul. 1985 [T-MTT]): 610-619.

A phase-locked second harmonic Gunn oscillator, mechanically tunable from 65 to 115 GHz, has been developed for use as a local oscillator (LO) in millimeter radio astronomy. The oscillator's output power is greater than 2 mW over most of its operating range, and exceeds 10 mW from 80 to 102 GHz. Its frequency can be electronically tuned approximately ± 200 MHz by varying the bias voltage on the Gunn diode it is phase locked by exploiting this bias tuning. The oscillator consists of a commercially available, packaged GaAs Gunn diode which is mounted in a coaxial resonator of adjustable length. Descriptions of the mechanical design and phase-lock circuit are given. Extensive experimental measurements of the tuning range and power output for oscillators with different resonator dimensions also are reported.





IEEE

Contents

Publications

Issues

Papers

Authors

Linearity Limits of the Varactor-Controlled Osc-Mod Circuits

D. Kajfez and E.J. Hwan. "Linearity Limits of the Varactor-Controlled Osc-Mod Circuits." 1985 Transactions on Microwave Theory and Techniques 33.7 (Jul. 1985 [T-MTT]): 620-625.

A method for optimum selection of the natural frequencies of a varactor-controlled oscillator (osc-mod) is developed for the purpose of providing the best modulation linearity, while still retaining practical features such as continuous tuning. Highly linear operation was found to be possible using conventional abrupt varactors if the circuit has one pole and two zeros situated below the operating frequency. The limits of the maximum realizable modulation bandwidths are established for a linearity of one percent, with and without the requirement for continuous tuning.

Click on title for a complete paper.

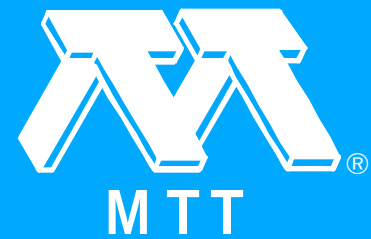


Abstracts

Circuit Design of the Loaded-Line Phase Shifter

H.A. Atwater. "Circuit Design of the Loaded-Line Phase Shifter." 1985 Transactions on Microwave Theory and Techniques 33.7 (Jul. 1985 [T-MTT]): 626-634.

Circuit design procedures for the loaded-line phase shifter are presented, utilizing a phasor diagram representation of the line to identify its loading modes. The effects of losses in the loading elements on the circuit parameters are determined and design factors affecting bandwidth are discussed.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

The Finite-Element Method for Finding Modes of Dielectric-Loaded Cavities (Short Papers)

J.P. Webb. "The Finite-Element Method for Finding Modes of Dielectric-Loaded Cavities (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.7 (Jul. 1985 [T-MTT]): 635-639.

A three-dimensional high-order finite-element scheme is proposed for finding the modes of dielectric-loaded cavities of arbitrary shape. New light is shed on the presence of spurious solutions. Results for an empty rectangular box are compared with exact solutions, A loaded rectangular box is also analyzed.

[Click on title for a complete paper.](#)



Abstracts

Large-Signal Microwave Performance Prediction of Dual-Gate GaAs MESFET Using an Efficient and Accurate Model (Short Papers)

A. Madjar and J. Dreifuss. "Large-Signal Microwave Performance Prediction of Dual-Gate GaAs MESFET Using an Efficient and Accurate Model (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.7 (Jul. 1985 [T-MTT]): 639-643.

This paper presents a microwave large-signal model for the dual-gate MESFET. The model enables prediction of device performance in small-signal and large-signal circuits. The model is an extension of a previously developed model for the ordinary MESFET. It relies on basic principles, thus correlating the device geometry and physical parameters to its performance. The speed and accuracy of the model are demonstrated by calculating three types of device performance: dc curves small-signal scattering parameters, and large-signal simulation of an amplifier. Good agreement was achieved between calculated and measured performance. The computed results are presented for comparison only, and no attempt was made to present a comprehensive analysis of the device performance.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

Contents

Publications

Issues

Papers

Authors

Analysis of Asymmetric Coupled Striplines (Short Papers)

T. Kitazawa and R. Mittra. "Analysis of Asymmetric Coupled Striplines (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.7 (Jul. 1985 [T-MTT]): 643-646.

A unified method for the quasi-static and the hybrid-mode formulation of asymmetric coupled striplines is presented. Variational expressions are derived for the matrix elements, which describe the quasistatic characteristics, for the first time. A very accurate numerical method is shown and some numerical examples are presented for the different types of asymmetric coupled striplines with anisotropic substrates.

Click on title for a complete paper.



Abstracts

Focused Heating in Cylindrical Targets: Part I (Short Papers)

J.R. Wait. "Focused Heating in Cylindrical Targets: Part I (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.7 (Jul. 1985 [T-MTT]): 647-649.

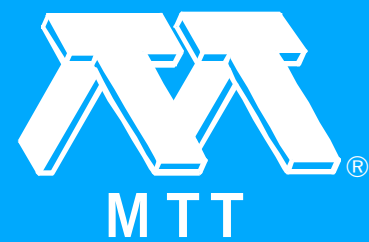
The analytical basis of a method to focus the electromagnetic power into a conductive cylinder is described. The scheme, & currently being used by others, is to locate a number of horn apertures around the periphery. An explicit expression is obtained for the required excitation of the apertures for a two-dimensional model.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Convergence of Local and Average Values in Three-Dimensional Moment-Method Solutions (Short Papers)

M.J. Hagmann and R.L. Levin. "Convergence of Local and Average Values in Three-Dimensional Moment-Method Solutions (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.7 (Jul. 1985 [T-MTT]): 649-654.

Block models using 8, 64, 216, 512, 1000, 1728, and 2744 cubical cells were used to evaluate the local and average specific absorption rate (SAR) for a dielectric cube irradiated by an EM plane wave. All seven models were used in examples for 0.5-cm and 2.5-cm saline cubes at 400 MHz and a 30-cm cube of biological tissue at 27.12 MHz. In each example, the solutions using 8 or 64 cells were similar to that for a sphere rather than a cube. Many cells are needed to approximate the sharp variation of the electric field near corners and edges of a dielectric cube. The heterogeneity of the electric field in an object having corners and edges causes a frequency-independent error (FIE) in addition to the more generally observed frequency-dependent error (FDE) associated with the electrical size of the object. FIE causes the average SAR to converge less rapidly than local values of SAR at locations distant from the corners and edges. An extrapolant is described that corrects for FDE but not FIE in order to estimate the volume average SAR.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

E-Plane Integrated Parallel-Strip Screen Waveguide Filters (Short Papers)

F. Arndt, J. Beike, D. Grauerholz, Ch. Lingemann and J. Bornemann. "E-Plane Integrated Parallel-Strip Screen Waveguide Filters (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.7 (Jul. 1985 [T-MTT]): 654-659.

A rigorous field theory design of a class of rectangular waveguide screen filters is presented which achieves improved attenuation in the upper stopband. The method of field expansion into suitable eigenmodes used considers the effects of the finite rectangular E-plane grid thickness and the mutual higher order mode interaction of the single screens. Calculated results up to 55 GHz show that the peak attenuation in the upper stopband for a Ka-band (26-40-GHz) two-resonators filter example with a midband frequency of $f_{0/2} = 37$ GHz is about 70 dB, whereas its planar circuit single-metal-insert counterpart reaches only about 34 dB. A Ku-band (12- 18-GHz) filter prototype with three metal-etched screens yields a measured passband insertion loss of 0.8 dB at about $f_{0/2} = 17$ GHz and a measured attenuation in upper stopband of about 50 dB up to 25 GHz.

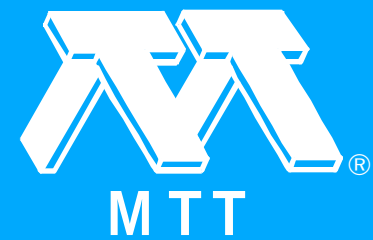
[Click on title for a complete paper.](#)



Abstracts

Patent Abstracts (Jul. 1985 [T-MTT])

"Patent Abstracts (Jul. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.7 (Jul. 1985 [T-MTT]): 660-663.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

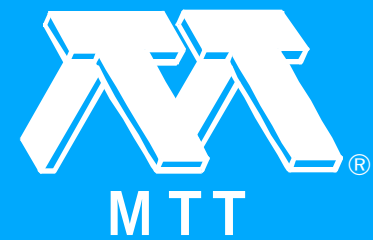
Click on title for a complete paper.



Abstracts

Membership Application (Jul. 1985 [T-MTT])

"Membership Application (Jul. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.7 (Jul. 1985 [T-MTT]): 664-664.



IEEE

Contents

Publications

Issues

Papers

Authors

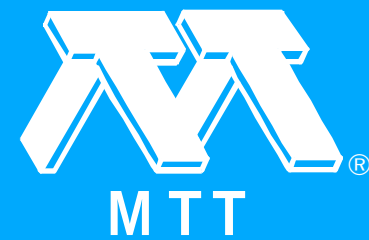
Click on title for a complete paper.



Abstracts

IEEE on Microfilm (Advertisement) (Jul. 1985 [T-MTT])

"IEEE on Microfilm (Advertisement) (Jul. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.7 (Jul. 1985 [T-MTT]): 665-665.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

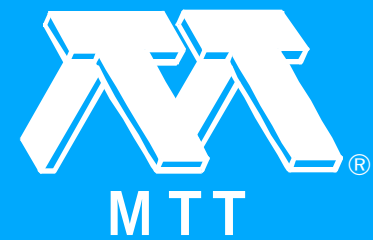
Click on title for a complete paper.



Abstracts

IEEE Press Books (Advertisement) (Jul. 1985 [T-MTT])

"IEEE Press Books (Advertisement) (Jul. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.7 (Jul. 1985 [T-MTT]): 666-666.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (Jul. 1985 [T-MTT])

"Back Cover (Jul. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.7 (Jul. 1985 [T-MTT]): b1-b2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

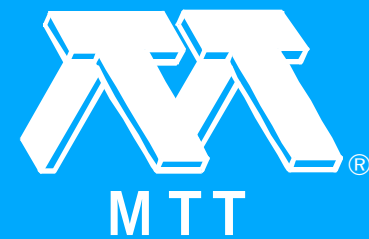
Click on title for a complete paper.



Abstracts

Front Cover (Aug. 1985 [T-MTT])

"Front Cover (Aug. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.8 (Aug. 1985 [T-MTT]): f1-f2.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

Vector Analyses of Propagation Constants in Dielectric Optical Waveguides with Perturbed Refractive-Index Profile

M. Miyagi and S. Nishida. "Vector Analyses of Propagation Constants in Dielectric Optical Waveguides with Perturbed Refractive-Index Profile." 1985 Transactions on Microwave Theory and Techniques 33.8 (Aug. 1985 [T-MTT]): 667-673.

A new method is developed to evaluate the propagation constants of guided or leaky modes in cylindrical dielectric optical waveguides with arbitrary cross sections. It is assumed that the refractive-index profiles of the fiber deviate from the step-index ones. Format expressions of the propagation constants are given for waveguides with anisotropically perturbed refractive-index profiles. The method is applied to a circular step-index fiber with an azimuthally perturbed refractive-index profile, and it is shown that scalar analyses cannot properly predict the propagation constants of those modes whose angular order satisfies certain conditions with respect to the Fourier spectrum of the perturbation of the refractive-index profile.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

An Exposure System for Variable Electromagnetic-Field Orientation Electrophysiological Studies

J.D. Forster, F.S. Barnes, H. Wachtel, R.R. Bowman, J.W. Frazer and R. Chalker. "An Exposure System for Variable Electromagnetic-Field Orientation Electrophysiological Studies." 1985 Transactions on Microwave Theory and Techniques 33.8 (Aug. 1985 [T-MTT]): 674-680.

A TEM system for exposing isolated nerve cells at 2 GHz is described. The system allows for monitoring of transmembrane potentials by means of microelectrodes and variation of the angle between the electric-field vector and the cell. An S-parameter characterization of the system is included along with temperature profile measurements for the energy distribution within the exposure chamber. Additional data on the transient electrical characteristics of microelectrodes upon exposure to microwave pulses in this system are included along with a few examples of the response of Aplysia pacemaker neurons to microwave fields.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Variational Analysis of Dielectric Waveguides by the Conformal Mapping Technique

R.-B. Wu and C.H. Chen. "A Variational Analysis of Dielectric Waveguides by the Conformal Mapping Technique." 1985 Transactions on Microwave Theory and Techniques 33.8 (Aug. 1985 [T-MTT]): 681-685.

The variational formulation together with the finite-element method is a well-established technique for the solution of a dielectric waveguide. One common difficulty is the handling of the problem with the infinite extent of the electromagnetic fields in the transverse plane. In this paper, the conformal mapping technique is employed to improve the modeling of the region exterior to the guides; hence it may give more accurate results for the modes near the cutoff region. Also included are the numerical results for rectangular, strip, and channel waveguides to demonstrate the applications of the proposed technique.



IEEE

[Contents](#)

[Publications](#)

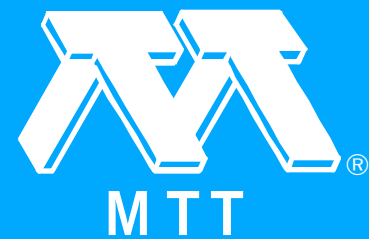
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Design and Performance of Monolithic GaAs Direct-Coupled Preamplifiers and Main Amplifiers

Y. Imai, N. Kato, K. Ohwada and T. Sugeta. "Design and Performance of Monolithic GaAs Direct-Coupled Preamplifiers and Main Amplifiers." 1985 Transactions on Microwave Theory and Techniques 33.8 (Aug. 1985 [T-MTT]): 686-692.

The design and performance of a GaAs direct-coupled preamplifier and main amplifier is described. The amplifiers are fabricated by the self-aligned implantation for n/sup +/-layer technology (SAINT) process. The developed preamplifiers have 13-dB gain, 3-GHz bandwidth, and 4.8-dB noise figure for the one-stage amplifier, and 22-dB gain, 2.7-GHz bandwidth, and 5.6-dB noise figure for the two-stage amplifier. The developed four-stage main amplifier has 36-dB gain and 1.5-GHz bandwidth with a power consumption of 710 mW. These amplifiers are promising candidates for application to high-speed data communication systems.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Bandstop Filter Design Using a Dielectric Waveguide Grating

D.C. Park, G.L. Matthaei and M.S. Wei. "Bandstop Filter Design Using a Dielectric Waveguide Grating." 1985 Transactions on Microwave Theory and Techniques 33.8 (Aug. 1985 [T-MTT]): 693-702.

Precision design techniques are obtained for dielectric waveguide (DW) bandstop filters with bandwidths up into the 5-10-percent range. Dielectric waveguide bandstop filters are realized in the form of a grating in the DW image guide which utilizes notches of varying depth and length. The grating is designed from a transmission-line prototype which has a prescribed stopband and also prescribed Chebyshev passbands. An approximate synthesis procedure for such prototypes is presented. Design data for grating notches were obtained from tests on uniform gratings, while DW dispersion is compensated for by calculations based on the "effective dielectric constant" method. Excellent agreement between computed and measured attenuation response is obtained. Two such grating structures used with loads on one end and a 3-dB coupler can be used to form a bandpass filter.

[Click on title for a complete paper.](#)



Abstracts

Efficient, Linear Amplification of Varying-Envelope Signals Using FET's with Parabolic Transfer Characteristics

A.A.M. Saleh and M.F. Wazowicz. "Efficient, Linear Amplification of Varying-Envelope Signals Using FET's with Parabolic Transfer Characteristics." 1985 Transactions on Microwave Theory and Techniques 33.8 (Aug. 1985 [T-MTT]): 703-710.

A linear, high-efficiency mode of operation is described for FET power amplifiers of varying envelope signals (e.g., single-sideband, quadrature-amplitude-modulation, and multicarrier signals). It makes use of FET's having parabolic transfer characteristics (PTC). It is shown theoretically and experimentally that the efficiency of the PTC mode is about 2 dB higher than that of the standard class-A mode. For example, two-tone, 4-GHz measurements on a Western Electric FET model 131-L showed that, for an output power of about 1.5 W and for a relative third-order intermodulation level of -35 dB, the power-added efficiency of the PTC mode was 20 percent, while that of the class-A mode was 13 percent. Comparisons are also made with other high-efficiency modes of operation proposed elsewhere.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A Method for Evaluating and the Evaluation of the Influence of the Reverse Transfer Gain on the Transducer Power Gain of Some Microwave Transistors (Short Papers)

P.L.D. Abrie and P. Rademeyer. "A Method for Evaluating and the Evaluation of the Influence of the Reverse Transfer Gain on the Transducer Power Gain of Some Microwave Transistors (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.8 (Aug. 1985 [T-MTT]): 711-713.

The unilateral figure of merit is frequently used to decide whether, from the viewpoint of transducer power gain, a transistor can be considered to be unilateral or not. In this communication, the limitations of this measure are discussed and alternative measures, as well as a procedure for determining the exact bounds on the gain error $G_{sub T}/G_{sub T}/_{sub u/}$, are proposed and applied to several microwave transistors in order to evaluate the influence of the reverse transfer gain on the transducer power gain.



MTT



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Attenuation Constants of UHF Radio Waves in Arched Tunnels (Short Papers)

Y. Yamaguchi, T. Abe, T. Sekiguchi and J. Chiba. "Attenuation Constants of UHF Radio Waves in Arched Tunnels (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.8 (Aug. 1985 [T-MTT]): 714-718.

This paper describes the attenuation constants of UHF radio waves in arched tunnels. In the analysis, a point-matching method is combined with Muller's method and is applied to determine the propagation constant of the dominant mode. We compare the calculated result with previous experimental data, as well as that of the experimental equation and the theoretical result of a circular waveguide having the same cross-sectional area. Finally, an approximate equation for the attenuation constant is derived from the point-matching solution so that one can determine or estimate the value without elaborate calculations.

[Click on title for a complete paper.](#)



Abstracts

The Thermal and Spatial Resolution of a Broad-Band Correlation Radiometer with Application to Medical Microwave Thermography (Short Papers)

J.C. Hill and R.B. Goldner. "The Thermal and Spatial Resolution of a Broad-Band Correlation Radiometer with Application to Medical Microwave Thermography (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.8 (Aug. 1985 [T-MTT]): 718-722.

The improved spatial and thermal resolution of a broad-band microwave correlation radiometer is discussed. Theoretical upper and lower bounds of the combined spatial and thermal resolution in a dense transmission medium are presented along with data obtained for two thermal sources in air. The application of broad-band correlation techniques to medical microwave thermography is novel, and the results indicate that electronic scanning of tissue should be possible.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Dispersion Characteristics for Wide Slotlines on Low-Permittivity Substrates (Short Papers)

R. Janaswamy and H.D. Schaubert. "Dispersion Characteristics for Wide Slotlines on Low-Permittivity Substrates (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.8 (Aug. 1985 [T-MTT]): 723-726.

This paper provides additional dispersion data on slotlines not available in the literature to date. In particular, data are presented on wide slots etched on an electrically thin substrate of low-dielectric constant. The range of parameters covered in this paper are $0.006 \leq d/\lambda_{\text{sub } 0} \leq 0.06$, $0.005 \leq W/\lambda_{\text{sub } 0} \leq 2.0$, and $\epsilon_r = 2.22, 3.0, 3.8, 9.8$. The problem is formulated using the spectral-domain technique, and the spectral Galerkin's method is employed to compute the slot wavelength. Numerical results are compared to the experimental data over 2-6 GHz for slotlines on a 1.57-mm substrate ($\epsilon_r = 2.55$). Agreement to within 2.0 percent is obtained.

[Click on title for a complete paper.](#)



Abstracts

Transient Analysis of Microstrip Gap in Three-Dimensional Space (Short Papers)

S. Koike, N. Yoshida and I. Fukai. "Transient Analysis of Microstrip Gap in Three-Dimensional Space (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.8 (Aug. 1985 [T-MTT]): 726-730.

In this paper, we deal with the microstrip gap that should be analyzed in three-dimensional space. The time variations of the electric field at each surface of the stripline having a finite metallization thickness are analyzed. Our method of analysis is based on both an equivalent circuit of Maxwell's equations and Bergeron's method. The former has advantages in the vector analysis by using all electromagnetic components. The latter has advantages in the time-domain analysis of the field. Therefore, our method can analyze field variations in three-dimensional space and time. We present the time variation of the instantaneous electric-field distributions below the strip, at the side of the strip, and at the gap end surface. These results show how the steady-state field distribution grows in the gap.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

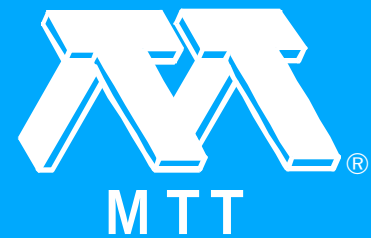


Abstracts

Ka-Band FET Oscillator (Short Papers)

A.K. Talwar. "Ka-Band FET Oscillator (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.8 (Aug. 1985 [T-MTT]): 731-734.

The design and performance of GaAs FET oscillators operating near 36 GHz are presented. The oscillators used readily available GaAs FET's and were built in a microstrip circuit configuration. An output power of about +8 dBm was obtained with two devices in a single oscillator.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Integral Transforms Useful for the Accelerated Summation of Periodic, Free-Space Green's Functions (Short Papers)

R. Lampe, P. Klock and P. Mayes. "Integral Transforms Useful for the Accelerated Summation of Periodic, Free-Space Green's Functions (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.8 (Aug. 1985 [T-MTT]): 734-736.

The Poisson summation formulas for two- and three-dimensional, periodic, free-space Green's functions of the Helmholtz and Laplace equations are cataloged in this paper. It is shown how these formulas can be applied for the efficient, approximate summation of series which arise in the computation of fields due to an infinite array of charge or current sources. The technique for approximating the summation of the series is valid for all arguments of a Green's function, even those which correspond to the region near a source singularity.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Constant-Frequency Synthesis of Lossy Microwave Two-Ports (Short Papers)

L.R.G. Versfeld. "Constant-Frequency Synthesis of Lossy Microwave Two-Ports (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.8 (Aug. 1985 [T-MTT]): 736-738.

At a fixed frequency, every linear time-invariant two-port can be described by its scattering matrix, whose elements represent eight real parameters. In this paper, it is proved that every lossy (linear, time-invariant) two-port can be canonically synthesized by eight "elementary" two-ports, which are characterized by one parameter only. Moreover, these elementary two-ports are passive and realizable in the microwave region. The synthesis is performed in the form of a cascade structure (with one "side arm" for the nonreciprocal case). Explicit formulas for the parameters of the elementary two-ports are derived.

[Click on title for a complete paper.](#)



Abstracts

A New Transmission Line of Round Conductor and Parallel Plane with Symmetrically Placed Slit (Short Papers)

W. Lin. "A New Transmission Line of Round Conductor and Parallel Plane with Symmetrically Placed Slit (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.8 (Aug. 1985 [T-MTT]): 739-740.

A new transmission line consisting of a cylindrical conductor symmetrically placed opposite a slit in an infinite flat plate is formed by inversion from the line of parallel plates of equal width. The characteristic admittance of the proposed line and one possible application of which is given.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

[Click on title for a complete paper.](#)

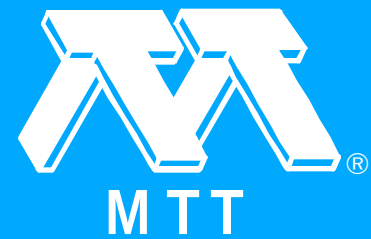


Abstracts

Optical Fiber Delay-Line Signal Processing (Corrections)

"Optical Fiber Delay-Line Signal Processing (Corrections)." 1985 Transactions on Microwave Theory and Techniques 33.8 (Aug. 1985 [T-MTT]): 740-740.

Due to a clerical error, the above paper by K. P. Jackson, S. A. Newton, B. Maslehi, M. Tur, C. C. Cutler, J. W. Goodman and H. J. Shaw appeared in the March 1985 issue (pp. 193-210) without being identified as an Invited Paper.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Scattering at a Junction of Two Waveguides with Different Surface Impedances (Comments)

V. Daniele, I. Montrosset and R. Zich. "Scattering at a Junction of Two Waveguides with Different Surface Impedances (Comments)." 1985 Transactions on Microwave Theory and Techniques 33.8 (Aug. 1985 [T-MTT]): 740-741.

In the above paper, a criterion has been given in order to establish if the scattering problem of the junction between two waveguides with different surface impedances can be solved in closed form. In this comment, a different approach, based on a spectral formulation, shows that the possibility to obtain analytical expressions of the scattering coefficients depends on the form of the relevant Wiener-Hopf equation.

[Click on title for a complete paper.](#)



Abstracts

A Novel Quasi-Optical Frequency Multiplier Design for Millimeter and Submillimeter Wavelengths (Corrections)

J.W. Archer. "A Novel Quasi-Optical Frequency Multiplier Design for Millimeter and Submillimeter Wavelengths (Corrections)." 1985 Transactions on Microwave Theory and Techniques 33.8 (Aug. 1985 [T-MTT]): 741-741.

In the above paper, there is a typographical error in an equation on p. 424, first column.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

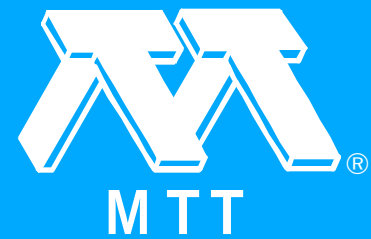


Abstracts

Design of Nonradiative Dielectric Waveguide Filters (Corrections)

T. Yoneyama, F. Kuroki and S. Nishida. "Design of Nonradiative Dielectric Waveguide Filters (Corrections)." 1985 Transactions on Microwave Theory and Techniques 33.8 (Aug. 1985 [T-MTT]): 741-741.

In the above paper, Figs. 1 and 7 should be interchanged.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Patent Abstracts (Aug. 1985 [T-MTT])

"Patent Abstracts (Aug. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.8 (Aug. 1985 [T-MTT]): 742-745.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

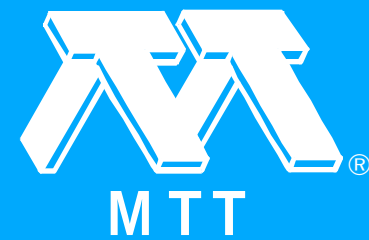
Click on title for a complete paper.



Abstracts

GaAs IC Symposium (Announcement) (Aug. 1985 [T-MTT])

"GaAs IC Symposium (Announcement) (Aug. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.8 (Aug. 1985 [T-MTT]): 746-746.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

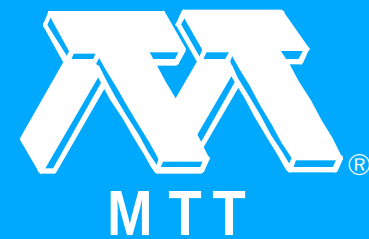
Click on title for a complete paper.



Abstracts

Back Cover (Aug. 1985 [T-MTT])

"Back Cover (Aug. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.8 (Aug. 1985 [T-MTT]): b1-b2.



- Contents
- Publications
- Issues
- Papers
- Authors

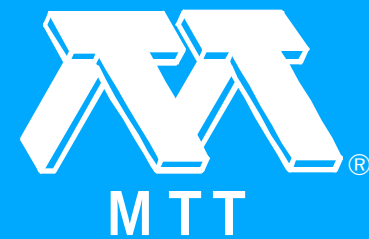
Click on title for a complete paper.



Abstracts

Front Cover (Sep. 1985 [T-MTT])

"Front Cover (Sep. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.9 (Sep. 1985 [T-MTT]): f1-f2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Editorial (Sep. 1985 [T-MTT])

T. Itoh. "Editorial (Sep. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.9 (Sep. 1985 [T-MTT]): i-i.

In a recent meeting of the IEEE Publications Board, the Centennial Issue of IEEE Transactions on Microwave Theory and Techniques, published in September 1984, has been chosen as the best Centennial Issue among all the IEEE Transactions. As the winner, the MTT Society will receive a Centennial Medal and a Certificate. The Medal, Certificate, and a copy of the Centennial Issue will become a part of the Historical Exhibits, which are displayed at the annual International Microwave Symposium.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

New Phase-Lock Loop Circuit Providing Very Fast Acquisition Time

B.S. Glance. "New Phase-Lock Loop Circuit Providing Very Fast Acquisition Time." 1985 Transactions on Microwave Theory and Techniques 33.9 (Sep. 1985 [T-MTT]): 747-747.

We present a new circuit configuration for second-order phase-lock loops that provides, for large initial frequency offsets, acquisition times several orders of magnitude shorter than those achieved using conventional phase-lock loops. This new circuit also provides frequency locking almost instantaneously when the time delay around the loop is small. Furthermore, it can, without losing lock, sustain frequency changes several hundred times faster than those which can be sustained by a conventional circuit.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

The Dominant Mode Properties of Open Groove Guide: An Improved Solution

A.A. Oliner and P. Lampariello. "The Dominant Mode Properties of Open Groove Guide: An Improved Solution." 1985 Transactions on Microwave Theory and Techniques 33.9 (Sep. 1985 [T-MTT]): 755-764.

Groove guide, one of several low-loss waveguides proposed some years ago for use at millimeter wavelengths, is again receiving attention in the literature. A new transverse equivalent network and dispersion relation for the properties of the dominant mode are presented here which are extremely simple in form and yet very accurate. Comparisons with accurate published measurements indicate better agreement with this new theory than with any previous theory.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Transmission Matrix Representation of Finline Discontinuities

A.S. Omar and K. Schunemann. "Transmission Matrix Representation of Finline Discontinuities." 1985 Transactions on Microwave Theory and Techniques 33.9 (Sep. 1985 [T-MTT]): 765-770.

A general treatise of cascaded discontinuities in inhomogeneous waveguides is given and applied to finline circuits. A transmission matrix representation is superior to a scattering matrix representation as far as CPU time is concerned. The scattering matrix is, however, advantageous if the sum of the line lengths separating the discontinuities is large. Numerical examples are given in order to illustrate the effect of increasing the number of modes used to represent the field at both sides of the discontinuity.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Quasi-Static Characteristics of Asymmetrical and Coupled Coplanar-Type Transmission Lines

T. Kitazawa and R. Mittra. "Quasi-Static Characteristics of Asymmetrical and Coupled Coplanar-Type Transmission Lines." 1985 Transactions on Microwave Theory and Techniques 33.9 (Sep. 1985 [T-MTT]): 771-778.

In this paper, variational expressions for the capacitances of asymmetrical and coupled coplanar-type transmission lines are derived. The methods employed are quite general, and are useful for analyzing various types of coplanar-type transmission lines, with either an isotropic or anisotropic substrate. An accurate and efficient method of calculation is provided for the variational expressions, and some numerical results are presented.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

A Method for Dielectric Loss Measurements by a Microwave Cavity in Fixed Resonance Condition

M. Martinelli, P.A. Rolla and E. Tombari. "A Method for Dielectric Loss Measurements by a Microwave Cavity in Fixed Resonance Condition." 1985 Transactions on Microwave Theory and Techniques 33.9 (Sep. 1985 [T-MTT]): 779-783.

A method for the measurement of dielectric losses at microwave frequencies for small samples inserted in a resonating cavity is discussed. The method allows static and dynamic determinations of ϵ'' by power reflection coefficient measurements in resonance condition and is suitable for experimental setup that use either active or passive frequency techniques. An X-band microwave apparatus based on the passive frequency technique and built up with a right cylindrical cavity resonating in the TE/sub 011/ mode is presented. By means of this apparatus, simultaneous measurements of ϵ' and ϵ'' can be performed. Since each determination of the complex permittivity requires times of the order of 1 ms, and the setting is carried out at the beginning of the experiment only, the apparatus is very suitable for dynamic process measurements. The error sources, the overall accuracy, and resolution are discussed and compared with performance achievable with the basic cavity perturbation method. The efficacy of the proposed method is demonstrated by measurements performed on polar liquid mixtures in perturbed cavity conditions.



Abstracts

Longitudinal and Transverse Current Distributions on Microstriplines and Their Closed-Form Expression

M. Kobayashi. "Longitudinal and Transverse Current Distributions on Microstriplines and Their Closed-Form Expression." 1985 Transactions on Microwave Theory and Techniques 33.9 (Sep. 1985 [T-MTT]): 784-788.

Simple but accurate closed-form expressions for the normalized longitudinal and transverse current distributions on microstriplines are derived by rising the charge conservation formula and the charge distributions calculated by the Green's function technique. Their dependence on both the relative permittivity of the substrate ϵ_r and the shape ratio w/h are explained, and the results are compared with other available results. It is confirmed by comparison with other theoretical results that the present closed-form expressions are valid for an even higher frequency. The reasonable expression for the normalized transverse current distribution is believed to be the first.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Dynamic Three-Dimensional TLM Analysis of Microstriplines on Anisotropic Substrate

G.E. Mariki and C. Yeh. "Dynamic Three-Dimensional TLM Analysis of Microstriplines on Anisotropic Substrate." 1985 Transactions on Microwave Theory and Techniques 33.9 (Sep. 1985 [T-MTT]): 789-799.

The frequency-dependent propagation characteristics of a hybrid mode along microstriplines on anisotropic substrates are presented for the case where the constitutive parameter tensors maybe diagonalized. A generalization of the three-dimensional transmission-line-matrix (TLM) numerical procedure is used to obtain results for the phase constant β , effective permittivity ϵ_{eff} , and the characteristic impedance Z , all as functions of frequency and the shape ratio (w/h). Also shown are results for coupled microstrips on a sapphire substrate.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Computation of the Parallel-Plate Capacitor with Symmetrically Placed Unequal Plates

W. Lin. "Computation of the Parallel-Plate Capacitor with Symmetrically Placed Unequal Plates." 1985 Transactions on Microwave Theory and Techniques 33.9 (Sep. 1985 [T-MTT]): 800-807.

The classical problem of the parallel-plate capacitor has been investigated by a number of authors, including Love and Langton; the latter gives good results that are still not complete as claimed. In this paper, the constants occurring in the Schwarz-Christoffel equations are correctly related to the dimensions of the capacitor. The electric intensity is studied and four typical values are given along the central line of force in the general case of the parallel-plate capacitor with symmetrically placed unequal plates. For the symmetrical case of an equal plate, the complete field distribution is given by constructing the family of lines of force.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Transverse Modal Analysis of Printed Circuit Transmission Lines

H.-Y. Yee. "Transverse Modal Analysis of Printed Circuit Transmission Lines." 1985 *Transactions on Microwave Theory and Techniques* 33.9 (Sep. 1985 [T-MTT]): 808-816.

Dispersion characteristics of finned rectangular waveguides, finlines, shielded slotlines, shielded microstrip and striplines, and shielded two-coupled slotlines and striplines are formulated by the transverse modal analysis method. A rectangular cavity is formed by placing two electric walls transverse to a uniform transmission-line system. Considering that the wave propagation is in the direction transverse to the transmission line and to the dielectric discontinuities, the rectangular cavity can be viewed as multiple rectangular waveguide sections joined by the discontinuities. The rectangular waveguide modal analysis technique is readily applicable to obtain the dispersion characteristics by matching the boundary conditions at the discontinuities interface. Numerical solutions are obtained using Galerkin's method, and the results are compared with several numerical techniques for various transmission-line systems.

[Click on title for a complete paper.](#)



Abstracts

Spectral-Domain Approach for Continuous Spectrum of Slot-Like Transmission Lines (Short Papers)

J. Citerne and W. Zieniutycz. "Spectral-Domain Approach for Continuous Spectrum of Slot-Like Transmission Lines (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.9 (Sep. 1985 [T-MTT]): 817-818.

For the first time, the continuous spectrum part of slot-like transmission lines is described using the spectral-domain approach which has been successfully applied to the discrete part. Reliability of the approach is checked by numerical calculation of the surface current distribution across the slot plane in a simple illustrative example.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Optical Effects on the Static and Dynamic Characteristics of a GaAs MESFET (Short Papers)

J.L. Gautier, D. Pasquet and P. Pouvil. "Optical Effects on the Static and Dynamic Characteristics of a GaAs MESFET (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.9 (Sep. 1985 [T-MTT]): 819-822.

In this paper, we describe the effect of light on the S-parameters of a GaAs MESFET. The photon energy is greater than the gap bandwidth of the semiconductor. The photoconductive and photovoltaic dc phenomena in the channel and in the depletion layer are theoretically analyzed with a unidimensional model to describe the light effect on the dc transconductance $g_{\text{sub m}}$. The comparison between the dc transconductance, without and under illumination, and the theoretical model shows a very close agreement.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Complex Permittivity Instrumentation for High-Loss Liquids at Microwave Frequencies (Short Papers)

H.A. Buckmaster, C.H. Hansen and H. Zaghloul. "Complex Permittivity Instrumentation for High-Loss Liquids at Microwave Frequencies (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.9 (Sep. 1985 [T-MTT]): 822-824.

This note draws attention to the fact that the instrumentation system for the measurement of the complex permittivity of high-loss liquids proposed by Zanforlin can be improved so as to i) increase the sensitivity and stability of the demodulation process, ii) make the demodulation accurately linear rather than approximately square law, and iii) improve the degree of bridge balance and stability.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

1.5-GHz GaAs Surface Acoustic Wave Delay Lines (Short Papers)

R.T. Webster. "1.5-GHz GaAs Surface Acoustic Wave Delay Lines (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.9 (Sep. 1985 [T-MTT]): 824-827.

Surface acoustic wave (SAW) delay lines fabricated on commercially available (100) cut GaAs have been used to control oscillators at frequencies as high as 1.5 GHz. These high frequencies were obtained by operating at the second overtone of transducers with three electrodes per wavelength. A theoretical and experimental study of the temperature coefficient of frequency of SAW oscillators on GaAs was performed. Tables display the GaAs elastic constants and their temperature coefficients, as well as the experimental and theoretical surface acoustic wave propagation characteristics of selected GaAs orientations.

[Click on title for a complete paper.](#)



Abstracts



IEEE

Contents

Publications

Issues

Papers

Authors

Planar Millimeter-Wave Diode Mixer (Short Papers)

N.J. Cronin and V.J. Law. "Planar Millimeter-Wave Diode Mixer (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.9 (Sep. 1985 [T-MTT]): 827-830.

A new mixer has been built, using a planar GaAs Schottky-barrier diode, for operation at frequencies around 100 GHz. The mixer has low noise temperature and conversion loss and low local oscillator power requirement. The design is such that construction of scaled versions should be possible for operation up to 200 GHz.

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Scattering at an N-Furcated Parallel-Plate Waveguide Junction (Short Papers)

R.R. Mansour and R.H. MacPhie. "Scattering at an N-Furcated Parallel-Plate Waveguide Junction (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.9 (Sep. 1985 [T-MTT]): 830-835.

Using the conservation of complex power technique (CCPT), this paper presents a solution to the problem of EM scattering at the junction of a parallel-plate waveguide and an N-furcated parallel-plate waveguide with arbitrarily spaced thick septa. Although this junction can be regarded as an $(N + 1)$ -port configuration, the problem is formulated so that it is viewed mathematically as a generalized 2-port. This leads to very simple expressions for the scattering parameters of the junction. Convergent numerical results are presented for bifurcated, trifurcated, and 4-furcated structures, and the effects of varying the thickness of the septa are investigated. The formulation is directly applicable to N-furcated rectangular waveguide junctions having TE/sub n_0 / excitation, with application in the design of E-plane filters.

[Click on title for a complete paper.](#)



Abstracts

Microstrip Transmission Line with Finite-Width Dielectric and Ground Plane (Short Papers)

C.E. Smith and R.-S. Chang. "Microstrip Transmission Line with Finite-Width Dielectric and Ground Plane (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.9 (Sep. 1985 [T-MTT]): 835-839.

Design data for microstrip transmission lines with finite-width dielectric and ground plane are presented. The characteristic impedance and velocity of propagation are tabulated from results of a moment-method solution of a quasi-TEM transmission-line model of this microstrip structure.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Waveguide Modes Via an Integral Equation Leading to a Linear Matrix Eigenvalue Problem (Corrections)

G. Conciauro, M. Bressan and C. Zuffada. "Waveguide Modes Via an Integral Equation Leading to a Linear Matrix Eigenvalue Problem (Corrections)." 1985 Transactions on Microwave Theory and Techniques 33.9 (Sep. 1985 [T-MTT]): 839-839.

After having examined the above paper, we noticed that the symbol of principal value in integral is inappropriate. In fact, integral can represent the field on sigma only in the limit as the observation point approaches sigma. This oversight, however, does not affect the theory at all.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

Patent Abstracts (Sep. 1985 [T-MTT])

"Patent Abstracts (Sep. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.9 (Sep. 1985 [T-MTT]): 840-842.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

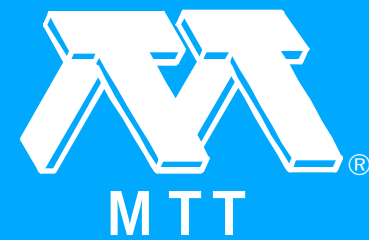
Click on title for a complete paper.



Abstracts

Congressional Fellowships (Announcement) (Sep. 1985 [T-MTT])

"Congressional Fellowships (Announcement) (Sep. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.9 (Sep. 1985 [T-MTT]): 843-843.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Call for Papers - New and Future Applications of Microwave Systems (Call for Papers) (Sep. 1985 [T-MTT])

"Call for Papers - New and Future Applications of Microwave Systems (Call for Papers) (Sep. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.9 (Sep. 1985 [T-MTT]): 844-844.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

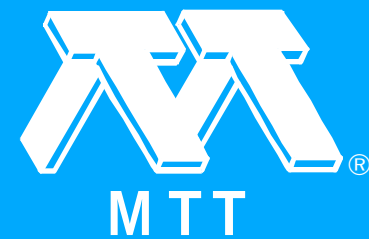
Click on title for a complete paper.



Abstracts

Back Cover (Sep. 1985 [T-MTT])

"Back Cover (Sep. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.9 (Sep. 1985 [T-MTT]): b1-b2.



- Contents
- Publications
- Issues
- Papers
- Authors

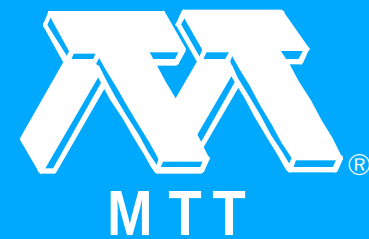
Click on title for a complete paper.



Abstracts

Front Cover (Oct. 1985 [T-MTT])

"Front Cover (Oct. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): f1-f2.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

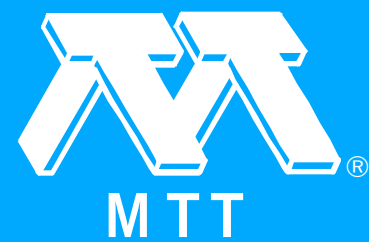
[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

Contents

Publications

Issues

Papers

Authors

Foreword (Oct. 1985 [T-MTT])

J.W. Mink and F.K. Schwering. "Foreword (Oct. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 845-846.

Microwave and millimeter-wave integrated circuits of increasing complexity and component density have been designed in recent years and are needed in the future for a wide variety of applications in computers, communications, sensing, signal processing, etc. Elaborate analytical and computational techniques are required for the characterization and synthesis of these circuits. The first step in a systematic approach to this problem is an accurate theoretical description of the basic building blocks from which these circuits are constructed, i.e., of microwave and millimeter-wave transmission media and active and passive components, including their mutual interaction in an integrated-circuit environment. There are several problem areas here where basic contributions to the state-of-the-art are needed. To name a few: the description of the effects of substrate anisotropy on the performance of open and shielded waveguides; the characterization of transitions and discontinuities in microwave/millimeter-waveguides, to include the case of active components monolithically integrated in these guides; and the accurate description of the effects of finite conductivity on the current distribution and losses in the metal parts of millimeter-wave transmission lines, in particular when the metallization thickness is in the order of or smaller than the skin depth. The complexity of these problems usually does not allow the development of analytical solutions, and advanced numerical methods are needed. Basic requirements on such methods include high accuracy -- or at least controlled accuracy -- and numerical efficiency. Moreover, while these techniques will always involve numerical evaluations, they should not degenerate into brute force computer methods. It is desirable that they can be carried through to a large extent analytically in order to facilitate physical understanding of the phenomena involved.

Click on title for a complete paper.



Abstracts

Integrated-Circuit Structures on Anisotropic Substrates

N.G. Alexopoulos. "Integrated-Circuit Structures on Anisotropic Substrates." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 847-881.

This paper addresses the problem of anisotropy in substrate materials for microwave integrated-circuit applications. It is shown that in modeling the circuit characteristics, a serious error is incurred which becomes larger with increasing frequency when the substrate anisotropy is neglected. Quasi-static, dynamic, and empirical methods employed to obtain the propagation characteristics of microstrip, coplanar waveguides, and slotlines on anisotropic substrates are presented. Numerical solutions such as the method of moments and the transmission-line matrix technique are outlined. The modified Wiener-Hopf, the Fourier series techniques, and the method of lines are also discussed. A critique of the aforementioned methods and suggestions for future research directions are presented. The paper includes new results as well as a review of established methods.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

The Transmission-Line Matrix Method--Theory and Applications

W.J.R. Hoefer. "The Transmission-Line Matrix Method--Theory and Applications." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 882-893.

This paper presents an overview of the transmission-line matrix (TLM) method of analysis, describing its historical background from Huygens's principle to modern computer formulations. The basic algorithm for simulating wave propagation in two- and three-dimensional transmission-line networks is derived. The introduction of boundaries, dielectric and magnetic materials, losses, and anisotropy are discussed in detail. Furthermore, the various sources of error and the limitations of the method are given, and methods for error correction or reduction, as well as improvements of numerical efficiency, are discussed. Finally, some typical applications to microwave problems are presented.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Review of Numerical Methods for the Analysis of Arbitrarily-Shaped Microwave and Optical Dielectric Waveguides

S.M. Saad. "Review of Numerical Methods for the Analysis of Arbitrarily-Shaped Microwave and Optical Dielectric Waveguides." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 894-899.

This paper presents a review of the numerical methods for the analysis of the homogeneous and inhomogeneous, isotropic and anisotropic, microwave and optical dielectric waveguides with arbitrarily-shaped cross sections. The characteristics of various methods are compared, and a set of qualitative criteria to guide the selection of an appropriate method for a given problem is proposed. The main approaches discussed are those of point matching, integral equations, finite difference, and finite element.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Finite-Element Formulation in Terms of the Electric-Field Vector for Electromagnetic Waveguide Problems

M. Koshiba, K. Hayata and M. Suzuki. "Finite-Element Formulation in Terms of the Electric-Field Vector for Electromagnetic Waveguide Problems." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 900-905.

A vector finite-element method for the analysis of anisotropic waveguides with off-diagonal elements in the permeability tensor is formulated in terms of all three components of the electric field. In this approach, spurious, nonphysical solutions do not appear anywhere above the "air-line." The application of this finite-element method to waveguides with an abrupt discontinuity in the permittivity is discussed. In particular, we discuss how to use the boundary conditions of the electric field at the interface between two media with different permittivities. To show the validity and usefulness of this formulation, examples are computed for dielectric-loaded waveguides and ferrite-loaded waveguides.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Integral Formulation for Analysis of Integrated Dielectric Waveguides

J.S. Bagby, D.P. Nyquist and B.C. Drachman. "Integral Formulation for Analysis of Integrated Dielectric Waveguides." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 906-915.

A polarization integral equation is advanced for use in the conceptual and numerical analysis of a broad class of integrated dielectric waveguiding systems. The equation is applied to axially uniform waveguides, in which case the axial integral becomes convolutional in nature, prompting a Fourier transform on that variable. Inversion of the transformed guiding region field, aided by complex analysis, allows identification of two components of that field the surface-wave modes and the radiation field. These are found in terms of the sources exciting the system, leading to a new formulation for the excitation of such waveguides. Analysis of the behavior of the kernel of the transformed integral equation in the complex plane leads to a general criterion for surface-wave leakage from the guiding region. Numerical results for the propagation characteristics of step- and the graded-index rectangular strip and rib waveguides are obtained from the integral equation by application of the method of moments and by a quasi-closed-form solution technique. These results are compared to those of other formulations. Further application of the integral equation is discussed, and several promising areas for further study are identified.



Abstracts

A Modified Mode-Matching Technique and its Application to a Class of Quasi-Planar Transmission Lines

R. Vahldieck and J. Bornemann. "A Modified Mode-Matching Technique and its Application to a Class of Quasi-Planar Transmission Lines." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 916-926.

A rigorous and versatile hybrid-mode analysis is presented to determine the normalized propagation constants in a class of quasi-planar transmission-line structures. The method is accurate and covers the finite metallization thickness, mounting grooves, and an arbitrary number of dielectric subregions. Utilizing a modified mode-matching technique, one can derive discontinuity and transmission-line matrices for each homogeneous subregion. Successively multiplying matrix equations of all subregions leads to the characteristic matrix system. This procedure makes it possible to create a modularized computer program which can be conveniently extended to a wide spectrum of conceivable configurations simply by inserting the matrix equations of additional subregions in the multiplication process. To demonstrate the efficiency of the proposed method, dispersion characteristics of dominant and next higher order hybrid modes in earthed and insulated finlines, suspended microstrips, and coupled striplines with tuning septa, are given as examples.



[Contents](#)

[Publications](#)

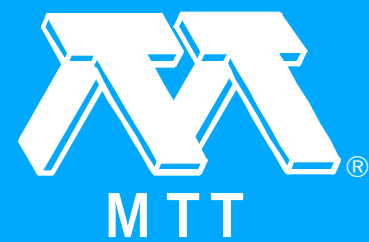
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Propagation of Quasi-Static Modes in Anisotropic Transmission Lines: Application to MIC Lines

R. Marques and M. Horno. "Propagation of Quasi-Static Modes in Anisotropic Transmission Lines: Application to MIC Lines." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 927-932.

In this paper, we analyze the field propagation in a general N-conductor transmission line embedded in an inhomogeneous and anisotropic medium, through the series expansion of the field in powers of frequency. The quasi-static approach is deduced as a zero-order approach upon the field and a first-order approach for the propagation constant. It is shown that it is even possible to decompose the field into a sum of propagating modes with a scalar propagation factor. The special case of transmission lines in nonmagnetic media is explicitly considered. A method to find out the mode characteristics of any open planar MIC line with anisotropic dielectric substrates is developed and applied to some MIC structures of interest, specifically broadside edge-coupled microstrips with inverted and noninverted substrates.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

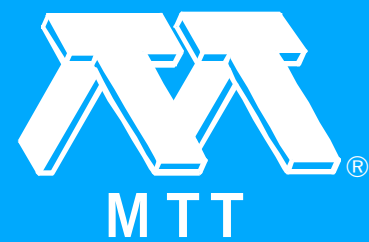
Determination of Green's Function Matrix for Multiconductor and Anisotropic Multidielectric Planar Transmission Lines: A Variational Approach

F. Medina and M. Horno. "Determination of Green's Function Matrix for Multiconductor and Anisotropic Multidielectric Planar Transmission Lines: A Variational Approach." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 933-940.

In this paper, a set of simple recurrence formulas to evaluate the Green's function matrix for a generic multiconductor and multidielectric planar transmission system with arbitrary rectangular boundary conditions is obtained. Combining these formulas with the variational technique in the spectral domain, two useful algorithms to calculate the capacitance matrix of a very wide range of practical configurations are proposed. Upper and lower bounds on mode capacitances are obtained by using both algorithms. A number of practical structures have been analyzed and their most interesting features discussed. The method is very versatile and can handle a large class of MIC configurations, no matter how complex the planar structure.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Propagation Characteristics of a Microstrip Line Printed on a General Anisotropic Substrate

J.L. Tsalamengas, N.K. Uzunoglu and N.G. Alexopoulos. "Propagation Characteristics of a Microstrip Line Printed on a General Anisotropic Substrate." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 941-945.

An analysis is presented for determining the propagation modes in a microstrip line printed on a substrate having both electric- and magnetic-type general anisotropies. An integral equation is derived for the unknown current distribution on the microstrip line. The kernel of this equation is a complicated 2x2 matrix function of the substrate anisotropy and of the substrate thickness. In order to determine the dispersion relations for the propagating waves, this integral equation is reduced into a finite system of linear equations by employing Galerkin's technique. Numerical results are given for several cases, and the effect of rotating the anisotropy axis in anisotropic substrates is investigated. The proposed method can be employed to compute the propagation characteristics of microstrip lines printed on anisotropic substrates.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Propagation in Broadside-Coupled Suspended-Substrate Stripline in E-Plane

H. Mizuno, C.J. Verver, R.J. Douville and M.G. Stubbs. "Propagation in Broadside-Coupled Suspended-Substrate Stripline in E-Plane." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 946-950.

The spectral-domain analysis is applied to the derivation of the propagation characteristics of the even and odd mode, for the broad-sidecoupled suspended-substrate stripline (BCSSS). The characteristic impedance, based on the current-power definition, as well as the effective permittivity are evaluated. Numerical results are presented illustrating the effects of several different dimensional parameters. Numerical results indicate a large spread between even- and odd-mode impedance for thin substrates ($D/A < 0.045$) and stripwidths ranging $0.046 \leq W/B \leq 0.47$, suggesting tight coupling. Negligible frequency dependence on odd-mode impedance is evident, as well as significant frequency effects on even-mode impedance. Considerable dispersion is shown to be present in the odd mode for wider strips. Measured results for a low-pass filter and cascaded transitions are presented.

[Click on title for a complete paper.](#)





[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)



Analysis of Arbitrarily Oriented Microstrip Transmission Lines in Arbitrarily Shaped Dielectric Media Over a Finite Ground Plane

J. Venkataraman, S.M. Rao, A.R. Djordjevic, T.K. Sarkar and Y. Naiheng. "Analysis of Arbitrarily Oriented Microstrip Transmission Lines in Arbitrarily Shaped Dielectric Media Over a Finite Ground Plane." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 952-960.

A numerical analysis is presented for a multiconductor transmission line in multilayered lossy, dielectric regions where the ground plane is of finite extent. The transmission lines are infinitely long and vary in cross section from finite to infinitesimally thin. The Green's function for such a two-dimensional transmission line involves an arbitrary constant. If the ground plane is infinite, the method of images could be used where this constant cancels out. However, in the case of a finite ground plane, the constant has to be evaluated. Here a numerical method is presented where the constant could be eliminated rather than evaluated by imposing the condition for the total charge to be zero. The transmission lines, dielectric regions, and the ground plane can have arbitrary cross sections.

[Click on title for a complete paper.](#)



IEEE

Contents

Publications

Issues

Papers

Authors

Analysis of Finite Conductivity Cylindrical Conductors Excited by Axially-Independent TM Electromagnetic Field

A.R. Djordjevic, T.K. Sarkar and S.M. Rao. "Analysis of Finite Conductivity Cylindrical Conductors Excited by Axially-Independent TM Electromagnetic Field." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 960-966.

A method is presented for the analysis of a system of cylindrical conductors, of large but finite conductivity, situated in a uniform dielectric and excited by an axially-independent TM electromagnetic field. The analysis is based on separating the space into the region exterior to the conductors and regions interior to the conductors, placing equivalent electric and magnetic currents on the boundary surfaces, applying the boundary conditions for the tangential fields and, hence, obtaining a system of coupled integral equations. Due to the special geometry and the chosen excitation, the problem treated is a two-dimensional one. The distribution of the unknown surface currents is approximated by pulses, and the amplitudes of these pulses are determined by a point-matching technique. This method is applied to the problem of determining the inductance and resistance of two-wire transmission lines.



Abstracts

Application of Davidenko's Method to the Solution of Dispersion Relations in Lossy Waveguiding Systems

S.H. Talisa. "Application of Davidenko's Method to the Solution of Dispersion Relations in Lossy Waveguiding Systems." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 967-971.

Davidenko's method is a reduction of Newton's method for the numerical solution of n-coupled nonlinear algebraic equations into n-coupled first-order differential equations in a dummy variable. This algorithm is useful for the solution of dispersion relations of electromagnetic waves propagating in lossy waveguiding structures, particularly layered geometries containing one or more gyrotropic layers. In this class of problems, Newton-based numerical techniques are not always satisfactory and Davidenko offers an alternative which is efficient and reliable and which relaxes the extent of the restriction placed on the initial guess to be sufficiently close to the solution. Presented are Davidenko's method, its application to lossy-waveguide dispersion relations, and an example where the algorithm was applied successfully.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Method of Moments as Applied to Electromagnetic Problems

M.M. Ney. "Method of Moments as Applied to Electromagnetic Problems." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 972-980.

This paper reviews one of the most important general methods for solving electromagnetic-field problems, namely, the moment method. It begins with a brief mathematical foundation of the general method. Then, the various specializations are described, accompanied with relevant references to illustrate the pitfalls and shortcomings, as well as the advantages, as compared to other methods. Deterministic and eigenvalue problems are both discussed separately. Finally, two advanced techniques which have been found to be among the most efficient ones for solving matrix equations resulting from the moment method, namely, the conjugate gradient and the pseudo-inverse, are described. A version of their algorithm which is easily programmable on computer is also presented.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Mode Coupling by a Longitudinal Slot for a Class of Planar Waveguiding Structures: Part I--Theory

P.F. Wilson and D.C. Chang. "Mode Coupling by a Longitudinal Slot for a Class of Planar Waveguiding Structures: Part I--Theory." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 981-987.

Coupling between two parallel-plate waveguides is investigated. Mutual excitation is due to a longitudinal slot in a common plate. The introduction of reflecting boundaries parallel to the slot allows one to model a number of planar waveguiding structures featuring a common coupling mechanism. Part I of this paper details the analysis of the basic slot scattering problem based on the singular integral equation method. If one assumes that the slot is small, then closed-form algebraic modal equations follow. These modal equations are well-adapted to numerical parametric studies.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.

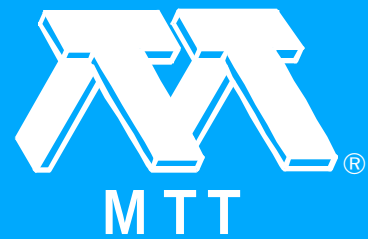


Abstracts

Mode Coupling by a Longitudinal Slot for a Class of Planar Waveguiding Structures: Part II--Applications

P.F. Wilson and D.C. Chang. "Mode Coupling by a Longitudinal Slot for a Class of Planar Waveguiding Structures: Part II--Applications." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 988-993.

Coupling between two parallel-plate waveguides is investigated. Mutual excitation is due to a longitudinal slot in a common plate. The introduction of reflecting boundaries parallel to the slot allows one to model a number of planar waveguiding structures featuring a common coupling mechanism. Part II of this paper presents specific examples of the above approach along with numerical results. Examples include a rectangular coaxial transmission line, broadwall-coupled rectangular waveguides, coupled microstrips, and coupled microstrip and rectangular waveguide.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Theoretical of and Experimental Investigation Finline Discontinuities

M. Helard, J. Citerne, O. Picon and V.F. Hanna. "Theoretical of and Experimental Investigation Finline Discontinuities." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 994-1003.

The dominant and the first-five higher order modes in a unilateral finline are precisely described from a thorough spectral-domain approach. Then, using the modal analysis, coupling coefficients between eigenmodes at a discontinuity that have to be introduced into the scattering matrix formulation are directly computed in the spectral-domain, and, consequently, the equivalent circuit parameters of the discontinuity are determined. Finally, finline discontinuities often used for impedance transformation are investigated and a good agreement between theoretical and experimental results is reported.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Solution of the Finline Step-Discontinuity Problem Using the Generalized Variational Technique

K.J. Webb and R. Mittra. "Solution of the Finline Step-Discontinuity Problem Using the Generalized Variational Technique." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 1004-1010.

The finline step discontinuity is an essential component in millimeter-wave integrated circuits. The discontinuity problem is formulated using an unknown magnetic current in the transverse junction plane. A numerical solution is obtained by a method termed the Generalized Variational Method, and illustrative examples of scattering parameter calculations are given.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Scattering Coefficients of an Inductive Strip in a Finline: Theory and Experiment

J.B. Knorr and J.C. Deal. "Scattering Coefficients of an Inductive Strip in a Finline: Theory and Experiment." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 1011-1017.

This paper describes the application of the spectral-domain method to the computation of the scattering coefficients of an inductive strip in a millimeter-wave finline. Measured scattering data are compared with numerical data to establish the accuracy of the results. The predicted and measured responses of several finline resonators are also compared.

[Click on title for a complete paper.](#)



Abstracts

Comparative Study of Mode-Matching Formulations for Microstrip Discontinuity Problems (Oct. 1985 [T-MTT])

T.S. Chu, T. Itoh and Y.-C. Shih. "Comparative Study of Mode-Matching Formulations for Microstrip Discontinuity Problems (Oct. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 1018-1023.

Several matrix formulations for the microstrip step-discontinuity problem are compared. Although they are theoretically identical, one of them has an advantage in numerical labor, relative, and absolute convergence. Results of this method are checked with other published data and with those independently obtained by the modified residue calculus technique.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Analysis of Microstrip Step Discontinuity by the Modified Residue Calculus Technique

T.S. Chu and T. Itoh. "Analysis of Microstrip Step Discontinuity by the Modified Residue Calculus Technique." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 1024-1028.

The microstrip step discontinuity is analyzed by the modified residue calculus technique. The method is numerically stable and efficient. The results obtained have been compared with other available data, and agreement has been found to be quite good.

[Click on title for a complete paper.](#)



Abstracts

Frequency-Dependent Characteristics of Microstrip Discontinuities in Millimeter-Wave Integrated Circuits

P.B. Katehi and N.G. Alexopoulos. "Frequency-Dependent Characteristics of Microstrip Discontinuities in Millimeter-Wave Integrated Circuits." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 1029-1035.

A theoretical approach for the representation of microstrip discontinuities by equivalent circuits with frequency-dependent parameters is presented. The model accounts accurately for the substrate presence and associated surface-wave effects, strip finite thickness, and radiation losses. The method can also be applied for the solution of microstrip components in the millimeter frequency range.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Full-Wave Analysis of Microstrip Open-End and Gap Discontinuities

R.W. Jackson and D.M. Pozar. "Full-Wave Analysis of Microstrip Open-End and Gap Discontinuities." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 1036-1042.

A solution is presented for the characteristics of microstrip open-end and gap discontinuities on an infinite dielectric substrate. The exact Green's function of the grounded dielectric slab is used in a moment method procedure, so surface waves as well as space-wave radiation are included. The electric currents on the line are expanded in terms of longitudinal subsectional piecewise sinusoidal modes near the discontinuity, with entire domain traveling-wave modes used to represent incident, reflected, and, for the gap, transmitted waves away from the discontinuity. Results are given for the end admittance of an open-ended line, and the end conductance is compared with measurements. Results are also given for the reflection coefficient magnitude and surface-wave power generation of an open-ended line on substrates with various dielectric constants. Loss to surface and space waves is calculated for a representative gap discontinuity.

[Click on title for a complete paper.](#)



Abstracts

The Spectral-Domain Approach for Microwave Integrated Circuits

R.H. Jansen. "The Spectral-Domain Approach for Microwave Integrated Circuits." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 1043-1056.

A survey is given of the so-called spectral-domain approach, an analytical and numerical technique particularly suited for the solution of boundary-value problems in microwave and millimeter-wave integrated circuits. The mathematical formulation of the analytical part of that approach is described in a generalized notation for two- and three-dimensional strip and slot-type fields. In a similar way, the numerical part of the technique is treated, keeping always in touch with the mathematical and physical background, as well as with the respective microwave applications. A discussion of different specific aspects of the approach is presented and outlines the peculiarities of shielded-, covered-, and open-type problems, followed by a brief review of the progress achieved in the last decade (1975-1984). The survey closes with considerations on numerical efficiency, demonstrating that spectral-domain computations can be speeded up remarkably by analytical preprocessing. The presented material is based on ten years of active involvement by the author in the field and reveals a variety of contributions by West German researchers previously not known to the international microwave community.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Planar Circuits, Waveguide Models, and Segmentation Method

R. Sorrentino. "Planar Circuits, Waveguide Models, and Segmentation Method." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 1057-1066.

The planar-circuit approach to the analysis and design of microwave integrated circuits (MIC's), with specific reference to microstrip circuits, is reviewed. The planar approach overcomes the limitations inherent to the more conventional transmission-line approach. As the operating frequency is increased and/or low-impedance levels are required, in fact, the transverse dimensions of the circuit elements become comparable with the wavelength and/or the longitudinal dimensions. In such cases, one-dimensional analyses give inaccurate or even erroneous results. The analysis of planar elements is formulated in terms of an N-port circuit and results in a generalized impedance-matrix description. Analysis techniques for simple geometries, such as the resonant mode expansion, and for more complicated planar configurations, such as the segmentation method, are discussed along with planar models for accounting for fringing fields effects and radiation loss.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Analysis of an Arbitrarily-Shaped Planar Circuit a Time-Domain Approach

W.K. Gwarek. "Analysis of an Arbitrarily-Shaped Planar Circuit a Time-Domain Approach." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 1067-1072.

A study of an arbitrarily-shaped planar circuit is reported. The theoretical background is presented and then a numerical method of analysis is introduced. Experiments show good agreement between the theoretical calculations and the measurements. The examples of applications concern stripline circuits but the method may be also applied to waveguides.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Use of the FFT to Speed Analysis of Planar Symmetrical 3- and 5-Ports by the Integral Equation Method

G.P. Riblet. "Use of the FFT to Speed Analysis of Planar Symmetrical 3- and 5-Ports by the Integral Equation Method." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 1073-1075.

In a recent paper, it was shown that, for planar two-dimensional problems with symmetry, linear eigenvalue-impedance matrix entry relations may be used to simplify the integral equation method of analysis. In this paper, it is pointed out that, in the case of planar circuits with N-fold rotational symmetry, these linear relations take the form of the discrete Fourier transform (DFT). Consequently, the fast Fourier transform (FFT) may be used in its place to give a further substantial improvement in computational speed.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.

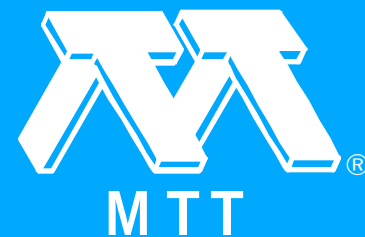


Abstracts

The Skin-Effect at High Frequencies

P. Waldow and I. Wolff. "The Skin-Effect at High Frequencies." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 1076-1082.

During the last years, monolithic integrated circuits have been used more and more in microwave techniques. As a result, the metallization thickness of the planar circuits became of the order of the skin depth even at very high frequencies, so that the approximate methods for loss calculations used until recently must be revised. In this paper, a variational formulation of the skin-effect problem for calculating the losses as well as the inner inductances of components in such circuits will be described, and the first numerical results of the method will be discussed.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Approximation Techniques for Planar Periodic Structures

R.C. Compton and D.B. Rutledge. "Approximation Techniques for Planar Periodic Structures." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 1083-1088.

The rigorous calculation of electromagnetic properties of periodic meshes using moment methods requires considerable algebraic work and computer resources. In this paper, a number of easy to use approximation techniques for analyzing thin structures with square, rectangular, and circular holes are presented. Formulas for the effective impedance of these meshes are described which can easily take into account oblique incidence and the presence of a dielectric substrate. In addition, techniques for analyzing more complex-shaped apertures such as a cross are discussed. These methods are more accurate than existing approximation techniques and can be applied to a wide range of situations that could not be handled before.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Magnetostatic Volume Modes of Ferrite Thin Films with Magnetization Inhomogeneities through the Film Thickness

N.E. Buris and D.D. Stancil. "Magnetostatic Volume Modes of Ferrite Thin Films with Magnetization Inhomogeneities through the Film Thickness." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 1089-1096.

A variational method recently used to analyze magnetostatic surface waves in films with arbitrary magnetization inhomogeneities through the film thickness is extended and applied to volume-wave modes in similar structures. Methods for calculating dispersion relations, delay characteristics, and magnetostatic potential functions for both forward and backward volume waves are discussed. Also, concepts pertaining to homogeneous films such as mode bandwidth and dimensional scaling effects are extended to the inhomogeneous case. Detailed consideration is given to a class of modes whose zero-wavenumber cutoff frequencies are associated with the minimum magnetization of the film. Calculations for linear and ion-implanted films are presented as numerical examples. Forward volume waves show greater sensitivity to the inhomogeneities than do backward volume waves for the cases considered.

[Click on title for a complete paper.](#)



Abstracts

Patent Abstracts (Oct. 1985 [T-MTT])

"Patent Abstracts (Oct. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 1097-1100.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

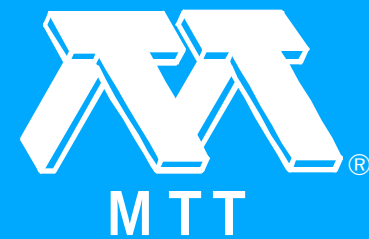
Click on title for a complete paper.



Abstracts

Back Cover (Oct. 1985 [T-MTT])

"Back Cover (Oct. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): b1-b2.



- Contents
- Publications
- Issues
- Papers
- Authors

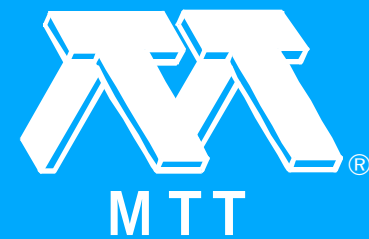
Click on title for a complete paper.



Abstracts

Front Cover (Nov. 1985 [T-MTT])

"Front Cover (Nov. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): f1-f2.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Cutoff Frequency of a Homogeneous Optical Fiber with Arbitrary Cross Section

C.-C. Su. "Cutoff Frequency of a Homogeneous Optical Fiber with Arbitrary Cross Section." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1101-1105.

Through an original derivation of the boundary conditions right at cutoff, the method of circular-harmonic expansion proposed by Goell to calculate propagation constants is extended to treat cutoff frequencies of homogeneous optical fibers with arbitrary cross sections in the rigorous vector form. This circular-harmonic method is also extended to the scalar form, from which the cutoff frequency can be obtained in a simpler way. Numerical results of cutoff frequencies of both the vector and the scalar forms are presented.

[Click on title for a complete paper.](#)



Abstracts

Approach for Evaluating Effects of Wall Losses on Quarter-Wave Short-Circuit Impedance Standards

H.B. Sequeira and B.C. Yates. "Approach for Evaluating Effects of Wall Losses on Quarter-Wave Short-Circuit Impedance Standards." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1106-1109.

The conservation of energy principle and first-order perturbation theory have been applied to obtain formulas for the physical lengths and reflection coefficient magnitudes of quarter-wave coaxial and rectangular waveguide short-circuit impedance standards. The expressions for the physical lengths ensure zero phase angle at the mating interface when wall losses are present. The method can be extended to include small dielectric and magnetic losses, and requires only knowledge of the loss-free solutions. It can also be applied to other waveguiding structures which support uncoupled modes.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

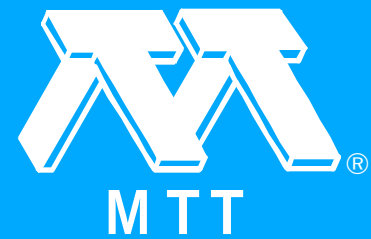


Abstracts

On the Higher Order Modes of Elliptical Optical Fibers

S.M. Saad. "On the Higher Order Modes of Elliptical Optical Fibers." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1110-1113.

The point-matching numerical method is here employed for the modal analysis of the elliptical optical fiber of any eccentricity. Good agreement with other analytical and numerical methods is obtained. Previous disagreement in the literature is resolved.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A Surface Integral Equations Method for Homogeneous Optical Fibers and Coupled Image Lines of Arbitrary Cross Sections

C.-C. Su. "A Surface Integral Equations Method for Homogeneous Optical Fibers and Coupled Image Lines of Arbitrary Cross Sections." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1114-1119.

Based on the surface integral equations, a novel method is developed to treat the propagation characteristics of homogeneous optical fibers of arbitrary cross sections in both the rigorous vectorial and the approximate scalar formulations. This method is ready to be generalized to the cases of multiple dielectric waveguides, such as the coupled dielectric image lines used in microwave integrated circuits. Further, Green's function at cutoff is presented so that the corresponding cutoff frequencies can be treated. Numerical results of propagation characteristics of single and double waveguides are presented in both the vector and scalar forms.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Time-Domain Perturbational Analysis of Nonuniformly Coupled Transmission Lines

Y.-C.E. Yang, K.J. Au and Q. Gu. "Time-Domain Perturbational Analysis of Nonuniformly Coupled Transmission Lines." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1120-1130.

A method of analyzing the time-domain behavior of a pair of nonuniformly coupled, dispersionless transmission lines is presented. The coupling coefficient of the system is assumed to be slowly varying with position. The set of coupled equations is transformed into a form for which the method of characteristics applies. Instead of numerically integrating the coupled equations, we decouple the equations by writing the solution in the form of a perturbational series. The resulting zeroth-order term corresponds to the inverse transform of the WKB approximation in the frequency domain, which contains only the wavefront and amplitude information. The higher order terms can be directly interpreted as reflections along the lines. Causality is satisfied to all orders. This method has the advantage of easier implementation, and is more versatile than frequency-domain methods as well as the brute-force numerical integration of the coupled partial differential equations.

[Click on title for a complete paper.](#)



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Rigorous Solution for Dispersive Microstrip

M. Hashimoto. "A Rigorous Solution for Dispersive Microstrip." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1131-1137.

Closed-form solutions are presented for the frequency-dependent characteristic impedance of microstrip as defined by the ratio of the electromagnetic power to the square of the electric current. The analysis uses the rigorous spectral-domain approach based on the charge-current formulation. Analytical expressions for the impedance solutions show that the frequency dispersion occurring in microstrip is characterized in terms of three different impedances. The characteristic impedance of a TEM line given in the limit as the frequency decreases is derived from one of these impedances, and the other two are involved in expressing the nature of dispersion to vanish in the limit. Conversely, as the frequency increases, these dispersive parts grow rapidly. Some comments are given in conjunction with previous works.

[Click on title for a complete paper.](#)



Abstracts

Computer-Aided Testing of Mixers Between 90 and 350 GHz

M.T. Faber and J.W. Archer. "Computer-Aided Testing of Mixers Between 90 and 350 GHz." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1138-1145.

Two computer-controlled measurement systems have been constructed to allow testing of millimeter-wave Schottky-barrier diode mixers in the frequency range from 90 to 350 GHz. A theoretical background to mixer measurement is presented and the design of the instruments and associated computer software is described. In a companion paper, a typical application of the measurement system to the testing and evacuation of a practical W-band, cryogenic, fixed-tuned Schottky diode mixer is used to demonstrate the performance and versatility of the instruments.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Polynomial Approximations for the Electric Polarizabilities of Some Small Apertures

N.A. McDonald. "Polynomial Approximations for the Electric Polarizabilities of Some Small Apertures." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1146-1149.

Polynomial expressions are given for the electric polarizabilities of some small apertures of various shapes, as functions of the aperture width to length ratios. The shapes considered are rectangle, diamond, rounded end slot, and ellipse, of which only the last is known to have an exact solution. Although the polynomial expressions are not exact, all embody features which would exist in exact solutions if they could be found. Values calculated from the polynomials compare well with previously published data, indicating accuracy sufficient for many purposes.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Field in Single-Mode Helically-Wound Optical Fibers

X.-S. Fang and Z.-Q. Lin. "Field in Single-Mode Helically-Wound Optical Fibers." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1150-1154.

The scalar field wave equations of the fundamental mode in single-mode helically-wound optical fibers with circular cross section are obtained by using the Maxwell equations in the local orthogonal curvilinear coordinate system introduced by Tang. Two important results are brought about 1) The field in the above-mentioned fibers maintains a quasi-linear state of polarization while its orientation rotates with a rotation rate close to $-\tau$ with respect to the Serret-Frenet frame. 2) The state of polarization (SOP) of the above field changes periodically along the propagation distances from 1 to a value a little less than 1, and, for a fixed s , it changes periodically according to the incident polarized angles with a period $\pi/2$. The theoretical results have been verified by the experimental measurements.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

New MIC Power Dividers Using Coupled Microstrip-Slot Lines: Two-Sided MIC Power Dividers

H. Ogawa, T. Hirota and M. Aikawa. "New MIC Power Dividers Using Coupled Microstrip-Slot Lines: Two-Sided MIC Power Dividers." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1155-1164.

New microwave integrated circuit (MIC) power dividers have been proposed. These power dividers utilize both substrate surfaces and employ coupled microstrip-slot lines, microstrip lines, and slotlines; therefore, we make use of the two-sided MIC technique. The out-of-phase-type power dividers, as well as the in-phase-type circuits, can be constructed by the circuit configuration method described in this paper. Coupled microstrip slot lines, an important component of the power dividers, have been analyzed by the spectral-domain method, and their characteristics have been calculated and the numerical results shown for several different structural parameters for the purpose of designing power dividers. The out-of-phase-type power divider was fabricated at the 26-GHz band and good performance achieved, confirming the calculated accuracy through experimental results. The new two-sided MIC power dividers are expected to have wide applications at the millimeter-wave band.



On the Narrow-Band Microwave Filter Design Using a Dielectric Rod

J.N. Sahalos and E. Vafiadis. "On the Narrow-Band Microwave Filter Design Using a Dielectric Rod." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1165-1171.

A method is presented to design bandpass or bandstop filters in the microwave region. The procedure is based on the analysis of the discontinuity problem of a circular cylindrical dielectric rod centered in a rectangular waveguide. For some special relations between the frequency, the dielectric constant, and the radius of the rod, the reflection or the transmission coefficient becomes equal to zero. This relation gives the narrow-band filter. Experimental results for filter design with the help of plastic and porcelain rods are given.



Abstracts

Millimeter-Wave, Shot-Noise Limited, Fixed-Tuned Mixer

M.T. Faber and J.W. Archer. "Millimeter-Wave, Shot-Noise Limited, Fixed-Tuned Mixer." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1172-1178.

In a companion paper, two computer-controlled measurement systems for testing millimeter-wave Schottky-barrier diode mixers between 90 and 350 GHz have been presented. In this paper, a typical application of the measurement system to the testing and evacuation of a practical W-band, cryogenic, fixed-tuned Schottky diode mixer is used to demonstrate the performance of the instruments. The mixer is shown to have a single-sideband noise temperature of less than 140 K between 98 and 118 GHz and, at 110 GHz, achieves shot-noise limited performance, with a SSB noise temperature of only 81 K and corresponding conversion loss of 5.7 dB.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A Very Low-Noise Single-Sideband Receiver for 200-260 GHz

N.R. Erickson. "A Very Low-Noise Single-Sideband Receiver for 200-260 GHz." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1179-1188.

A cryogenic Schottky diode mixer receiver has been built for the 230-GHz region with true single-sideband operation and a receiver noise temperature as low as 330 K. Local oscillator power is provided by a frequency tripler, with LO injection and sideband filtering accomplished through quasi-optical interferometers. The image sideband is terminated in a cryogenic load with an effective temperature of 33 K. The IF bandwidth is 600 MHz with nearly flat noise, and the RF band is nearly flat over 50 GHz using backshort tuning of the mixer.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

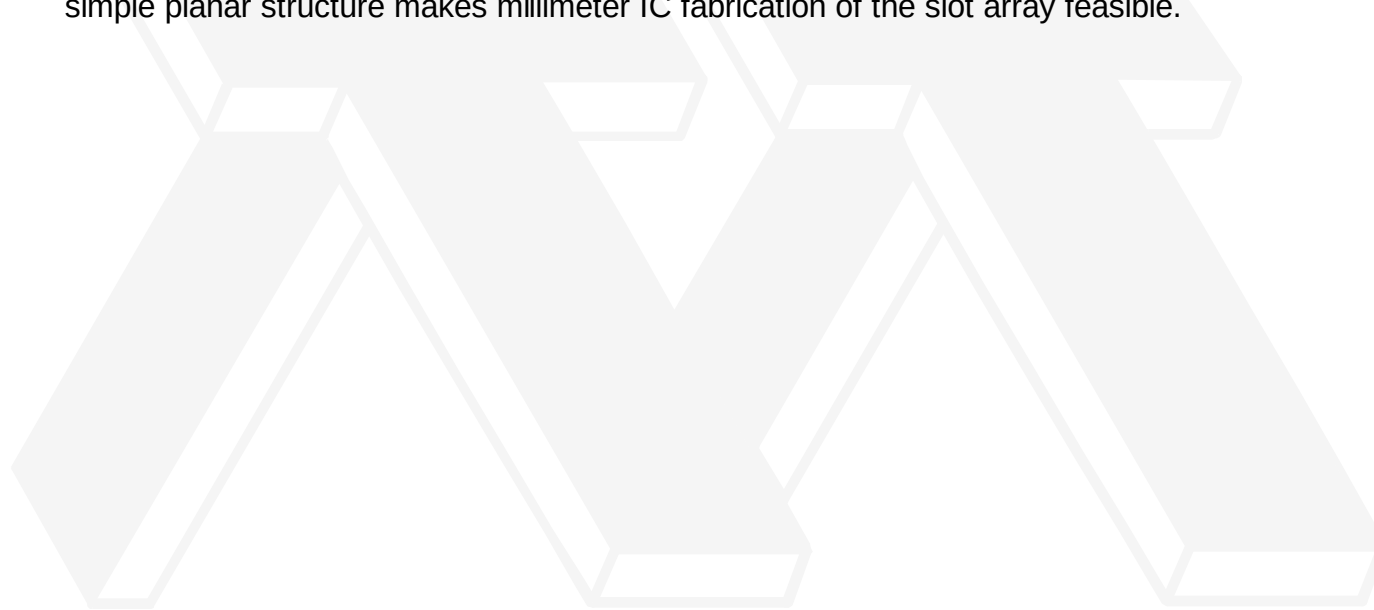
[Papers](#)

[Authors](#)

A Quasi-Optical Multiplying Slot Array

N. Camilleri. "A Quasi-Optical Multiplying Slot Array." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1189-1195.

A quasi-optical frequency-multiplying slot array for high-power millimeter-wave applications has been demonstrated. Single slot conversion loss measured for X- and Ka -band models produced results that are similar to in-waveguide multipliers using the same type of diodes. An eight-element multiplying array exhibited better than --12-dB sidelobe level at 70 GHz. The simple planar structure makes millimeter IC fabrication of the slot array feasible.



[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Equivalent Circuits of Junctions of Slab-Loaded Rectangular Waveguides

A.T. Villeneuve. "Equivalent Circuits of Junctions of Slab-Loaded Rectangular Waveguides." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1196-1203.

Equivalent-circuit parameters are calculated for junctions of dielectrically loaded rectangular waveguides. The loading takes the form of axial slabs consisting of dielectric sandwich structures. Two different forms of the equivalent circuit are considered. One form, which consists of an ideal transformer between two sections of transmission line, appears to be the most natural for these junctions. A number of examples are given.

[Click on title for a complete paper.](#)



Abstracts

The Application of Planar Anisotropy to Millimeter-Wave Ferrite Phase Shifters

S.B. Thompson and G.P. Rodrigue. "The Application of Planar Anisotropy to Millimeter-Wave Ferrite Phase Shifters." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1204-1209.

The torque produced by the planar anisotropy that occurs in some hexagonal ferrites is included in the equation of motion of the magnetization. The elements of the permeability tensor, derived here for a lossless approximation, are affected by the planar anisotropy in much the same way as by an increase in saturation magnetization. This modified permeability has been incorporated into a model for a planar ferrite loaded rectangular waveguide, and the calculated values for differential nonreciprocal phase shift are found to increase substantially over those for a conventional isotropic ferrite.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Step Response of Lossless Nonuniform Transmission Lines with Power-Law Characteristic Impedance Function (Short Papers)

H. Curtins and A.V. Shah. "Step Response of Lossless Nonuniform Transmission Lines with Power-Law Characteristic Impedance Function (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1210-1212.

The step-response waveform of the lossless nonuniform transmission line possessing a characteristic impedance function $Z_c(x) = Z_0/(1 + \eta x)^{2n}$, $n = 0, 1, 2, \dots$, is deduced. The simple and closed-form solutions should be useful for pulse transient analysis involving nonuniform transmission lines.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Development and Testing of a 2450-MHz Lens Applicator for Localized Microwave Hyperthermia (Short Papers)

Y. Nikawa, M. Kikuchi and S. Mori. "Development and Testing of a 2450-MHz Lens Applicator for Localized Microwave Hyperthermia (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1212-1216.

A new type of applicator with a convergent lens for localized microwave hyperthermia is developed. A lens applicator of direct contact type was designed to conduct actual and progressive experiments with phantoms of simulated fat and muscle tissues heated at 2450 MHz. The experimental results showed that the heating power penetration depth increased 40 percent with this applicator as compared to a simple rectangular waveguide applicator with the same size aperture that had generally been used for microwave hyperthermia. Our applicator had a concave-shaped aperture and was designed to contact well with the heating medium whose shape was cylindrical like a human body.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



On the Analysis and Design of Three Coupled Microstrip Lines (Short Papers)

E.A.F. Abdallah and N.A. El-Deeb. "On the Analysis and Design of Three Coupled Microstrip Lines (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1217-1222.

The general configuration of a system of three coupled microstrip lines is analyzed and its parameters (mode numbers, effective dielectric constants, and modal impedances) are derived in terms of the system capacitances. These capacitances were computed by using the network analog method. In this paper, it is shown that for a system of three equal-width lines, there are, in general, the normal-mode impedances (four of which are independent). This would make the design of a system based on three equal-width lines, mainly with narrow strips and narrow separations, rather complicated. For a system of three equal-impedance lines, the number of mode impedances reduces to only three, which would facilitate the design. This latter system can be achieved by an appropriate increase of the width of the center line relative to that of the outer lines. Thus, a set of curves and a corresponding formula are obtained to determine this relative increase as a function of the geometric parameters. A complete set of design data for the new geometric configuration are also given. The experimental results of two fabricated three-line couplers, one based on the present data and the second on other published data, are compared.



Abstracts

Broad-Band Permittivity Measurements Using the Semi-Automatic Network Analyzer (Short Papers)

J. Ness. "Broad-Band Permittivity Measurements Using the Semi-Automatic Network Analyzer (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1222-1226.

This paper outlines the use of the network analyzer to measure the dielectric properties of materials over a broad frequency range. The method described here is based on transmission techniques with simple procedures for obtaining initial estimates and unambiguous solutions for the dielectric parameters. A further feature is that this measurement technique provides a degree of self-checking for inconsistent results.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Design Curves for -3-dB Branchline Couplers (Short Paper)

A.F. Celliers and J.A.G. Malherbe. "Design Curves for -3-dB Branchline Couplers (Short Paper)." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1226-1228.

Design curves for --3-dB branchline couplers that include compensation for the junction discontinuities are presented. The curves are obtained by including an accurate model of a stripline T-junction in an optimization program.

[Click on title for a complete paper.](#)



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Power Increase of Pulsed Millimeter-Wave IMPATT Diodes (Short Papers)

R. Pierzina and J. Freyer. "Power Increase of Pulsed Millimeter-Wave IMPATT Diodes (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1228-1231.

The fabrication and encapsulation of single-drift pulsed IMPATT diodes for 73 GHz is described. The transforming properties of the parasitic inductance and capacitance demonstrate the strong influence of diode-mounting technique. The used reduced-height waveguide resonator is described theoretically, giving an indication of optimum matching between resonator and transformed diode impedance. The diodes deliver more than 10-W output power at 73 GHz with 5-percent efficiency, if they are matched to the resonator by proper parasitic.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

X-Band Low-Noise GaAs Monolithic Frequency Converter (Short Papers)

K. Honjo, Y. Hosono and T. Sugiura. "X-Band Low-Noise GaAs Monolithic Frequency Converter (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1231-1235.

An X-band, low-noise GaAs monolithic frequency converter has been developed. Multicircuit functions, such as amplification, filtering, and mixing, were integrated on to a single GaAs frequency converter chip. The frequency converter consists of an X-band three-stage low-noise amplifier, an image rejection filter, an X-band dual-gate FET mixer, and an IF-band buffer amplifier. To minimize circuit size without degrading performances, an RC-coupled buffer amplifier was connected directly after a dual-gate FET mixer IF port, and one-section parallel and series microstrip lines were adopted for the amplifier. One-half-micron ($1/2 \mu\text{m}$) single-gate FET's and a one-micron ($1 \mu\text{m}$) dual-gate FET, which have an ion-implanted closely-spaced electrode structure, were used. Either via hole grounds or bonding wire grounds are selectable for the frequency converter. Chip size is $3.4 \times 1.5 \text{ mm}$. The frequency converter provides less than 3-dB noise figure and more than 34-dB conversion gain.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Novel Rectangular Waveguide with Double T-Septums (Short Papers)

G.G. Mazumder and P.K. Saha. "A Novel Rectangular Waveguide with Double T-Septums (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1235-1238.

A new rectangular waveguide with two T-shaped septums in place of solid rectangular ridges has been analyzed theoretically by the Ritz-Galerkin technique and is found to have superior cutoff and bandwidth characteristics of the dominant TE/sub10/ mode compared to the conventional ridged guides. Numerical data are presented and compared with those of symmetric double-ridged guides with identical gap parameters.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Nonradiative Dielectric Waveguide T-Junctions for Millimeter-Wave Applications (Short Papers)

T. Yoneyama and S. Nishida. "Nonradiative Dielectric Waveguide T-Junctions for Millimeter-Wave Applications (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1239-1241.

A high-performance T-junction has been fabricated based on the nonradiative dielectric waveguide. Widths of the main arm and subarm were determined experimentally. The T-junction was provided with a dielectric stub and thin-metal patches which proved to be effective matching elements in improving the performance. Well-balanced outputs in excess of -4 dB were obtained over a frequency range of 2 GHz at a center frequency of 35 GHz.

[Click on title for a complete paper.](#)



A Novel Method for the Analysis of Microwave Two-Port Active Mixers (Short Papers)

J. Dreifuss, A. Madjar and A. Bar-lev. "A Novel Method for the Analysis of Microwave Two-Port Active Mixers (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1241-1244.

An analysis method for a microwave mixer, based on an active nonlinear device, is developed. The method is a two-port extension of Kerr's work on a one-port (diode)-type mixer and utilizes the harmonic balance approach for the large-signal analysis portion. It results in a relatively fast and efficient program, the use of which is demonstrated by simulating the operation of a mixer based on a NEC MESFET for a range of local oscillator available power and frequency conditions.

Abstracts

Single-Stage GaAs Monolithic Feedback Amplifiers (Short Papers)

C.E. Weitzel and D. Scheitlin. "Single-Stage GaAs Monolithic Feedback Amplifiers (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1244-1249.

A theoretical and experimental comparison is made of the performance of GaAs MESFET's with and without negative feedback. The devices are fabricated using a six-step MMIC process, which utilizes polyimide for low-capacitance crossovers and silicon nitride for MIM capacitors. Typical RF performance is 9-dB gain with noise figure less than 4 dB from 100 MHz to 3 GHz. The greatest bandwidth is achieved by incorporating a 3 1/2 turn, low Q inductor, which is connected in series with the feedback resistor and is wrapped around the perimeter of the chip to conserve die area.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

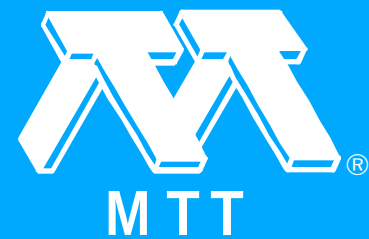
Authors

Homodyne and Heterodyne Studies of GaAs and InP Millimeter-Wave Gunn Mixers (Short Papers)

F.R. Pantoja. "Homodyne and Heterodyne Studies of GaAs and InP Millimeter-Wave Gunn Mixers (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1249-1253.

Detailed investigations of both homodyne and heterodyne self-oscillating mixers have been conducted. The active devices were GaAs and InP Gunn diodes, operating in the frequency region of 94 GHz. In addition to the fourfold comparisons of GaAs and InP homodyne and heterodyne mixers, finer comparisons were made with recently developed diode structures. The InP diodes were of two types either n^{+}/n^{-} sandwich, or n^{-}/n^{+} with a current-limiting cathode contact. The GaAs diodes were of n^{+}/n^{-} sandwich structure. Sensitivity of -80 dBm (homodyne) at a few hundred hertz beat frequency was obtained with InP n^{+}/n^{-} diodes. These results were of the order of 6 dB better than those with GaAs n^{+}/n^{-} and InP n^{-}/n^{+} diodes. With heterodyne, the InP n^{+}/n^{-} gave sensitivity approaching -90 dBm with intermediate frequency at 70 MHz and an IF bandwidth of 33 MHz, which constituted a superiority of 10 dB over the other two diode types.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Optimum Noise Measure Terminations for Microwave Transistor Amplifiers (Short Papers)

C.R. Poole and D.K. Paul. "Optimum Noise Measure Terminations for Microwave Transistor Amplifiers (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1254-1257.

The noise performance of the individual stages in a multistage low-noise amplifier can be quantified by means of the noise measure as proposed by Haus and Adler. The minimization of the noise measure of a given active two-port device is of direct interest to the designer of such amplifiers. A new means of obtaining circles of constant noise measure in the source reflection coefficient plane is presented here. These circles can be used to determine the value of the minimum noise measure for a given active device and the associated source termination. The validity of the new method has been verified by comparison with results obtained using existing equations for the admittance plane and also by experiment.

[Click on title for a complete paper.](#)



Abstracts

Graph Transformations of Nonuniform Coupled Transmission Line Networks and Their Application (Short Papers)

Y. Nemoto, K. Kobayashi and R. Sato. "Graph Transformations of Nonuniform Coupled Transmission Line Networks and Their Application (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1257-1263.

The graph transformation method of [5] has been extended to apply for a class of coupled nonuniform transmission lines whose self and mutual line constants have the same functional dependence along the direction of propagation, and it is assumed that the mode of propagation is TEM. First, the graph representation of such nonuniform coupled two-wire transmission lines is derived by decomposition of the 4 X 4 admittance matrix. This leads to three-port equivalent circuits of nonuniform coupled two-wire line networks. Then, the multiport graph transformations of networks consisting of nonuniform transmission lines and nonuniform stubs are shown. By using the graph transformation of n-wire nonuniform coupled lines, the equivalent circuits for the nonuniform interdigital line and the nonuniform meander line are given. Finally, a meander-line low-pass filter consisting of parabolic tapered coupled transmission lines designed on this equivalent circuit is shown.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Double-Plane Steps in Rectangular Waveguides and Their Application for Transformers, Irises, and Filters (Comments)

M.T.A. Sipila. "Double-Plane Steps in Rectangular Waveguides and Their Application for Transformers, Irises, and Filters (Comments)." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1264-1266.

In the above paper, Patzelt and Arndt have presented a theory for the analysis of rectangular waveguide structures consisting of cascaded double-plane step discontinuities. The theory is based on Dr. Patzelt's dissertation. The presentation of the theory contains several errors.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Direct Method of Obtaining Capacitance from Finite-Element Matrices (Clarification)

R. Kaires and J. Beren. "Direct Method of Obtaining Capacitance from Finite-Element Matrices (Clarification)." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1266-1267.

In the letter by Daly and Helps, they suggest that energy can be minimized on an element-by-element basis. The functional, however, must be treated globally because energy minimization has meaning only over the whole system. TM discussion follows Daly and Helps' reasoning, but on a global basis, and draws different conclusions based on our work with finite elements.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Continuous Comparison Radiometer at 97 GHz (Corrections)

C.R. Predmore, N.R. Erikson, G.R. Huguenin and P.F. Goldsmith. "A Continuous Comparison Radiometer at 97 GHz (Corrections)." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1267-1267.

In the above paper, the reference to Faris should not imply that the correlation radiometer was invented by Faris. This class of radiometers was devised by Dr. Emil Blum and described in his paper "Sensibility des radiotelesopes et recepteurs a correlation," which appeared in Annales D 'Astrophysique, vol. 22, no. 2, pp. 139-163, Mar-Apr. 1959. Dr. Blum's contribution was also cited in the paper "Radio telescopes," published in Methods of Experimental Physics, vol. 12, pt. B, pp. 218-219.

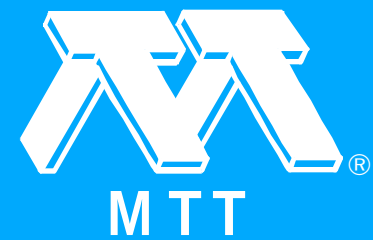
[Click on title for a complete paper.](#)



Abstracts

Patent Abstracts (Nov. 1985 [T-MTT])

"Patent Abstracts (Nov. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1268-1271.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

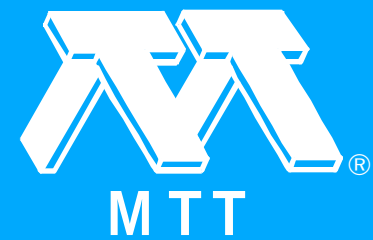
Click on title for a complete paper.



Abstracts

Asian Abstracts (Nov. 1985 [T-MTT])

"Asian Abstracts (Nov. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1272-1288.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (Nov. 1985 [T-MTT])

"Back Cover (Nov. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): b1-b2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

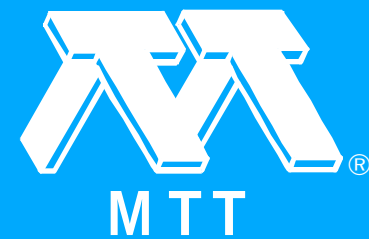
Click on title for a complete paper.



Abstracts

Front Cover (Dec. 1985 [T-MTT])

"Front Cover (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): i-f2.



- Contents
- Publications
- Issues
- Papers
- Authors

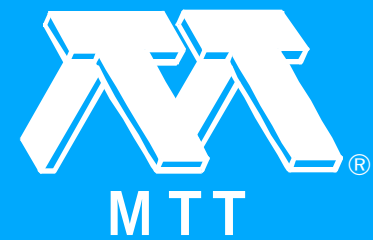
Click on title for a complete paper.



Abstracts

Table of Contents (Dec. 1985 [T-MTT])

"Table of Contents (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1287-1288.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Editor's Overview (Dec. 1985 [T-MTT])

M.W. Muller. "Editor's Overview (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1289-1289.

The motto of the 1985 MTT-S International Symposium was Microwaves: Gateway to the Future, and it was held in St. Louis, within sight of the Gateway Arch, symbol of an earlier successful drive to the future. In this Symposium Issue of the IEEE Transactions on Microwave Theory and Techniques, we are publishing expanded and detailed versions of a small but representative fraction of the more than one hundred and fifty technical papers that were presented during the three days of the Symposium.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

The 1985 MTT-S International Microwave Symposium (Dec. 1985 [T-MTT])

F.J. Rosenbaum. "The 1985 MTT-S International Microwave Symposium (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1290-1297.

St. Louis was the venue of the 1985 IEEE-MTT-S Microwave Symposium and Workshops. This was the first time that the Symposium was hosted in St. Louis and the first Midwestern meeting since the 1971 gathering in Arlington Heights, IL. The conference and associated events were held in the Cervantes Convention Center, a spacious downtown facility that comfortably accommodated both the technical meetings and the Exhibition. The Sheraton St. Louis Hotel served as the headquarters hotel. Five other major hotels were also occupied by conference participants. As our meeting has grown, it has become difficult to find a single facility that can provide suitable meeting and exhibition space and adequate hotel space as well. For that reason, we chose to locate at the Convention Center and use off-site hotels. Nearly continuous shuttle bus service was provided between the Center and the conference hotels. This was particularly helpful to many of the participants as St. Louis experienced a period of rainy weather during the meeting.



IEEE

Contents

Publications

Issues

Papers

Authors

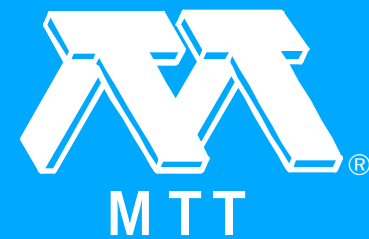
Click on title for a complete paper.



Abstracts

Awards (Dec. 1985 [T-MTT])

"Awards (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1298-1303.



- Contents
- Publications
- Issues
- Papers
- Authors

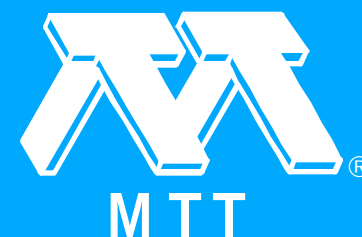
Click on title for a complete paper.



Abstracts

Table of Contents, 1985 MTT Symposium Digest (Dec. 1985 [T-MTT])

"Table of Contents, 1985 MTT Symposium Digest (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1304-1309.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Coplanar Waveguide Short-Gap Resonator for Medical Applications

Y.X. Wang. "Coplanar Waveguide Short-Gap Resonator for Medical Applications." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1310-1312.

A coplanar waveguide short-gap resonator as an electromagnetic energy coupler for medical applications is described. The principles and design formulas are given and the experimental results for a pair of the couplers designed to operate at 915 MHz are provided. From the data obtained on a phantom, it can be shown that the coupling efficiency of this coupler is at least 3 dB better, compared with the other kinds of coplanar waveguide couplers.

[Click on title for a complete paper.](#)



Abstracts

Formulation of the Singular Integral Equation Technique for Planar Transmission Lines

A.S. Omar and K. Schunemann. "Formulation of the Singular Integral Equation Technique for Planar Transmission Lines." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1313-1322.

The singular integral equation technique is used to determine the normal modes of propagation in general planar transmission lines. Taking finlines as, an example, it is demonstrated how high-order modes can effectively and accurately be calculated. It is also shown that complex and backward-wave modes, which are known to exist in rectangular and circular waveguides with dielectric inserts, can also exist in finlines. Besides a discussion of their characteristic features, this paper describes the conditions under which complex and backward-wave modes are found in finlines.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Effects of Side-Wall Grooves on Transmission Characteristics of Suspended Striplines (Dec. 1985 [T-MTT])

E. Yamashita, B.Y. Wang, K. Atsuki and K.R. Li. "Effects of Side-Wall Grooves on Transmission Characteristics of Suspended Striplines (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1323-1328.

The use of suspended striplines is becoming an important transmission-line technique at millimeter wavelengths because of low attenuation, weak dispersion, and various merits in manufacturing processes. This paper estimates the effects of side-wall grooves of these lines on transmission characteristics within the TEM wave approximation.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Design of Microwave Oscillators and Filters Using Transmission-Mode Dielectric Resonators Coupled to Microstrip Lines

A. Podcameni and L.F.M. Conrado. "Design of Microwave Oscillators and Filters Using Transmission-Mode Dielectric Resonators Coupled to Microstrip Lines." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1329-1332.

A more detailed model for the transmission-mode dielectric resonator coupled between microstrip lines is given. Novel design approaches for parallel feedback oscillators and bandpass filters are discussed. For oscillators, the design mainly takes into account zero phase shift loop considerations, as in the classical low-frequency approach. Oscillators of this type may offer low phase noise. For filters, the spatial separation between dielectric resonators favors multipole designs. Using the same microstrip layout, different shapes and bandwidths may be obtained by simple tuning.

[Click on title for a complete paper.](#)



Abstracts

Finline and Metal Insert Filters with Improved Passband Separation and Increased Stopband Attenuation

R. Vahldieck and W.J.R. Hoefer. "Finline and Metal Insert Filters with Improved Passband Separation and Increased Stopband Attenuation." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1333-1339.

A new class of optimized finline and metal insert filters is introduced. In these filters, the ladder-type insert is located in a waveguide section which is either wider or narrower than the embedding standard waveguide. A step junction at each end forms the transition to the standard waveguide and is included in the analysis. Both filter types provide a better suppression of spurious passbands and have significantly improved stop-band attenuation. Filters with enlarged sections are useful for design at the lower end of the waveguide band, whereas the narrower version is appropriate for bandend design.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Study of W-Band Subharmonically Pumped Mixer

W. Yun-yi and S. Yong-Hui. "A Study of W-Band Subharmonically Pumped Mixer." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1340-1345.

A W-band subharmonically pumped mixer with packaged Schottky diodes has been developed. The design and performance of this mixer are described in detail. A new method for measuring the embedding network parameters of the subharmonically pumped mixer has been developed and the measurement has been carried out directly at $2f_{\text{sub LO}}$ and $2f_{\text{sub LO}} \pm f_{\text{if}}$. A special program for the analysis of the subharmonically pumped mixer has been developed, and computed results are given in comparison with measured results.

[Click on title for a complete paper.](#)



Abstracts

A 20--40-GHz Push--Push Dielectric Resonator Oscillator

A.M. Pavio and M.A. Smith. "A 20--40-GHz Push--Push Dielectric Resonator Oscillator." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1346-1349.

A novel coupling method is employed in the design of a push-push broad-band dielectric resonator oscillator for K- and Ka-band operation. The oscillators realized with this technique exhibit excellent spectral purity, power output, and suppression of spurious outputs.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

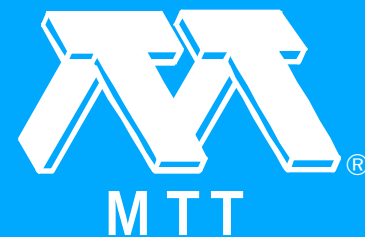


Abstracts

Microwave Active Filters Based on Transversal and Recursive Principles

C. Rauscher. "Microwave Active Filters Based on Transversal and Recursive Principles." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1350-1360.

Transferral and recursive filter concepts, normally associated with discrete-time applications, are adapted for implementation in the microwave frequency range. Principal focus is on microwave active filter designs that permit realization of wide bandwidths, with microwave transistors used as active elements. A transversal-type and a recursive-type experimental filter, both of which exhibit 9-15-GHz bandpass responses, serve to illustrate aspects of physical implementation, while offering a convenient basis for comparing the two different approaches.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Influence of Conductor Shields on the Q-Factors of a TE /sub 0/ Dielectric Resonator

Y. Kobayashi, T. Aoki and Y. Kabe. "Influence of Conductor Shields on the Q-Factors of a TE /sub 0/ Dielectric Resonator." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1361-1366.

Two approaches due to the complex frequency and to the perturbation theory are described to compute accurately the Q-factors of the circularly-symmetric TEO modes for dielectric rod resonators placed between two parallel conductor plates and in a conductor cavity. These techniques allow us to estimate separately the Q-factors due to radiation, conductor, and dielectric losses from only the computation of resonant frequencies by means of the mode-matching method. Validity of the theories is verified by experiments. The influence of the conductor shields on the Q-factors is discussed from the computed results. A possibility of realizing high-Q dielectric resonators is suggested.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Theoretical Efficiency for Triplers Using Nonideal Varistor Diodes at Submillimeter Wavelengths

K. Benson and M.A. Frerking. "Theoretical Efficiency for Triplers Using Nonideal Varistor Diodes at Submillimeter Wavelengths." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1367-1374.

The theoretical efficiency for frequency triplers multiplying from 300 to 900 GHz has been calculated for nonideal GaAs Schottky diodes operating in the varistor mode. The maximum efficiency is determined to be about 7 percent, only slightly smaller than that for ideal varistors. Guidelines for optimum bias conditions and embedding network impedances have been determined using the large-signal analysis computer program of Siegel and Kerr.

[Click on title for a complete paper.](#)



Abstracts

W-Band (75-110 GHz) Microstrip Components (Dec. 1985 [T-MTT])

K. Chang, D.M. English, R.S. Tahim, A.J. Grote, T. Pham, C. Sun, G.M. Hayashibara, P.C.H. Yen and W.S. Piotrowski. "W-Band (75-110 GHz) Microstrip Components (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1375-1381.

Various microstrip components, including mixers, IMPATT oscillators, Gunn oscillators, doublers, circulators, and IMPATT amplifiers, have been developed at W-band with state-of-the-art performance. The use of microstrip drastically reduces fabrication costs due to the less stringent machining tolerance. The design and performance of these components will be reported.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A Nonlinear GaAs FET Model for Use in the Design of Output Circuits for Power Amplifiers (Dec. 1985 [T-MTT])

W.R. Curtice and M. Ettenberg. "A Nonlinear GaAs FET Model for Use in the Design of Output Circuits for Power Amplifiers (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1383-1394.

A nonlinear equivalent circuit model for the GaAs FET has been developed based upon the small-signal device model and separate current measurements, including drain-gate avalanche current data. The harmonic-balance technique is used to develop the FET RF load-pull characteristics in an amplifier configuration under large-signal operation. Computed and experimental load-pull results show good agreement.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

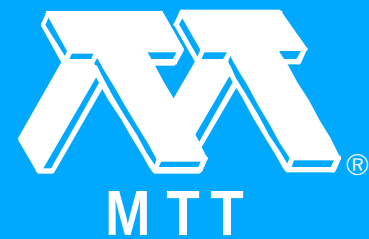
Optimization of Third-Order Intermodulation Product and Output Power from an X-Band MESFET Amplifier Using Volterra Series Analysis

G.M. Lambrianou and C.S. Aitchison. "Optimization of Third-Order Intermodulation Product and Output Power from an X-Band MESFET Amplifier Using Volterra Series Analysis." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1395-1403.

A third-order analysis for accurately predicting large-signal power and intermodulation distortion performance for GaAs MESFET amplifiers is presented. The analysis is carried out for both single- and two-tone input signals using the Volterra series representation and is based only on small-signal measurements. Simple expressions for the nonlinear power gain frequency response, the output power, the gain compression factor, and the third-order intermodulation (IM/sub 3/) power are presented. The major sources of gain compression and intermodulation distortion are identified. Based on the developed nonlinear analysis in conjunction with the device nonlinear model, a systematic procedure for designing a MESFET amplifier under large-signal conditions for optimum output power and IM/sub 3/ performance is proposed. The method utilizes out of band computed matching compensation through a nonlinear model of the amplifier. The accuracy of the device large-signal and IM/sub 3/ distortion characterization and the practicability of the proposed method are illustrated through comparison between measured and predicted results.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Limitations of Microwave and Millimeter-Wave Mixers Due to Excess Noise (Dec. 1985 [T-MTT])

G.M. Hegazi, A. Jelenski and K.S. Yngvesson. "Limitations of Microwave and Millimeter-Wave Mixers Due to Excess Noise (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1404-1409.

Previous analytical work on microwave and millimeter-wave mixers concentrated on circuit aspects, utilizing for the analysis a simple noise model consisting of shot and thermal noise sources at a constant temperature. However, measurements show that the excess noise created in the diode by hot electrons, intervalley scattering, and traps at the metal-semiconductor interface can be important, especially in millimeter-wave mixers. In this paper, the method of calculation of mixer noise performance in the presence of excess noise is given and its influence discussed for room-temperature, as well as for cooled, mixers.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Precision Dielectric Measurements of Nonpolar Polymers in the Millimeter Wavelength Range

M.N. Afsar. "Precision Dielectric Measurements of Nonpolar Polymers in the Millimeter Wavelength Range." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1410-1415.

Complex refractive index and complex dielectric permittivity and loss tangent data for polyethylene, polypropylene, poly-4 methyl-perrtene1 (TPX), and polytetrafluorethylene (Teflon) are presented over the frequency range 60-300 GHz. All of these nonpolar polymers are extremely low-loss materials. As in the microwave region, polyethylene demonstrates exceptionally low-loss characteristics in the entire millimeter-wave region. Polar polymers such as nylon and plexiglass exhibit much higher absorption (nearly an order of magnitude higher) loss compared to nonpolar polymers.

[Click on title for a complete paper.](#)



Abstracts

On the Analysis and Design of Spurline Bandstop Filters

C. Nguyen and K. Chang. "On the Analysis and Design of Spurline Bandstop Filters." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1416-1421.

The parameters of general two-coupled lines and symmetric three-coupled lines in an inhomogeneous medium for the lossless case are obtained. The impedance and chain matrices of spurline bandstop filters are derived. One-section spurline bandstop filters with their stopbands centered near 33 GHz have been designed and tested. There is excellent agreement between the experimental results and those predicted theoretically.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Analysis and Design of Four-Port and Five-Port Microstrip Disc Circuits

K.C. Gupta and M.D. Abouzahra. "Analysis and Design of Four-Port and Five-Port Microstrip Disc Circuits." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1422-1428.

A generalized method for evaluating the S-parameters of a multiport circular microstrip disc circuit is presented. The method is based on the planar circuit approach in which the two-dimensional Green's function of a circular segment is used. Three different applications of multiport circular disc structures are illustrated by designing, i) a broadband (44 percent bandwidth for $|S_{11}| < 0.2$) five-port network suitable for six-port network analyzers, ii) a broad-band three-way power divider with -3 dB, -6 dB, and -6 dB outputs, and iii) a four-port microstrip "cross-over." Experimental results verify the design methodology in all of these three cases.

[Click on title for a complete paper.](#)



Abstracts

Computer-Aided Design Models for Millimeter-Wave Finlines and Suspended-Substrate Microstrip Lines

P. Pramanick and P. Bhartia. "Computer-Aided Design Models for Millimeter-Wave Finlines and Suspended-Substrate Microstrip Lines." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1429-1435.

This paper presents closed-form expressions that model the electrical characteristics of finlines and suspended-substrate microstrip lines over a wide range of structural parameters for millimeter-wave applications. The expressions for finlines are within ± 0.8 percent for the cutoff wavelength and within ± 2 percent for the phase constant and the characteristic impedance (based on the power-voltage definition for a small slot ($d/b \leq 0.2$)) of spectral-domain results. The expressions for suspended and inverted microstrips are within ± 1 percent. The equations are vital to CAD of millimeter-wave planar circuits using these media.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Toward a Generalized Algorithm for the Modeling of the Dispersive Properties of Integrated Circuit Structures on Anisotropic Substrates

A. Nakatani and N.G. Alexopoulos. "Toward a Generalized Algorithm for the Modeling of the Dispersive Properties of Integrated Circuit Structures on Anisotropic Substrates." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1436-1441.

A variety of substrate materials used in practice exhibit anisotropic behavior which is either inherent to the material or may be acquired during the manufacturing process. The development of highly accurate models for the propagation properties of integrated circuit structures necessitates careful accounting of substrate anisotropy. In this paper, an algorithm is developed which models structures such as microstrip, inverted microstrip, slotlines, and coplanar waveguides on anisotropic substrates. The model includes cases where the circuit has a cover or is enclosed in a rectangular shield.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Intensity and Distribution of Hybrid-Mode Fields in Dielectric-Loaded Waveguides

K.A. Zaki and C. Chen. "Intensity and Distribution of Hybrid-Mode Fields in Dielectric-Loaded Waveguides." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1442-1447.

Plots of the intensity and distribution of the electric and magnetic fields of several propagating and evanescent hybrid modes in dielectric-loaded circular waveguides are derived and presented. These plots have not been reported in the literature before, and can be very valuable in applications using dielectric-loaded waveguides and resonators, including microwave, millimeter-wave, and optical guiding structures.

Click on title for a complete paper.



Abstracts

Loss Mechanisms in Dielectric-Loaded Resonators (Dec. 1985 [T-MTT])

K.A. Zaki and C. Chen. "Loss Mechanisms in Dielectric-Loaded Resonators (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1448-1452.

Analysis is presented of resonators consisting of a section of a dielectric-loaded waveguide shorted at both ends. The analysis includes resonant frequency calculations, mode charts, and unloaded Q computations. Numerical results are presented for the unloaded Q's of various modes, as a function of the resonator parameters. Effects of losses in different parts of the resonator wall on the unloaded Q are discussed, and methods of improving these Q's are explored. Experimental verification of the theoretically derived results is made for a number of resonators, and the measurements agree closely with theory.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Analysis of Dielectric Resonators with Tuning Screw and Supporting Structure (Dec. 1985 [T-MTT])

F. Hernandez-Gil and J.P. Martinez. "Analysis of Dielectric Resonators with Tuning Screw and Supporting Structure (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1453-1457.

The finite-element method is applied to calculate the resonant frequencies and electromagnetic field distributions of axisymmetric dielectric resonator modes. Analyses of several resonator shapes, including ring resonator, double resonator, and rod resonator with tuning screw and supporting structure, are made.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

Contents

Publications

Issues

Papers

Authors

A Simple Network Analog Approach for the Quasi-Static Characteristics of General Lossy, Anisotropic, Layered Structures (Dec. 1985 [T-MTT])

V.K. Tripathi and R.J. Bucolo. "A Simple Network Analog Approach for the Quasi-Static Characteristics of General Lossy, Anisotropic, Layered Structures (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT]) (1985 Symposium Issue): 1458-1464.

A network analog method to compute the quasi-static parameters of multilayered planar structures consisting of lossy and/or anisotropic dielectric media is presented. The discrete network analog having complex (e.g., RL, RC) branches can be reduced and solved for the desired interface node voltages and currents by using known techniques leading to the solution of the quasi-static potential problems. All of the quasi-static transmission-line constants required for the evaluation of the propagation characteristics of general multilayered quasi-TEM planar structures are computed from the solution of the two-dimensional discrete analog network. These constants include the self- and mutual-resistances, inductances, conductance, and capacitances per unit length of the structure. The method is applied to compute the propagation constants, impedances, and field distribution for typical single and coupled strip structures on lossy, anisotropic, and layered substrates.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Millimeter-Wave Diplexers with Printed Circuit Elements (Dec. 1985 [T-MTT])

Y.-C. Shih, L.Q. Bui and T. Itoh. "Millimeter-Wave Diplexers with Printed Circuit Elements (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1465-1469.

A novel design of W-band (75-110 GHz) noncontiguous diplexers is described. The common port of the diplexer is fed by suspended probe transitions which are suitable for wide-band applications. The circuit is printed on a single substrate and easily assembled in a split-block housing. The measured insertion loss at the passbands is about 1 dB. The calculated frequency response of a diplexer is in good agreement with the measurement.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Very Wide-Band Microwave MESFET Mixer Using the Distributed Mixing Principle

O.S.A. Tang and C.S. Aitchison. "A Very Wide-Band Microwave MESFET Mixer Using the Distributed Mixing Principle." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1470-1478.

A new theory of distributed (traveling-wave) mixing is presented. A closed-form expression for the conversion gain is derived. Subsequently, the expression is reduced to a very simple form when the mixer approaches the ideal lossless case. A simplified nonlinear model of a GaAs MESFET is also described. Design criteria and considerations are presented. The relative contributions made by circuit parasitic to the conversion gain-bandwidth product are also examined. Experimental verification on a two-section design is described. It exhibits around 4 dB of conversion loss over the signal frequency band from 2 GHz to the cutoff at 10 GHz for an IF of 1.5 GHz. Experimental results obtained corroborate the theoretical predictions. Better performance is expected if more sections are employed.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Predistortion Linearize Using GaAs Dual-Gate MESFET for TWTA and SSPA Used in Satellite Transponders

K. Mahesh, J.C. Whartenby and H.J. Wolkstein. "Predistortion Linearize Using GaAs Dual-Gate MESFET for TWTA and SSPA Used in Satellite Transponders." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1479-1488.

Present traveling-wave tube amplifiers (TWTA) and solid-state power amplifiers (SSPA) used in communication systems both at ground stations and on-board satellites should be highly efficient and provide linear amplification. The performance of these microwave power amplifiers is limited, however, by intrinsic nonlinearities which result in undesirable distortions. In this paper, a new predistortion technique using GaAs dual-gate MESFET's is presented to linearize the TWTA's and SSPA's. The results of a Ku-band (11.7-12.2 GHz) linearized 16-W TWTA and C-band (3.8-4.2 GHz) linearized SSPA are presented.

[Click on title for a complete paper.](#)



Measurement of TDC in Engine by Microwave Technique (Dec. 1985 [T-MTT])

T. Yamanaka, M. Esaki and M. Kinoshita. "Measurement of TDC in Engine by Microwave Technique (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1489-1494.

A microwave technique for determining the top dead center (TDC) of an engine has been developed. Factors affecting systematic errors were investigated experimentally using high-resolution pulses (0.015°) and a uniquely designed probe. Consideration is made for cycle change of the cylinder wall temperature. The main factors are attributable to the thermal expansion of the cylinder and the cylinder pressure change. Under well-defined engine conditions, accuracy of $\pm 0.1^\circ$ CA (crank angle) is probable for TDC measurement. A static method was also employed for an accuracy cross-check.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Broad-Band RF Match to a Millimeter-Wave SIS Quasi-Particle Mixer

A.V. Raisanen, W.R. McGrath, P.L. Richards and F.L. Lloyd. "Broad-Band RF Match to a Millimeter-Wave SIS Quasi-Particle Mixer." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1495-1500.

An integrated superconducting microstrip is shown to be a convenient, flexible, and well-characterized matching element for a super-conductor-insulator- superconductor (SIS) quasi-particle heterodyne mixer. The resonant interaction (Fiske modes) between the Josephson oscillations of a voltage-biased junction and the microstrip provides a convenient method for determining the electrical length of the microstrip line. An open-circuited microstrip stub that reflects a parallel inductance across the junction is used to broaden the bandwidth of the RF match of a 36-40-GHz SIS- mixer. Measurements with Pb-alloy junctions in a full-height waveguide mixer with fixed mechanical tuning give an instantaneous bandwidth of 10 to 15 percent with a mixer noise temperature $T_{\text{sub M}} / (\text{DSB}) = 10 \pm 2.5 \text{ K}$.

[Click on title for a complete paper.](#)



Abstracts

Modeling and Measurement of Microstrip Transmission-Line Structures

P.R. Shepherd and P. Daly. "Modeling and Measurement of Microstrip Transmission-Line Structures." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1501-1506.

New techniques have been employed in both the modeling and measurement of microstrip transmission-line structures. The modeling employs a dual potential approach using finite-element analysis to derive exact bounds to the microstrip characteristics. From these, error limits to the theoretical S-parameters of step-impedance-line structures have been derived. The measurement of the S-parameters were performed on an automatic vector network analyzer using an "on-chip" calibration method with micro-strip calibration pieces. Theoretical results are presented for the test structures on both alumina and gallium arsenide, and measured results are presented for the alumina structure. Error bounds for the measured results have been derived from repeatability, and agreement between theoretical and measured results is reasonably good.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Computer-Aided Noise Analysis of Linear Multiport Networks of Arbitrary Topology

V. Rizzoli and A. Lipparini. "Computer-Aided Noise Analysis of Linear Multiport Networks of Arbitrary Topology." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1507-1512.

The paper discusses a new algorithm for the noise analysis of a linear multiport network. The circuit may include any kind of passive components introducing thermal noise only, and any number of two-port devices described by the usual four noise parameters. On output, the algorithm produces the correlation matrix of the Norton equivalent noise current sources at the network ports. The approach is suitable for implementation into any general-purpose microwave circuit design program.

[Click on title for a complete paper.](#)



Abstracts

A SPICE Model for Multiple Coupled Microstrips and Other Transmission Lines (Dec. 1985 [T-MTT])

V.K. Tripathi and J.B. Rettig. "A SPICE Model for Multiple Coupled Microstrips and Other Transmission Lines (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1513-1518.

A general multiple coupled line model compatible with standard CAD programs, such as SPICE, is presented. It is shown that the model can be used to help analyze and design coupled line (e.g., microstrip) circuits with linear, as well as nonlinear/time varying terminations, and to help study the pulse propagation characteristics in high-speed digital circuits.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Superlinearly Convergent Minimax Algorithm for Microwave Circuit Design (Dec. 1985 [T-MTT])

J.W. Bandler, W. Kellermann and K. Madsen. "A Superlinearly Convergent Minimax Algorithm for Microwave Circuit Design (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1519-1530.

A new and highly efficient algorithm for nonlinear minimax optimization is presented. The algorithm, based on the work of Hald and Madsen, combines linear programming methods with quasi-Newton methods and has sure convergence properties. A critical review of the existing minimax algorithms is given, and the relation of the quasi-Newton iteration of the algorithm to the Powell method for nonlinear programming is discussed. To demonstrate the superiority of this algorithm over the, existing ones, the classical three-section transmission-line transformer problem is used. A novel approach to worst-case design of microwave circuits using the present algorithm is proposed. The robustness of the algorithm is proved by using it for practical design of contiguous and noncontiguous-band multiplexer, involving up to 75 design variables.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A Review of the Panel Discussion on Advances in Millimeter-Wave Subsystems

J.B. Horton and T.H. Oxley. "A Review of the Panel Discussion on Advances in Millimeter-Wave Subsystems." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1531-1533.

The millimeter-wave subsystems panel, was formed to provide an overall picture of the status of millimeter-wave subsystems as seen by a group of panelists from six of the major international companies. The principal features were to be the application of current technologies to systems requiring large quantities of millimeter-wave subsystems. Members of the panel were selected to represent a cross section of technologies and applications as well as to provide an overview of the current technologies throughout the industry. It was recognized early that a diversified group of experts would bring about a varied number of technologies for construction. Emphasis was placed on current and in-place construction techniques, and how these techniques are used to produce practical multifunction subsystems. Almost as an afterthought, panelists were asked to discuss techniques that are applicable to low-volume as well as high-volume production. This last minute change of format seemed appropriate since the current state of the art for many of the techniques is in the prototype stages, that is, still not in the high-volume stage. During the panel discussion, this factor was brought out even more.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Advances in Millimeter-Wave Systems in Japan

Y. Konishi. "Advances in Millimeter-Wave Systems in Japan." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1534-1537.

This paper discusses recent applications of millimeter waves and the relating subsystems in Japan. Also, the recent advancement of millimeter-wave active and passive components in Japan is included.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Integrated Millimeter-Wave Systems and Subsystems Using Finline and Related E-Plane Technologies

H. Meinel. "Integrated Millimeter-Wave Systems and Subsystems Using Finline and Related E-Plane Technologies." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1538-1541.

Reduced production costs is one of the most important requirements for the successful and widespread application of millimeter-wave systems in the future. Finline integration techniques, combined with E-plane- or milled-block waveguide technology, provide a suitable solution. Three already realized millimeter-wave sensors, using this design approach will be described: - a 61-GHz Doppler sensor, being used to determine the top dead center in combustion engines, accuracy being a few angle minutes; - A dual-polarization front-end for a frequency-agile 94-GHz Pulse-Doppler-radar featuring an overall conversion loss of 11 dB (pin-diode switch, filter, diplexer-circulator, and mixer losses are included); - a 66-GHz radar front-end for a helicopter obstacle warning radar with only four separated millimeter-wave "Super" components (the provided output power is 1.5 W peak, the achieved receiver conversion loss is less than 7 dB).



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Millimeter-Wave Hybrid Microstrip Subsystems

T.H. Oxley and D.A. Williams. "Millimeter-Wave Hybrid Microstrip Subsystems." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1542-1546.

This paper reviews the application of hybrid open-microstrip technology to millimeter-wave (30-110 GHz) military subsystems. The relevant circuit techniques, active and passive devices, and construction methods are considered. Examples of components/subsystems are discussed.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

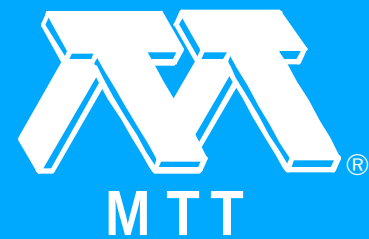
[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Foreword (Dec. 1985 [T-MTT])

R.W. Sudbury. "Foreword (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1547-1547.

The 1985 IEEE Microwave and Millimeter-Wave Monolithics Symposium was held on June 3 and 4, 1985 in St. Louis, MO, in conjunction with the IEEE MTT-S International Microwave Symposium. A total of 686 attended. This the fourth Microwave and Millimeter Wave Monolithic Circuits Symposium continued to enjoy a high level of interest from the technical community. This was reflected in the quality of submissions to the Technical Program Committee and the high attendance for all the Symposium sessions. The Technical Program Committee worked diligently to carefully review the papers submitted and provided a quality program.

[Click on title for a complete paper.](#)



Abstracts

A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications (Dec. 1985 [T-MTT])

K. Kanazawa, M. Kazumura, S. Nambu, G. Kano and I. Teramoto. "A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1548-1554.

A double-balanced dual-gate FET mixer has been developed for application in the front-end circuit of UHF receivers. A 6--8-dB conversion gain has been obtained without an additional matching circuit over a wide frequency range from 100-800 MHz with good suppression of RF/LO feedthrough by more than 20 dB and third-order intermodulation product of --60 dB.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A 6.5--16-GHz Monolithic Power Amplifier Module

S.D. Bingham, S.D. McCarter and A.M. Pavio. "A 6.5--16-GHz Monolithic Power Amplifier Module." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1555-1559.

A miniaturized 6.5- 16-GHz power amplifier module, which includes T/R switch, dual polarity power supply, switch driver, and gate functions, was designed using two types of broad-band MMIC amplifiers. The two cascade designs were a 900- 1200- μm FET amplifier and a 300-300- μm feedback amplifier which were used to provide large and small gain functions, respectively. The module exhibits 35 dB of gain, 1-W power output, and 55-dB T/R switch isolation.

[Click on title for a complete paper.](#)



Abstracts

X-Band Monolithic Series Feedback LNA (Dec. 1985 [T-MTT])

R.E. Lehmann and D.D. Heston. "X-Band Monolithic Series Feedback LNA (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1560-1566.

An X-band monolithic three-stage low-noise amplifier (LNA) employing series feedback has demonstrated 1.8-dB noise figure with 30.0-dB gain and an input VSWR less than 1.2:1 at 10 GHz. The key to this design is using monolithic technology to obtain an exactly repeatable series feedback inductance to achieve a simultaneous noise match and input VSWR match.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Design and Process Sensitivity of a Two-Stage 6--18-GHz Monolithic Feedback Amplifier (Dec. 1985 [T-MTT])

J.M. Beall, S.R. Nelson and R.E. Williams. "Design and Process Sensitivity of a Two-Stage 6--18-GHz Monolithic Feedback Amplifier (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1566-1571.

The design of a 6-18-GHz two-stage monolithic feedback amplifier is discussed, and the critical process and FET parameters are identified. Variations in circuit performance experienced during a pilot production run are correlated with the predictions of a sensitivity analysis. Five circuit model parameters were selected for study substrate height, GaAs sheet resistance, gate-source capacitance, transconductance, and drain-source resistance. Measured results show the importance of substrate height and sheet resistance in the control of gain flatness. An example on-slice RF performance distribution is presented, showing the suitability of the circuit and fabrication process for high-volume production.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Novel MMIC X-Band Phase Shifter

K. Wilson, J.M.C. Nicholas, G. McDermott and J.W. Burns. "A Novel MMIC X-Band Phase Shifter." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1572-1572.

A novel configuration for monolithic phase shifters is presented. The layout and fabrication of a single chip, four-bit X-band phase shifter, measuring 3.7 x 2.3 mm, is described in some detail. The first samples to be assessed exhibited full 360° coverage at the design frequency, operation throughout X-band, good matches, and an insertion loss less than 5 dB.



MTT



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

A 2 Gb/s Throughput GaAs Digital Time Switch LSI Using LSCFL (Dec. 1985 [T-MTT])

T. Takada, Y. Shimazu, K. Yamasaki, M. Togashi, K. Hoshikawa and M. Idda. "A 2 Gb/s Throughput GaAs Digital Time Switch LSI Using LSCFL (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1579-1584.

A GaAs four-channel digital time switch LSI with a 2.0-Gb/s throughput is developed. This switch consists of 4-bit shift registers, data latches, a counter, a control unit, and I/O buffer gates. The LSI includes 1176 devices (FET's, diodes, and resistors) and its equivalent gate number is 231 gates. Low Power Source Coupled FET Logic (LSCFL) operating in a true/complementary mode is used to ensure high-speed and low-power performance. MESFET's with 0.55- μ m gate length are fabricated by the buried p-layer SAINT process, which satisfactorily suppresses short channel effects. Dislocation-free wafers are also used to provide high chip yields of 75 percent. The propagation delay time of the LSCFL basic circuit is 48 ps/gate with 1.4-mW/equivalent gate. The total power dissipation including input and output buffers is 0.64 W. The LSI speed performance is evaluated by measuring toggle frequency of the 1/4 frequency divider. The divider operates typically at 5.1 GHz, maximum 7.5 GHz. The newly developed high-speed digital time switch LSI makes possible time division switching services in TV and high-definition TV transmission systems.



Airbridge Gate FET for GaAs Monolithic Circuits

E.M. Bastida and G. Donzelli. "Airbridge Gate FET for GaAs Monolithic Circuits." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1585-1590.

This paper describes a novel technology for producing micron- and submicron gate FET devices with improved gain and noise performances. The technique is particularly attractive for the production of very low-noise devices and is very useful in monolithic circuit fabrication. In the production of high-power devices, the technique has the advantage of not requiring complicated interdigitated structures. A noise figure improvement of 0.4 dB at 10 GHz was achieved using this technology. As an example of the developed technique, a two-stage monolithic preamplifier (2.8-dB NF, 15-dB gain between 11.7 and 12.5 GHz) is described. This amplifier was connected with other monolithic circuits to form a multichip DBS front-end receiver having 43 ± 2.5 dB conversion gain and 4-dB NF /sub MAX/.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

C-Band 6-Bit GaAs Monolithic Phase Shifter (Dec. 1985 [T-MTT])

C. Andricos, I.J. Bahl and E.L. Griffin. "C-Band 6-Bit GaAs Monolithic Phase Shifter (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1591-1596.

Design, fabrication, and performance of a 6-bit GaAs monolithic phase shifter for use in the 5-6-GHz frequency range are described. The chip includes an analog control bit (0-11°) for phase correction in a closed-loop configuration and five digitally controlled phase bits. A $\pm 1^\circ$ phase variation was achieved for the 11.25°, 22.5°, and 45° bits while for the 90° and 180° bits the phase variation was $\pm 6^\circ$ over 5 to 6 GHz. The return loss was better than 15 dB and insertion-loss flatness was within ± 1 dB over this frequency band. The phase error over a temperature range of 25-80°C and the 5-6-GHz frequency band was less than $\pm 0.5^\circ$, $\pm 1^\circ$, $\pm 1^\circ$, $\pm 2^\circ$, and $\pm 2^\circ$ for the 11.25°, 22.5°, 45°, 90°, and 180° bits, respectively, with a maximum of .8-dB insertion-loss variation.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

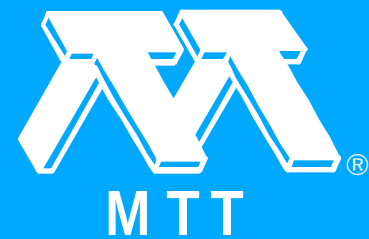
Production Technology for High-Yield, High-Performance GaAs Monolithic Amplifiers

S.-K. Wang, C.-D. Chang, M. Siracusa, L.C.T. Liu, R.G. Pauley, P. Asher and M. Sokolich. "Production Technology for High-Yield, High-Performance GaAs Monolithic Amplifiers." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1597-1602.

A production technology for GaAs MMIC's has been developed. In a six-month period, seventy 2-in wafers have been processed for X-band monolithic power and low-noise amplifiers and more than 2000 working chips have been produced. The two-stage power amplifiers have achieved a typical performance of 1.6-w output power with 8-dB associated gain and 20-percent power-added efficiency at 9.5 GHz. The two-stage low-noise amplifiers have consistently achieved 3-dB noise figure with 20-dB associated gain at the same frequency. Improvement of MMIC processing technology implemented in this work has resulted in an average dc chip yield of 15 percent.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

A 30-GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element

S.J. Nightingale, M.A.G. Upton, B.K. Mitchell, U.K. Mishra, S.C. Palamater and P.M. Smith. "A 30-GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1603-1610.

This paper will describe a 30-GHz monolithic low-noise balanced mixer which has been developed using an integrated bow-tie antenna to waveguide transition and low parasitic Mott diodes. The diodes and mixer circuit were developed using MBE material and were fabricated using a plated airbridge technology. Measurements on the diode at dc and RF showed that the zero bias junction capacitance was 0.025 pF and the series resistance was 10 Ω . A mixer conversion loss of 6 dB was measured at 30 GHz with an IF of 1 GHz.

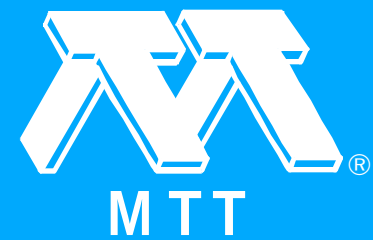
Click on title for a complete paper.



Abstracts

Patent Abstracts (Dec. 1985 [T-MTT])

"Patent Abstracts (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): 1611-1614.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

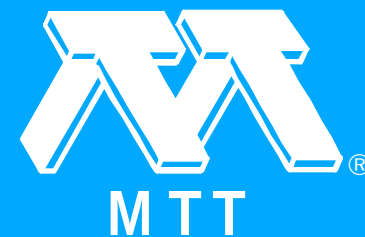
Click on title for a complete paper.



Abstracts

Index, IEEE Transactions on Microwave Theory and Techniques, Volume MTT-33, 1985

*"Index, IEEE Transactions on Microwave Theory and Techniques, Volume MTT-33, 1985."
1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985
Symposium Issue)): i1-i22.*



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

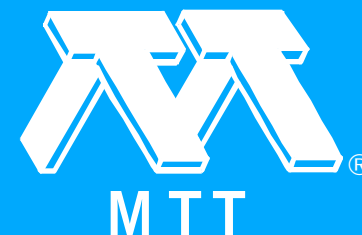
Click on title for a complete paper.



Abstracts

IEEE Finding Your Way (Advertisement) (Dec. 1985 [T-MTT])

"IEEE Finding Your Way (Advertisement) (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): bm1-bm1.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Congressional Fellowships (Dec. 1985 [T-MTT])

"Congressional Fellowships (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): bm2-bm2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

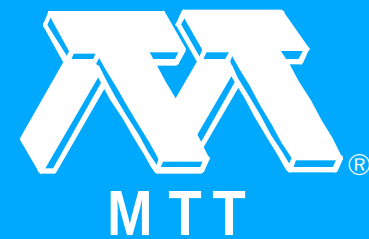
Click on title for a complete paper.



Abstracts

Back Cover (Dec. 1985 [T-MTT])

"Back Cover (Dec. 1985 [T-MTT])." 1985 Transactions on Microwave Theory and Techniques 33.12 (Dec. 1985 [T-MTT] (1985 Symposium Issue)): b1-b2.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

Front Cover (1984 [MWSYM])

"Front Cover (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): f1-f1.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

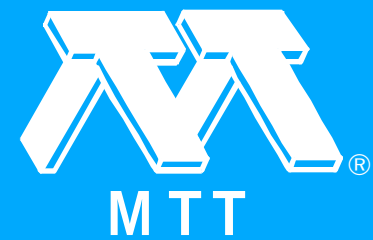
Click on title for a complete paper.



Abstracts

Copyright (1984 [MWSYM])

"Copyright (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): i-ii.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

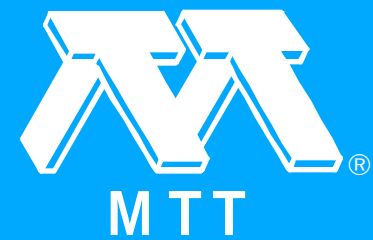
Click on title for a complete paper.



Abstracts

A Welcome from the Chairman (1984 [MWSYM])

"A Welcome from the Chairman (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): iii-iii.



IEEE

Contents

Publications

Issues

Papers

Authors

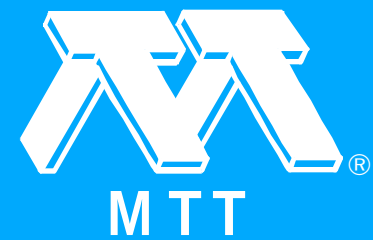
Click on title for a complete paper.



Abstracts

Table of Contents (1984 [MWSYM])

"Table of Contents (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): vi-xxvii.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

MTT-S Symposium - Committees, Awards, Panels, Workshops (1984 [MWSYM])

"MTT-S Symposium - Committees, Awards, Panels, Workshops (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 1-1.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Committees (1984 [MWSYM])

"Committees (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 3-11.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Awards (1984 [MWSYM])

"Awards (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 12-19.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Panel Sessions (1984 [MWSYM])

"Panel Sessions (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 20-20.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Workshops (1984 [MWSYM])

"Workshops (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 21-23.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

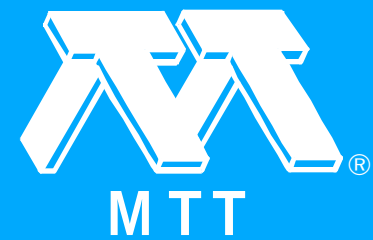
Click on title for a complete paper.



Abstracts

Plenary Session (1984 [MWSYM])

"Plenary Session (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 25-34.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Session 1 -- Joint Session of MTT-S and MW & mmW Monolithic Symposia - Monolithic Millimeter-Wave Circuits

"Session 1 -- Joint Session of MTT-S and MW & mmW Monolithic Symposia - Monolithic Millimeter-Wave Circuits." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 35-35.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Session 1 Introduction (1984 [MWSYM])

B.E. Spielman and R.W. Sudbury. "Session 1 Introduction (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 37-37.

Current activity for millimeter-wave circuits is focusing on applications within the frequency range from about 30 GHz to 100 GHz. This activity is driven, for defense purposes, by four generic areas of application: 1) radar (e.g., fire-control); 2) communications (e.g., ground-satellite and satellite-satellite); 3) missile seekers (active and passive); and 4) electronic warfare (e.g., surveillance).



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A 69 GHz Monolithic FET Oscillator (1984 [MWSYM])

D.W. Maki, J.M. Schellenberg, H. Yamasaki and L.C.T. Liu. "A 69 GHz Monolithic FET Oscillator (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 39-43.

A monolithic oscillator was fabricated using conventional planar FET technology. The active device used was a 0.35x60 micron FET fabricated on an active layer formed by ion implantation into an undoped VPE buffer layer. Frequency stability is achieved using either an on-chip microstrip resonant circuit or by adding a 30 mil diameter dielectric resonator directly onto the 50 mil square GaAs chip. With no external tuning the oscillator delivered 0.45 milliwatts at 64 GHz. By using an external E-H waveguide tuner, 0.7 milliwatts of power at 65.7 GHz was achieved. The oscillator was tunable from 55 to 75 GHz by adjusting the source-gate tuning inductor and the drain tuning.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

A W-Band Monolithic GaAs Crossbar Mixer (1984 [MWSYM])

L.T. Yuan. "A W-Band Monolithic GaAs Crossbar Mixer (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 44-46.

A fully monolithic crossbar mixer has been designed and fabricated for operation at W-band (75 to 110 GHz). A typical conversion loss of 9 dB with a variation of less than ± 0.5 dB has been measured, and a minimum conversion loss of 7.5 dB has been measured at 76 GHz.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

94 GHz Planar GaAs Monolithic Balanced Mixer (1984 [MWSYM])

P. Bauhahn, T. Contolatis, J. Abrokwhah, C. Chao and C. Seashore. "94 GHz Planar GaAs Monolithic Balanced Mixer (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 47-50.

A 94 GHz GaAs monolithic balanced mixer in a planar microstrip integrated circuit configuration has been demonstrated. A double sideband noise figure of 5.6 dB has been achieved at 94.5 GHz. This includes a 1.5 dB noise contribution of the IF preamplifier. The chip size is 0.076 x .034 inch with integral beam leads.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

GaAs Monolithic Frequency Doublers with Series Connected Varactor Diodes (1984 [MWSYM])

A. Chu, W.E. Courtney, L.J. Mahoney, R.W. McClelland and H.A. Atwater. "GaAs Monolithic Frequency Doublers with Series Connected Varactor Diodes (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 51-54.

GaAs monolithic frequency doublers using series connected varactor diodes have been fabricated for the first time. Output powers of 150 mW at 36.9 GHz with 24% efficiency and 300 mW at 24.8 GHz with 18% efficiency have been obtained. Peak efficiencies of 35% at output power levels near 100 mW have been achieved at both frequencies. Both K-band and Ka-band frequency doublers are derived from a lower power, single-diode design by series connection of two diodes and scaling to achieve different power and frequency specifications. Their fabrication was accomplished using the same process sequence.

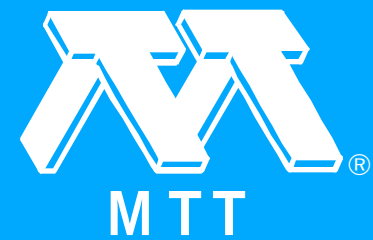
Click on title for a complete paper.



Abstracts

Session 2 -- Field Theory of Guiding Structures

"Session 2 -- Field Theory of Guiding Structures." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 55-55.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Session 2 Introduction (1984 [MWSYM])

J. Knorr. "Session 2 Introduction (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 57-57.

This session and the companion session on Component Applications of Field Theory evolved from the review of some 50 papers by the Field Theory Subcommittee of the 1984 MTT-S Technical Program Committee. The process began with the selection of papers which the Subcommittee felt were indeed field theoretic in nature and which treated topics of current interest. These papers were then further screened to determine which were more suitable for Open Forum presentation and which could be grouped to develop sessions with some coherence of theme. After long hours of review and debate and many difficult decisions, we organized this year's sessions on Field Theory of Guiding Structures and Component Applications of Field Theory.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Space Domain Decoupling of LSE and LSM Fields in Generalized Planar Guiding Structures

A.S. Omar and K. Schunemann. "Space Domain Decoupling of LSE and LSM Fields in Generalized Planar Guiding Structures." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 59-61.

LSE and LSM fields in generalized planar guiding structures are shown to be coupled only by means of the edge condition, which can be fulfilled as a final step in the analysis. This is utilized by applying the singular integral equation method to fin-lines. Modes up to the 20th are thus easily computed.

[Click on title for a complete paper.](#)



Abstracts

Simple and Accurate Expression for the Dominant Mode Properties of Open Groove Guide

A.A. Oliner and P. Lampariello. "Simple and Accurate Expression for the Dominant Mode Properties of Open Groove Guide." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 62-64.

Groove guide, one of several low-loss waveguides proposed some years ago for use at millimeter wavelengths, is again receiving attention in the literature. A new transverse equivalent network and dispersion relation for the properties of the dominant mode are presented here which are extremely simple in form and yet very accurate. Comparisons with accurate published measurements indicate better agreement with this new theory than with any previous theory.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Fourier Transformed Matrix Method of Finding Propagation Characteristics of Complex Anisotropic Layered Media (1984 [MWSYM])

C.M. Krowne. "Fourier Transformed Matrix Method of Finding Propagation Characteristics of Complex Anisotropic Layered Media (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 65-67.

A structure having arbitrarily located conductor lines immersed in complex anisotropic layered media presents one with a very general guided wave problem. This problem is solved here by a rigorous formulation technique characterizing each layer by a 6×6 constitutive tensor and finding the appropriate Fourier transformed Green's function matrix G . From G a method of moments solution for the propagation characteristics follows including propagation constant eigenvalues and field eigenvectors at all spatial locations.

[Click on title for a complete paper.](#)



Abstracts

Theory and Experiment Predicting the Cutoff Frequencies for a Rectangular Stripline

R. Lampe, P. Klock, D. Tanner and P. Mayes. "Theory and Experiment Predicting the Cutoff Frequencies for a Rectangular Stripline." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 68-69.

The frequency at which the first higher order mode propagates fixes the upper limit of the useful frequency range of a rectangular stripline. In this paper, the results of two disparate analytical techniques used in predicting this cutoff frequency are presented and compared to other published results. Furthermore, a novel experiment was devised and performed. Agreement between the experimental results and the analytical predictions is close.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

The Simulation of Three-Dimensional Wave Propagation by a Scalar TLM Model

D.H. Choi and W.J.R. Hoefer. "The Simulation of Three-Dimensional Wave Propagation by a Scalar TLM Model." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 70-71.

This paper presents novel scalar transmission line matrix simulating the propagation of a Hertzian potential in three-dimensional space. The new method is numerically more efficient than the traditional TLM method.



IEEE

Contents

Publications

Issues

Papers

Authors

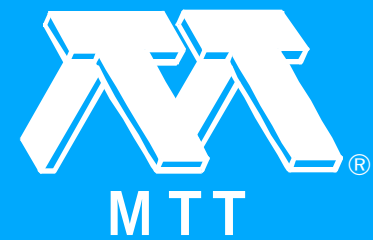
Click on title for a complete paper.



Abstracts

Session 3 -- Acoustic and Magnetic Devices

"Session 3 -- Acoustic and Magnetic Devices." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 73-73.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Session 3 Introduction (1984 [MWSYM])

T. Lukaszek. "Session 3 Introduction (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 75-75.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

YIG Oscillators: Is a Planar Geometry Better?

R.L. Carter, J.M. Owens and D.K. De. "YIG Oscillators: Is a Planar Geometry Better?." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 77-77.

Paper not available at the time of printing.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A 94 GHz Suspended Stripline Circulator

M.H. Arain. "A 94 GHz Suspended Stripline Circulator." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 78-79.

Suspended stripline W-Band (94 GHz) circulators have been successfully developed. Their design development and construction are described. The planar configuration makes them suitable for integration into millimeter wave systems. Even without optimization the insertion loss of such circulators is less than 1.5 dB and the isolation greater than 20 dB over 1.5 GHz frequency range.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Recent Developments in SAW Device Applications

K.F. Lau, K.H. Yen, R.S. Kagiwada and R.B. Stokes. "Recent Developments in SAW Device Applications." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 80-82.

This paper discusses recent developments in SAW applications by first reviewing the range of parameters achievable using current state-of-the-art devices. Examples of device applications in filtering, frequency sources and signal processing are then presented to provide an overview of how SAW devices are being utilized in various commercial and military electronic systems.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Fundamental-Mode Pierce Oscillators Utilizing Bulk-Acoustic-Wave Resonators in the 250 - 300 MHz Range

S.G. Burns and R.S. Ketcham. "Fundamental-Mode Pierce Oscillators Utilizing Bulk-Acoustic-Wave Resonators in the 250 - 300 MHz Range." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 83-84.

Fundamental-mode Pierce Oscillators in the 250-300 MHz range have been realized utilizing a unique form of a bulk-acoustic-wave (BAW) resonator. Phase noise of -100 dbc/Hz (1 KHz offset) and output power levels of +6 dbm have been demonstrated. A linear-model design was used. The circuit topology and resonator fabrication technique show great promise for creation of monolithic circuits in the 200 MHz to 2 GHz range.

Click on title for a complete paper.



Abstracts

Passive Magnetostatic Wave Pulse Compression Loop

K.W. Chang, D. Gerli, R.L. Carter and J.M. Owens. "Passive Magnetostatic Wave Pulse Compression Loop." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 85-86.

A magnetostatic pulse compression loop using linear delay lines and passive FM chirp generation has been demonstrated. Sidelobe suppression of 30 dB has been achieved by using loop transducers for appropriate amplitude weighting.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Magnetostatic Volume Wave Delay Lines with Stepped Ground Planes

J.D. Adam. "Magnetostatic Volume Wave Delay Lines with Stepped Ground Planes." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 87-88.

A magnetostatic forward volume wave delay line was divided into sections each with a different ground plane spacing. The length of each section was optimized so that the total group delay, i.e., the summation of the delay in each section, showed a minimum phase error from a quadratic phase with frequency characteristic. Using this technique a delay line with 600 MHz bandwidth, 50 nS differential delay and phase error $< \pm 16^\circ$ has been demonstrated at X-band.

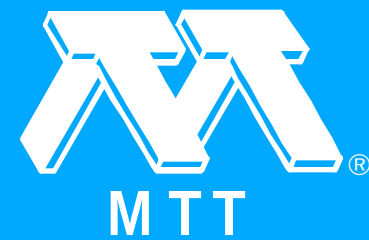
[Click on title for a complete paper.](#)



Abstracts

Session 4 -- Devices and Monolithic Circuit Elements

"Session 4 -- Devices and Monolithic Circuit Elements." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 89-89.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

Contents

Publications

Issues

Papers

Authors

Session 4 Introduction (1984 [MWSYM])

D.R. Ch'en and M.N. Yoder. "Session 4 Introduction (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 91-91.

Monolithic integrated circuits operating at frequencies in excess of 1 GHz are rapidly becoming realities of the marketplace. To remain competitive requires not only knowledge in semiconductor materials, device, and circuit technology, but also sophisticated ability to accurately measure, test, and characterize. Only then can sufficiently accurate models be developed with which to design, fabricate and efficiently produce. This session emphasizes the "tools" essential to furthering monolithic integrated circuit technology. Included are instrument probes and calibration methods, high heterojunction performance devices, high efficiency millimeter wave power devices, and accurate design models for on-chip spiral inductors. The session begins with a paper describing new and accurate techniques for probing a wafer or die at its intended operating frequency. While problems such as common lead inductance and capacitive coupling between adjacent lines are among the least of "worries" for a discrete device designer, the adverse crosstalk introduced is well known to the hybrid circuit designer and is of major concern to the designer of monolithic circuits. Not only must crosstalk be addressed within the integrated circuits, but I/O pads on the die must be both judiciously placed and of proper impedance if accurate probe measurements are to be obtained. Without adequate forethought being given to characterization and testing, testprobe crosstalk can be adversely impaired. For digital ICS, this frequently leads to a requirement for balanced, low impedance I/O pads. In addition to I/O impedance and pad placement to reduce crosstalk, additional consideration must be given to test pad placement to accurately measure propagation delay and phasing.

Click on title for a complete paper.



Abstracts

Calibration Methods for Microwave Wafer Probing (1984 [MWSYM])

E.W. Strid and K. Gleason. "Calibration Methods for Microwave Wafer Probing (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 93-97.

A new level of accuracy in the measurement of microwave parasitic has been achieved, due to the combined development of microwave wafer probes and on-wafer impedance standards. Repeatable losses and reflections in the probes can be readily removed from measured data, but radiation losses and crosstalk cannot be corrected and must be minimized. Oneport and twoport on-wafer standards for several probe footprints are shown, and their performance verified.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Low Noise High Electron Mobility Transistors (1984 [MWSYM])

J.J. Berenz, K. Nakano and K.P. Weller. "Low Noise High Electron Mobility Transistors (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 98-101.

Sub-half-micron gate length High Electron Mobility Transistors (HEMT) were fabricated by direct-write electron beam lithography for low noise EHF amplifiers. Modulation-doped epitaxial structures were grown by molecular beam epitaxy having 8,000 cm²/V-sec room temperature and 77,600 cm²/V-sec liquid nitrogen Hall mobility for 10/sup 12/ electrons/cm². Gate lengths as narrow as 0.28 micron were defined in a recess etched through the n+ GaAs contact layer. The dc transconductance of 0.4 micron gate length depletion mode devices exceeded 260 mS/mm. Preliminary measurement of noise figure and associated gain made at room temperature yielded 2.7 dB noise figure and 5.9 dB associated gain at 34 GHz for devices having 0.37 micron gate length. Enhancement mode devices were also fabricated having 240 mS/mm dc transconductance. These devices yielded 1.5 dB noise figure and 10.5 dB associated gain at 18 GHz for 0.35 micron gate length. These results are comparable to the best quarter-micron gate length GaAs MESFET noise figures yet reported.

Click on title for a complete paper.



Abstracts

High Efficiency GaAs MBE Power FETs for Ka-Band (1984 [MWSYM])

J. Geddes, V. Sokolov, T. Contolatis, J. Abrokwhah and W. Larson. "High Efficiency GaAs MBE Power FETs for Ka-Band (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 102-105.

Submicron gate length, 300 Micron gate width GaAs FETs were fabricated on MBE material using direct write e-beam lithography. Evaluation of the devices in a Ka-band test fixture with fin line transitions resulted in an amplifier output power of 110 mw with 11 percent power added efficiency at 30 GHz. At 2.9 dB gain the power per unit gate width is .46 W/mm referenced to the device. This is the highest power output per unit gate width reported to date for a GaAs FET at Ka-band.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Highly Accurate Design of Spiral Inductors for MMIC's with Small Size and High Cut-Off Frequency Characteristics (1984 [MWSYM])

M. Parisot, Y. Archambault, D. Pavlidis and J. Magarshack. "Highly Accurate Design of Spiral Inductors for MMIC's with Small Size and High Cut-Off Frequency Characteristics (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 106-110.

High precision experimental, theoretical procedures are presented for obtaining very compact inductors (diameter 80 to 200 μm) with values up to 5 nH, cut-off frequencies ranging from 20 to 100 GHz for $L < 2$ nH. The maximum phase and amplitude measurement error is of the order to ± 2 degrees and 1% respectively with typical measurement reproducibility of 0.1%. A new lumped element theory is presented predicting the electrical characteristics of spiral inductors with a maximum error of only 5%.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

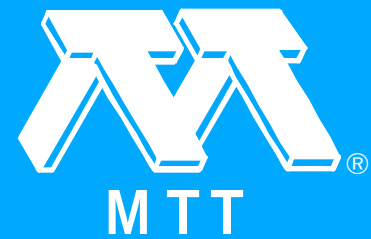
[Click on title for a complete paper.](#)



Abstracts

Session 5 -- Component Applications of Field Theory

"Session 5 -- Component Applications of Field Theory." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 111-111.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Session 5 Introduction (1984 [MWSYM])

E.J. Denlinger. "Session 5 Introduction (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 113-113.

Field theory is continually being applied to useful component-oriented structures. The use of planar transmission line technology and miniaturized packaging demands an ever-increasing need for field solutions to produce scattering parameters, coupling coefficients, impedance parameters, radiation, etc. at the component-transmission line interface. This session on "Component Applications of Field Theory" treats a wide variety of components associated with five different types of transmission media (dielectric image guide, non-radiative dielectric waveguide, dielectric planar waveguide, microstrip, and rectangular waveguide) . The material is directly applicable to making filters, antennas, bias circuits, and guiding structures for millimeter waves and integrated optics.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

Coupling Between a Dielectric Image Guide and a Dielectric Resonator

F. Farzaneh, P. Guillon and Y. Garault. "Coupling Between a Dielectric Image Guide and a Dielectric Resonator." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 115-117.

Since many years dielectric guides have been used to realize microwave components at millimeter wave frequencies. In this frequency band, the coupling of dielectric resonators with such guides will permit to obtain integrated dielectric components like filters or oscillators. This paper presents the study of the coupling between a dielectric image guide and the TE/sub 0 gamma delta/ cylindrical dielectric resonator mode. A lumped equivalent circuit is given and the coupling coefficient between the guide and the resonator is evaluated. Experimental and theoretical results are also presented.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Microwave Network Analysis of a Leaky-Wave Structure in Non-Radiative Dielectric Waveguide

A. Sanchez and A.A. Oliner. "Microwave Network Analysis of a Leaky-Wave Structure in Non-Radiative Dielectric Waveguide." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 118-120.

An accurate microwave network analysis is presented for a new leaky-wave structure based on a recent nonradiative (and practical) modification of H guide. The structure can serve as the basis for a new millimeter wave antenna of simple configuration. The analysis employs a transverse equivalent network, with some subtle features, that yields a dispersion relation in closed form; numerical values are presented for the phase and leakage constants, including experimental confirmation.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Mode Propagation through a Step Discontinuity in Dielectric Planar Waveguide (1984 [MWSYM])

H. Shigesawa, M. Tsuji and K. Takiyama. "Mode Propagation through a Step Discontinuity in Dielectric Planar Waveguide (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 121-123.

This paper proposes two analytical methods which are essential for dealing with the wave propagation through a dielectric step discontinuity; one is a method to accelerate the convergence rate of solutions, especially for TM-mode problems, and the other is a method to treat efficiently the waves with continuous spectrum, in case of open waveguides. It is shown with a number of numerical results that our proposals are quite powerful to the investigation of discontinuity problems.

[Click on title for a complete paper.](#)



Abstracts

Planar Circuit Analysis of Microstrip Radial Stub

F. Giannini, R. Sorrentino and J. Vrba. "Planar Circuit Analysis of Microstrip Radial Stub." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 124-125.

Microstrip radial line stubs are analyzed using a planar circuit technique and characterized for design purposes. Experiments performed on various structures are in excellent agreement with the theory.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Scattering Parameters of Axial Inductive Strips in Rectangular Waveguide

Y.-C. Shih. "Scattering Parameters of Axial Inductive Strips in Rectangular Waveguide." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 126-127.

A variational formula is derived for the reflection coefficient of axial inductive strips in rectangular waveguide. With a carefully chosen current basis function incorporating the edge condition, the computed results are in good agreement with the measurement.

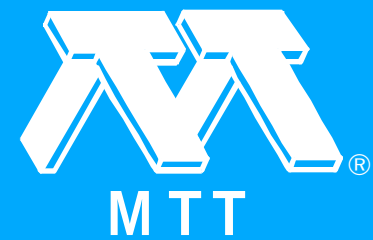
[Click on title for a complete paper.](#)



Abstracts

Session 6 -- Biomedical Aspects of Microwaves

"Session 6 -- Biomedical Aspects of Microwaves." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 129-129.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Session 6 Introduction (1984 [MWSYM])

A. Rosen. "Session 6 Introduction (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 131-131.

Many excellent contributions in the area of microwave hyperthermia treatment of cancer and radiation measurement techniques can now be found by scanning both the IEEE MTT transactions and the MTT meeting Proceedings. The title of this year's meeting, Biomedical Pets of Microwaves, has been changed from Microwave Biological effects to reflect the type of paper which this meeting has attracted.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Microstrip Spiral Antenna for Local Hyperthermia

*E. Tanabe, A.H. McEuen, S. Caslow, C.S. Norris, T.V. Samulski and P. Fessenden.
"Microstrip Spiral Antenna for Local Hyperthermia." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 133-134.*

Several microstrip spiral antenna applicators suitable for local hyperthermia treatment operating at 433 and 915 MHz have been developed. Design and experimental results are compared with other types of applicators. A summary of current clinical experience with these applicators is presented.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

A Slot Antenna Radiating in Muscle

P. Pribetich, P. Kennis, C. Seguinot, S. Toutain and P. Gelin. "A Slot Antenna Radiating in Muscle." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 135-139.

This paper is relative to the study of slot antenna radiating on muscle. The results presented point out the necessity to take into account the presence of the microstrip line feeding the antenna. To do so we use a two dimensional spectral Domain Approach in which the basis function used are choosen by reference of previous works relative to the microstrip line with tuning septum.

Click on title for a complete paper.



Abstracts

Enhancing the Efficacy of Localized Thermotherapy by Monitoring Changes in Tumor Blood Flow

*F. Sterzer, R.W. Paglione, A. Winter, J. Laing, E. Friedenthal, J. Mendecki and C. Botstein.
"Enhancing the Efficacy of Localized Thermotherapy by Monitoring Changes in Tumor Blood
Flow." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 140-
141.*

Changes in the blood flow of tumors being heated with microwaves can be conveniently monitored by monitoring the applied heating power needed to maintain the tumors at given temperatures. Data obtained by this method are presented, and applications to clinical localized thermotherapy are discussed.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

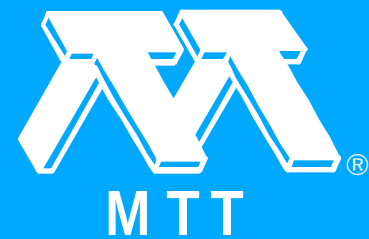
Specific Absorption Rate Distribution in a Model of Man at Various Polarizations

A. Kraszewski, M.A. Stuchly, S.S. Stuchly and G. Hartsgrrove. "Specific Absorption Rate Distribution in a Model of Man at Various Polarizations." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 142-144.

A computer-based scanning system and implantable electric field probes were used to obtain maps of the specific absorption rate (SAR) in various cross-sections of a full-scale model of the human body. The model was exposed to a plane-wave at 350 MHz at E and k polarizations with respect to the body. Enhanced absorption in the neck and the limbs, as previously found by the thermographic method, was observed. Significant differences between the SAR distribution and the SAR values calculated using the block model and those found in this work were observed.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

A Three-Band Microwave Radiometer for Noninvasive Temperature Measurement

S. Mizushina, H. Oh-ishi and Y. Hamamura. "A Three-Band Microwave Radiometer for Noninvasive Temperature Measurement." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 145-146.

A three-band radiometer operating at 1.5, 2.5 and 3.5 GHz with a 1-GHz band-width has been developed for noninvasive measurement of body temperature. An experiment using a water-bath filled with tap water showed that the instrument could measure the temperature (15 °C) of a subjacent layer (depth > 2 cm), differentiating it from that (22 °C) of the surface layer (depth < 2 cm).

Click on title for a complete paper.



Abstracts

Microwave and Infrared Thermograms of Hot Spots in Tissue

G. Schaller. "Microwave and Infrared Thermograms of Hot Spots in Tissue." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 148-149.

The steady-state temperature distribution in the vicinity of hot spots in tissue is investigated using the finite-difference method in a 3-dimensional model. Starting from these results the thermograms from microwave radiometers are computed and compared with those attainable with infrared (IR) thermography.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Session 7 -- Open Forum Session I

"Session 7 -- Open Forum Session I." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 151-151.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

An Ultra Low Transient GaAs FET VHF Switch

D.W. White. "An Ultra Low Transient GaAs FET VHF Switch." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 155-157.

A simple unbalanced GaAs FET switch is described which has 20 dB lower peak transients than commercial balanced diode designs. An auto-transformer neutralization circuit provides more than 55 dB off-isolation over a three octave bandwidth. A novel scheme which derives both drive and bias from Schottky TTL gates eliminates the bipolar supplies and discrete drive circuitry usually found in high speed switches. A low level transient caused by carrier trapping in the GaAs material is described.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Transfer Properties of the Upper-Sideband Varactor Upconverter

E. Loser. "Transfer Properties of the Upper-Sideband Varactor Upconverter." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 158-160.

The large signal upper-sideband varactor upconverter is theoretically investigated. Using measurable quantities as parameters, gain linearity and phase conversion are computed and optimized at specific input mismatches. Furthermore, noise conversion from bias and inputs is studied under large signal conditions. The bias termination proves to be critical to all noise transfer coefficients.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Solid State, X-Band, Exciter/Local Oscillator/Down Converter Subsystem for an Airborne, Coherent Radar Fire Control System

J.B. Vuong, G. Keogh, A.M. Madni and L.A. Wan. "A Solid State, X-Band, Exciter/Local Oscillator/Down Converter Subsystem for an Airborne, Coherent Radar Fire Control System." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 161-163.

A "state-of-the-art", low cost, lightweight Exciter/Local Oscillator/Down Converter (EX/LO/DC) subsystem is presented for use in airborne applications. It plays a triple role of providing TWT excitation, local oscillator drive and dual channel RF-IF conversion. The overall subsystem design together with experimental results is presented.



IEEE

Contents

Publications

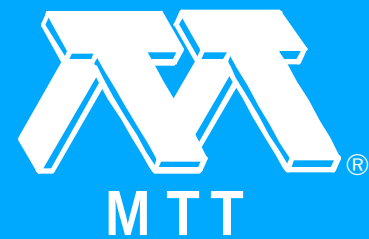
Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Distributed GaAs FET Circuit Model for Broadband and Millimeter Wave Applications

R. LaRue, C. Yuen and G. Zdasiuk. "Distributed GaAs FET Circuit Model for Broadband and Millimeter Wave Applications." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 164-166.

In this distributed. paper, the Z-parameters of a fully equivalent circuit MESFET model are presented as simple, closed-form expressions. The benefit of this new model is to extend the frequency range of accurate, predicted device performance beyond that of a simple lumped element model . Comparison with the simpler circuit model shows differences at frequencies beyond 18 GHz for a 285-micron x 0.5-micron GaAs MESFET.

Click on title for a complete paper.

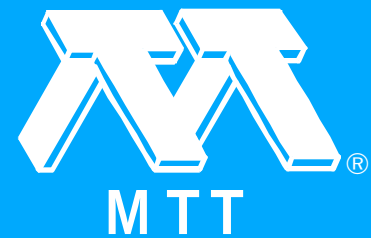


Abstracts

V-Band Double-Drift Read Silicon IMPATTs

Y.E. Ma, E.M. Nakaji and W.F. Thrower. "V-Band Double-Drift Read Silicon IMPATTs." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 167-168.

Double-drift hybrid Read silicon IMPATTs have been fabricated in the millimeter-wave frequency range with RF performance superior to that of more conventional double-drift flat diodes. State-of-the-art output power of 2.15 W was obtained at 60 GHz with 8.8 percent efficiency. The best DC-to-RF conversion efficiency achieved was 12 percent.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Field Analysis of Millimeter-Wave GaAs Double-Drift IMPATT Diode in the Travelling-Wave Mode

Y. Fukuoka and T. Itoh. "Field Analysis of Millimeter-Wave GaAs Double-Drift IMPATT Diode in the Travelling-Wave Mode." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 169-171.

An analysis of a realistic model of distributed IMPATT structures is described. Wave equations are solved with all losses included. The results show that net gain is produced at frequencies just above the avalanche resonance, while the propagation becomes slow at high frequencies. The results compare favorably with experiment.

Click on title for a complete paper.



W-band GaAs Gunn Diode Harmonic Power Combiners

Z.-L. Sun and S.-F. Li. "W-band GaAs Gunn Diode Harmonic Power Combiners." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 172-174.

In this paper the combination of second harmonic power from multiple GaAs Gunn oscillators at W-band was investigated. The power combiner operating in a subharmonic tie involves two or three GaAs Gunn oscillators connected together by a 3 dB short-slot coupler. In two-oscillator combiners the second harmonic power of individual oscillator is 16 mW and 15 mW respectively. The combined power at 91.5 GHz is 23mW. In three- oscillator combiners the second harmonic power of individual oscillator is 7 mW, 7 mW, and 6 mW respectively. The combined power at 92 GHz is 14.5 mW. In both cases the combining efficiency is greater than 70 %.

Abstracts

A Wideband 60 GHz 16-Way Power Divider/Combiner Network

T.-I. Hsu and M.D. Simonutti. "A Wideband 60 GHz 16-Way Power Divider/Combiner Network." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 175-177.

A 16-way, low-loss, wideband power divider/combiner network for V-band waveguide is described. This network utilizes a section of radial waveguide operating in the TEM mode. Over a frequency band of 55-67 GHz, this 16-way divider/combiner network has an insertion loss of 1 dB maximum and better than 12 dB return loss. Matching elements which have been designed for each of the three transitions between different transmission media within this network are described in detail.



IEEE

Contents

Publications

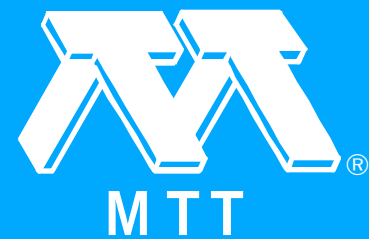
Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Two-Frequency Method for Impedance Measurement in Microwave Frequency-Halving Networks

R.G. Harrison and G.A. Kalivas. "A Two-Frequency Method for Impedance Measurement in Microwave Frequency-Halving Networks." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 178-180.

The method described removes a major difficulty in the design of wideband frequency-halvers: the accurate characterization of the "pumped" input and output impedances at the plane of the varactors. The procedure permits the use of realistic input and output power levels with the input at twice the output frequency.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Parallel Feedback FETDRO Design Using 3-Port S-Parameters

A.P.S. Khanna. "Parallel Feedback FETDRO Design Using 3-Port S-Parameters." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 181-183.

A new approach for the design of parallel feedback FET oscillators has been presented using 3-Port S parameters. The linear analysis accurately determines the reflection gain at any port as a function of the parameters of the dielectric resonator parallel feedback network between the other two ports of the FET. An example of design and practical realization of FETDRO is presented at 9 GHz.

Click on title for a complete paper.



Abstracts

Optimum Design of Shielded Dielectric Rod and Ring Resonators for Obtaining the Best Mode Separation

Y. Kobayashi and M. Miura. "Optimum Design of Shielded Dielectric Rod and Ring Resonators for Obtaining the Best Mode Separation." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 184-186.

Accurate resonant frequencies of shielded dielectric rod and ring resonators are computed by means of the mode-matching technique. For four cases of the rod and ring resonators with $TE_{01\delta}$ and $HE_{11\delta}$ modes, the optimum dimensions are determined to obtain the best separation of the neighboring modes from the interested mode.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Inhomogeneous Open-Ended Resonators as Microwave Sensor Elements

H. Moschuring and I. Wolff. "Inhomogeneous Open-Ended Resonators as Microwave Sensor Elements." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 187-189.

Inhomogeneous open-ended coaxial line resonators terminated by multilayer media have been investigated with regard to their application for the determination of the (local) permittivity of dielectric materials. A multisectional transmission-line model is presented which characterizes the experimental arrangement. The fringing capacitance at the open aperture is computed for the electrostatic case. Experimental and theoretical results for the attainable frequency shift due to the variation of the permittivity of the termination structure, compared with the respective case of the homogeneous resonator, will be presented.

[Click on title for a complete paper.](#)





[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Composite, Multilayered Cylindrical Dielectric Resonator

S. Maj and M. Pospieszalski. "A Composite, Multilayered Cylindrical Dielectric Resonator." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 190-191.

The analysis of TE modes in a composite multilayered cylindrical dielectric resonator is presented. All cylindrical dielectric resonator structures which have found some practical applications can be treated as a special case of the structure under consideration. These include: single resonator, double resonator, ring resonator, resonator in microstrip, inhomogeneous resonator and others. A new rigorous method of determining the field distribution and resonant frequency of this resonator is presented. By this method the solution is obtained in a form of successive approximations converging to an exact solution. The analysis is applied in detail to the lowest frequency TE mode of double dielectric resonator.

[Click on title for a complete paper.](#)



Abstracts

Computed Modal Field Distributions of Isolated Dielectric Resonators

D. Kajfez, A.W. Glisson and J. James. "Computed Modal Field Distributions of Isolated Dielectric Resonators." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 193-195.

Equivalent surface currents obtained from the solution of a surface integral equation model for a dielectric resonator are utilized to evaluate the electric and magnetic fields inside and outside of the isolated dielectric resonator. The resulting field plots permit a positive mode identification, and they are useful in designing devices to enhance coupling of or to suppress various modes.



IEEE

Contents

Publications

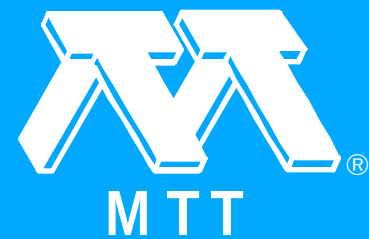
Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Disc-Type Resonator Mount in Rectangular Waveguide

M.E. Bialkowski. "Disc-Type Resonator Mount in Rectangular Waveguide." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 196-198.

The field matching technique is applied to analyse a disc-type resonator mount in a rectangular waveguide. Two cases are considered: (i) of a single and (ii) of a double coaxial entry mount. Using the the mount numerical impedance developed theory input impedance of is determined. A comparison between and experimental data for the input is made and shows good agreement.

[Click on title for a complete paper.](#)



Abstracts

800 MHz Band Channel Dropping Filter Using TM/sub 010/ Mode Dielectric Resonator

T. Nishikawa, K. Wakino and Y. Ishikawa. "800 MHz Band Channel Dropping Filter Using TM/sub 010/ Mode Dielectric Resonator." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 199-201.

High Power "Channel Bandpass Filter" for Base station was miniaturized to 1/5 to 1/10 in dimension by using high K dielectric ceramics. The resonant mode is dielectric TM/sub 010/ and its unloaded Q is over 8,000 at 800 MHz. The frequency temperature stability of the filter is less than 0.5ppm/°c.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Dielectric Waveguide Grating Design for Bandstop and Bandpass Filter Applications

D.C. Park, G.L. Matthaei and M.S. Wei. "Dielectric Waveguide Grating Design for Bandstop and Bandpass Filter Applications." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 202-204.

Techniques have been obtained for the precision design of dielectric waveguide (DW) bandstop filters in the form of a grating in DW which utilizes notches of varying depth. The grating is designed from a transmission-line prototype which has a prescribed stop band and also prescribed Chebyshev pass bands. Two such grating structures used with loads on one end and a 3-dB coupler can be used to form a bandpass filter.

[Click on title for a complete paper.](#)



Abstracts

Lossy, Hybrid Coupled Amplitude Equalizers for Narrow Band Filters

R.V. Snyder. "Lossy, Hybrid Coupled Amplitude Equalizers for Narrow Band Filters." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 205-210.

The growing use of contiguous channel switched filter banks in applications such as signal identification has exposed a difficulty inherent to the use of the low Q filters which are incorporated into such assemblies.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

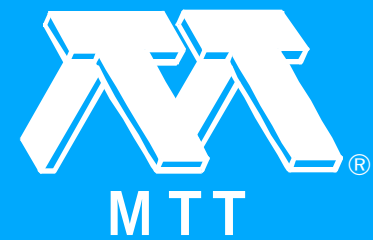
Click on title for a complete paper.



Abstracts

Session 8 -- FET Amplifiers

"Session 8 -- FET Amplifiers." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 211-211.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Session 8 Introduction (1984 [MWSYM])

S. Temple. "Session 8 Introduction (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 213-213.

During the past five years FET device and amplifier circuit technology has advanced significantly. Five years ago, the papers presented at the MTT Symposium in Orlando, Florida reflected the activity within the microwave community to demonstrate the feasibility of 1 watt FET power amplifiers over narrow band-widths in C and X-band. During the next few years, as device process technology was refined to enhance device yields and extend producible power device designs to submicron gate geometries, circuit techniques were being successfully applied to FET power amplifiers providing 1 watt over an octave in X and Ku-band.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Reflective Match, Lossy Match, Feedback and Distributed Amplifiers: A Comparison of Multi-Octave Performance Characteristics

K.B. Niclas. "Reflective Match, Lossy Match, Feedback and Distributed Amplifiers: A Comparison of Multi-Octave Performance Characteristics." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 215-217.

The performance of multi-stage single-ended GaAs MESFET amplifiers are compared when employing one and the same transistor type. Supporting experimental results include those of a 3-17.5 GHz reflective match module, a two-stage 2-18 GHz feedback amplifier, a two-stage 2-20 GHz, as well as a four-stage 2-18 GHz distributed amplifier.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A 1-Watt, 8-17 GHz FET Power Amplifier

T. Dao, W.C. Tsai, R. Healy and B. Liles. "A 1-Watt, 8-17 GHz FET Power Amplifier." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 218-220.

Design and performance of a compact size 1-Watt, 8-17 GHz, 38 ± 3 dB gain FET amplifier for airborne ECM applications is described. The amplifier with a gain temperature compensation PIN diode stage and a bias regulator is packaged in 1.1 x 0.5 x 3.65 inches hermetically sealed housing.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A Solid-State 2-10 GHz 1 Watt TWT Replacement Amplifier

A.M. Pavio, D.L. Allen, S.D. Thompson and S.J. Goldman. "A Solid-State 2-10 GHz 1 Watt TWT Replacement Amplifier." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 221-223.

The design and performance of a solid-state TWT replacement amplifier for the 2-10 GHz frequency range will be presented with special emphasis on broadband matching and serrodyne techniques. The 55 dB gain GaAs FET amplifier employs resistive equalization, matching networks constructed on high permittivity substrates, and planar SSB mixer technology, in order to achieve its 1 watt power output and serrodyne performance.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Third-Order Nonlinearity of GaAs MESFET's

J.H. Abeles, S.H. Wemple, W.O.W. Schlosser and J.P. Beccone. "Third-Order Nonlinearity of GaAs MESFET's." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 224-226.

Direct linearity measurements at 6 GHz show that Bell Labs GaAs MESFET's are effectively third-order in AM/PM up to output powers near saturation, and that AM/AM can be made negligible through bias adjustment. This permits the use of predistortion techniques to attain extremely high linearity power amplification.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A 1.5 Watt 28 GHz Band FET Amplifier

T. Takagi, K. Seino, Y. Ikeda, O. Ishihara and F. Takeda. "A 1.5 Watt 28 GHz Band FET Amplifier." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 227-228.

A 1.5 Watts FET amplifier with 5.8 dB gain over 27.5 to 28.4 GHz frequency band has been developed. This amplifier combines the output power of four multistage amplifier modules utilizing a 4 way combiner with low insertion loss.



IEEE

Contents

Publications

Issues

Papers

Authors

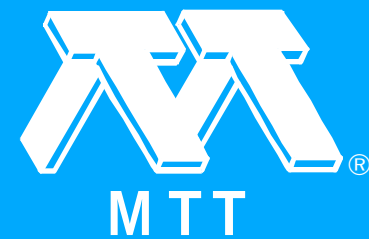
Click on title for a complete paper.



Abstracts

Session 9 -- Filters

"Session 9 -- Filters." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 229-229.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

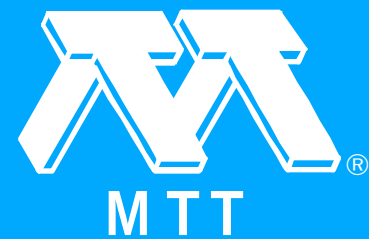


Abstracts

Session 9 Introduction (1984 [MWSYM])

R.V. Snyder. "Session 9 Introduction (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 231-231.

If there is a common theme to the papers in our session, it is the interdisciplinary and synergistic use of heretofore separate design techniques to achieve smaller, higher performance and intrinsically lower cost filter structures. The authors have combined computer modeling, dielectric resonators, evanescent mode waveguide and printed technology to achieve new levels of performance. Our session spans the frequency range 4 GHz to 100 GHz and treats bandpass, bandstop and multiplexed devices - the authors have evidently "cross-pollinated" a number of heretofore separate design concepts to achieve their results. This bodes well for the future of the microwave filter art. We seem to be entering into an era in which the newer technologies are becoming practical, moving from laboratory curiosities to actual system usage.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Millimeter Wave Multiplexer with Printed Circuit Elements for the 88 to 100 GHz Frequency Range

L.D. Cohen, N. Worontzoff, J. Levy and A. Harvey. "Millimeter Wave Multiplexer with Printed Circuit Elements for the 88 to 100 GHz Frequency Range." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 233-235.

An 88 to 100 GHz contiguous triplexer that uses printed circuit elements has been developed and demonstrates the practicality of millimeter wave multiplexer. The triplexer is composed of an E-plane, 7-pole, dual band-pass filter, a common junction diplexer and two H-plane quadrature hybrids. The filter and hybrid circuit elements are printed on metal cards. This multiplexer technology is extendible to 140 GHz.

Click on title for a complete paper.



Abstracts

Broadband Millimeter-Wave E-Plane Bandpass Filters

L.Q. Bui, D. Ball and T. Itoh. "Broadband Millimeter-Wave E-Plane Bandpass Filters." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 236-237.

A recently developed efficient CAD program has been extended to apply to superbroadband E-plane band-pass filters. An accurate method for estimating the starting values used in the CAD program is developed and incorporated for design. W-band and D-band filters with bandwidth over 10 percent designed by the new program are presented.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Analysis and Design of Evanescent-Mode Waveguide Dielectric Resonator Filters

Y.C. Shih and K.G. Gray. "Analysis and Design of Evanescent-Mode Waveguide Dielectric Resonator Filters." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 238-239.

The analysis and design of an evanescent-mode waveguide dielectric resonator filter are presented. The filter, consisting of low permittivity dielectric resonators placed in waveguide below cutoff, can be designed up to about 20% bandwidth. Measurements performed in K band are in good agreement with the theory.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Dielectric Resonators Band Pass Filter with High Attenuation Rate

P. Guillon, M.P. Chong and Y. Garault. "Dielectric Resonators Band Pass Filter with High Attenuation Rate." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 240-242.

A bandpass filter with high attenuation cut off has been realized by cascading a bandpass filter containing dielectric resonators and a two dielectric resonators bandstop filter. The filter response has a higher cut off attenuation rate (26 db/10 MHz) compared to the original bandpass filter (14 db/10 MHz). The attenuation characteristics and return loss response show that the bandpass and the center frequency remain unchanged at 40 MHz and 4.015GHz respectively. The insertion losses are low (1db).

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Design of Nonradiative Dielectric Waveguide Filter

T. Yoneyama, F. Kuroki and S. Nishida. "Design of Nonradiative Dielectric Waveguide Filter." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 243-244.

An efficient design technique of nonradiative dielectric waveguide filter circuits for use at millimeter wavelengths is developed. A 3-pole, 0.1-dB Chebyshev ripple bandpass filter with 2-percent bandwidth at center frequency of 49.5 GHz was designed and fabricated with Teflon dielectric according to this theory. The calculated and measured filter responses agree quite well, and the excess insertion loss is found to be as small as 0.3 dB.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Miniature Band Reject Filters Applications for Satellite

J. Bowes, S.J. Fiedziuszko, J. Redd and C. Ziegler. "Miniature Band Reject Filters Applications for Satellite." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 245-246.

The rejection of spurious or unwanted signals appearing in the input of a satellite transponder is necessary. Miniature, low-cost, temperature stable, band rejection filters which were developed for these applications utilize high performance dielectric resonators mounted in Space Shuttle thermal tile material. The design and achieved performance of the actual flight unit is presented.

Click on title for a complete paper.



Abstracts

Session 10 -- Systems

"Session 10 -- Systems." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 247-247.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Session 10 Introduction (1984 [MWSYM])

G.L. Heiter. "Session 10 Introduction (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 249-249.

Advances in microwave systems are taking place at the component, subsystem and overall system design levels with cost reduction providing a major driving force. Radar system developments emphasize increasing operating frequencies and resolution while in communication systems higher information densities and digital connectivity provide major goals. A number of specific advances are covered in topical sessions and the open forums of this symposium.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



24-GHz-FM-CW-Radar for Detection of Information for Traffic Purposes

G. Seehausen. "24-GHz-FM-CW-Radar for Detection of Information for Traffic Purposes." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 251-253.

A system is introduced, which is suitable to transmit information for traffic purposes. To store the information a reflector is developed, that may easily be mounted under the roadside borderline. To read the information and to measure the distance between vehicle and boarderline a 24-GHz-FM-CW-radar is designed.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)



Abstracts

A 26-GHz High Performance MIC Transmitter/Receiver for Digital Radio Subscriber Systems (1984 [MWSYM])

H. Ogawa, K. Yamamoto and N. Imai. "A 26-GHz High Performance MIC Transmitter/Receiver for Digital Radio Subscriber Systems (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 254-256.

A high-performance 26-GHz transmitter/receiver using FSK modulation has been developed. All RF components are fabricated using MIC technology and integrated into a compact module. Transmitting power of 21 dBm and a receiving noise figure of 8.7 dB are obtained.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

17/12 GHz Communication Receiver for Direct Broadcast Satellites

S.S. Dhillon, P. Goldgeier, R. Sudarsanam and H. Goldberg. "17/12 GHz Communication Receiver for Direct Broadcast Satellites." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 257-259.

This paper describes the design of a 17/12 GHz Communication Receiver for the first US Direct Broadcast Satellite (DBS) to be launched in 1986. The receiver has an operating bandwidth of 500 MHz, a maximum noise figure of 6.0 dB (at 60°C), small-signal gain of 35 dB (nominal), gain stability of 0.5 dB peak-to-peak and a third-order intercept point of 26 dBm (minimum) when operated over -10°C to 60°C temperature range. Measured data on a development model receiver are presented.

Click on title for a complete paper.



Abstracts

A Circularly Polarized Active Antenna Array Using Miniature GaAs FET Amplifiers

H.C. Johnson, R.E. Marx, A. Sanchez and E. Mykiety. "A Circularly Polarized Active Antenna Array Using Miniature GaAs FET Amplifiers." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 260-262.

An active antenna sub-array that includes a miniature two-stage batch processable amplifier driving clusters of circularly polarized patch resonator antenna elements is described. The resulting lightweight, low profile structure provides an efficient source of radiated microwave power that can become the building block for a high power solid state transmitter array.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

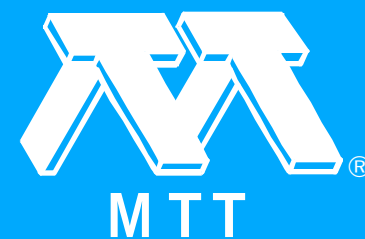
Click on title for a complete paper.



Abstracts

Session 11 -- Noise and Frequency Stabilization of FET Oscillators

"Session 11 -- Noise and Frequency Stabilization of FET Oscillators." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 263-263.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Session 11 Introduction (1984 [MWSYM])

F.N. Sechi. "Session 11 Introduction (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 265-265.

This session addresses the topic of improving the noise and the frequency stability of FET oscillators. These are important characteristics directly affecting the performance of devices in practical systems. Over the last decade numerous studies have been reported on the design and the performance of FET oscillators, about their feedback implementation, the various circuit topologies, and the techniques for frequency stabilization, often employing dielectric resonators. The best design techniques also included non-linear modelling. Thus, the general design method for achieving oscillation at the required frequency and with required level of output power and efficiency is well established. Also, the reported performances have been excellent, with high levels of efficiency and operating frequencies well into the millimeter wave range. As a result FET oscillators have become attractive for application in many microwave systems, specifically in those having a limited amount of DC power available, or already built with FET technology.

[Click on title for a complete paper.](#)



Abstracts

A Study of the Relation Between Device Low-Frequency Noise and Oscillator Phase Noise for GaAs MESFETs

H. Rohdin, C.-Y. Su and C. Stolte. "A Study of the Relation Between Device Low-Frequency Noise and Oscillator Phase Noise for GaAs MESFETs." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 267-269.

An analytical model for oscillator noise resulting from active device LF noise is presented. We apply it to a number of GaAs MESFET oscillators finding good quantitative agreement, and demonstrating several ways of reducing the phase noise. We show evidence that after having reduced the effect of the normally dominant device LF noise source, a residual LF noise source starts to dominate the phase noise. The best phase noise result for the 5GHz oscillators is $S_{\phi}/(1\text{kHz}) = -75\text{dB/Hz}$.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Single-Resonator GaAs FET Oscillator with Noise Degeneration

M.J. Bianchini, J.B. Cole, R. DiBiase, Z. Galani, R.W. Laton and R.C. Waterman, Jr.. "A Single-Resonator GaAs FET Oscillator with Noise Degeneration." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 270-273.

A low noise GaAs FET oscillator circuit is presented. It uses a single dielectric resonator both in the oscillator feedback circuit and as the dispersive element of a discriminator in a frequency locked loop used for noise degeneration. An FM noise level of -120 dBc/Hz at 10 kHz offset was measured at X-band.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A New Method of Reducing Phase Noise in GaAs FET Oscillators

A.N. Riddle and R.J. Trew. "A New Method of Reducing Phase Noise in GaAs FET Oscillators." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 274-276.

This paper addresses the problem of $1/f$ FM noise reduction in GaAs MESFET oscillators from circuit design considerations. The near-carrier FM noise is described with the aid of an analytic model that includes in-band and upconversion expressions. Variations in these terms are investigated as a function of circuit impedance. In particular, the bias impedance is observed to significantly affect the FM noise of the oscillator, primarily through the upconversion process. Techniques for noise reduction and experimental results are presented.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Digital and Analog Frequency - Temperature Compensation of Dielectric Resonator Oscillators

J. Lee, J.E. Andrews, K.W. Lee and W.R. Day. "Digital and Analog Frequency - Temperature Compensation of Dielectric Resonator Oscillators." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 277-279.

The advent of the varactor tuned, dielectric resonator oscillator (DRO) has made possible both digital and analog frequency - temperature compensation. Seth techniques provide the DRO with a stability approximating that of a crystal referenced oscillator (i.e., better than ± 50 ppm over -55° to $+85^{\circ}$ C) without the higher power consumption and spurious output signals.

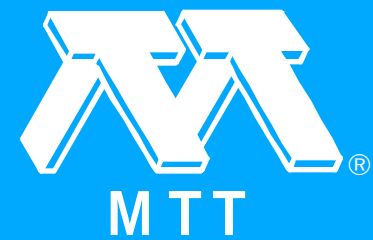
[Click on title for a complete paper.](#)



Abstracts

Session 12 -- Communications Filters

"Session 12 -- Communications Filters." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 281-281.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Session 12 Introduction (1984 [MWSYM])

H.C. Bell. "Session 12 Introduction (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 283-283.

The papers in this session cover practical realizations of filters and multiplexer for use in the satellite communications frequency bands. Advances in performance (especially loss) and configuration (size and weight) are represented. Consistent improvements in these areas can be expected as more demands are made for higher performance communications satellites.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Engine-Block - Dual Mode Dielectric Resonator Loaded Cavity Filter with Nonadjacent Cavity Couplings

S.J. Fiedziuszko. "Engine-Block - Dual Mode Dielectric Resonator Loaded Cavity Filter with Nonadjacent Cavity Couplings." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 285-287.

A degenerate mode in a dielectric resonator loaded cavity is utilized to realize a flat, miniature, high performance bandpass filter in side coupled, "engine block" configuration. A novel way of providing coupling between nonadjacent electrical cavities by an interchangeable iris-probe combination is employed to achieve high performance elliptic function response.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Narrow Bandpass Filters Using the High-Q Cylindrical TE/sub 0ml/ Resonator Modes

R.R. Bonetti and A.E. Williams. "Narrow Bandpass Filters Using the High-Q Cylindrical TE/sub 0ml/ Resonator Modes." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 288-289.

The realization of optimum-response, narrow bandpass filters in high-Q TE/sub 0ml/ cylindrical resonator modes is described. Experimental results are presented for 15- and 28-MHz bandwidth, 4-pole, elliptic function filters centered at 17.52 GHz using the TE/sub 021/ mode. Unloaded Q's of 25,000 have been achieved with cavity shaping to suppress TM/sub 1ml/ mode degeneracy.

[Click on title for a complete paper.](#)



Abstracts

Predistortion Techniques for Multicoupled Resonator Filters

A.E. Williams, W.G. Bush and R.R. Bonetti. "Predistortion Techniques for Multicoupled Resonator Filters." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 290-291.

This paper presents predistortion, lossy design techniques as applied to general, multicoupled resonator networks. The analytical procedure predistorts the poles of the transfer function to recover the lossless passband flatness at the expense of insertion loss. Experimental results on a dielectric-loaded, 6-pole, elliptic-function filter confirm the validity of the theory.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Novel Lowpass Harmonic Filters for Satellite Application

A.M.K. Saad. "Novel Lowpass Harmonic Filters for Satellite Application." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 292-294.

A new class of lowloss spurious-free lowpass filters in ridged waveguide have been developed for space application. These filters are currently being incorporated for INTELSAT VI at 4 GHz and SATCOM K satellites at 12 GHz and will likely replace the present generation of Zolotarev stepped-impedance or waffle-iron filter networks for future spacecraft.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A 12 GHz 12 Channel Contiguous Multiplexer for Satellite Applications

S.C. Holme. "A 12 GHz 12 Channel Contiguous Multiplexer for Satellite Applications." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 295-296.

A 12 GHz 12 channel contiguous multiplexer realization for satellite applications is presented. Utilization of extensive computer modeling and optimization resulted in excellent performance of the multiplexer. The selected configuration employs an H-plane T-junction manifold.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

A 12-Channel Contiguous Band Multiplexer for Satellite Application

R. Tong and D. Smith. "A 12-Channel Contiguous Band Multiplexer for Satellite Application." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 297-298.

A 12-channel contiguous-band output multiplexer has been designed to meet the stringent performance requirements of an Operational Communications Satellite working in the 14/12 GHz frequency band. A working unit has been built and tested. Results show an extremely close correlation between predicted and measured performance.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Session 13 -- Systems Topics

"Session 13 -- Systems Topics." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 299-299.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Session 13 Introduction (1984 [MWSYM])

J.B. Horton. "Session 13 Introduction (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 301-301.

Advances in microwave systems are often related to specific improvements that lead to added system performance. Examples of such improvements in communication systems are greater power output, lower receiver noise figure, etc., that contribute to greater link margins. These technologies are covered in other sessions and do not need to be discussed here. However, there are more subtle topics that can affect the system's performance.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Planar 4.0 GHz Reactively Steered Adaptive Array

R.J. Dinger. "A Planar 4.0 GHz Reactively Steered Adaptive Array." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 303-305.

A planar reactively steered adaptive array comprised of a single active microstrip element and eight closely coupled parasitic microstrip elements is described. Null steering is accomplished by adaptive control of reactive terminations on the parasitic elements using both a steepest descent algorithm and a guided random search algorithm. The planar array can steer nulls in elevation and azimuth with a depth of about 35 dB.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

R.F. Spectrum of Thermal Noise and Stability of a Microwave Cavity Oscillator

B. Villeneuve, P. Tremblay, A. Michaud and M. Tetu. "R.F. Spectrum of Thermal Noise and Stability of a Microwave Cavity Oscillator." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 306-313.

The spectral distribution of the thermal noise within a microwave cavity equipped with an external feedback loop has been calculated and measured. An equivalent electrical model is established from which the noise spectral density can be calculated at any port in the system. The effect of the gain and phase of the loop on the spectral distribution is measured with a spectrum analyzer through an heterodyne technique. Comparison with theoretical calculations shows good agreement. Preliminary measurements of the short term frequency stability of the system when operated as a microwave cavity-oscillator show a predominant flicker frequency noise. The F. M. noise close to carrier is measured and related to time domain measurements.

[Click on title for a complete paper.](#)



Abstracts

TWTA Linearize Using Dual-Gate MESFET

M. Kumar and J.C. Whartenby. "TWTA Linearize Using Dual-Gate MESFET." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 314-315.

This paper presents a new predistortion technique using GaAs dual-gate MESFETs to linearize the microwave power amplifiers. The results of a linearized 16-watt traveling wave tube amplifier at 12 GHz are presented. The linearize affects a 12 dB reduction in this third-order intermodulation products at 2.5 dB input power back off.



IEEE

Contents

Publications

Issues

Papers

Authors

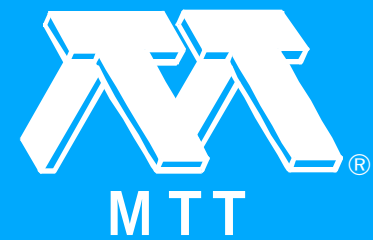
Click on title for a complete paper.



Abstracts

Session 14 -- Open Forum Session II

"Session 14 -- Open Forum Session II." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 317-317.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Scattering by Dielectric Obstacles Inside Guiding Structures

A.S. Omar and K. Schunemann. "Scattering by Dielectric Obstacles Inside Guiding Structures." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 321-323.

Green's function method is applied to the problem of dielectric resonators inside conducting cavities or waveguides. Systematic solutions are derived and applied to the calculation of resonant frequencies, radiation quality factors, and coupling coefficient.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Useful Equivalence for the Input Reactance Seen by the Coaxial Line in a Broadwall Coaxial-Microstrip Launcher

C.D. Gupta and R.S. Tomar. "A Useful Equivalence for the Input Reactance Seen by the Coaxial Line in a Broadwall Coaxial-Microstrip Launcher." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 324-326.

The broadwall coaxial-microstrip launcher has been studied from the point of view of modelling the reactance seen at the coaxial port. It turns out that, for the purpose of writing the input reactance, the feeding probe can be treated as a thin cylindrical antenna situated in an homogeneous infinite space.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

Generalized Spectral Domain Analysis of Planar Structures Having Semi-Infinite Ground Planes

H. Lee and V.K. Tripathi. "Generalized Spectral Domain Analysis of Planar Structures Having Semi-Infinite Ground Planes." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 327-329.

Accurate, efficient techniques that utilize the general Galerkin's method in Fourier transform domain are formulated to compute the quasi-TEM parameters of planar structures having semiinfinite strips. Examples include coplanar waveguides with and without the conductor backing and microstrips with a parallel slot in the ground plane. Computed results for typical cases of symmetrical, nonsymmetrical, single and multiple strip coplanar waveguide and microstrip-slot structures are presented.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

An Improved Model for Short- and Open-Circuited Series Stubs in Fin Lines

M. Burton and W.J.R. Hoefer. "An Improved Model for Short- and Open-Circuited Series Stubs in Fin Lines." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 330-332.

This paper presents empirical closed-form expressions for the scattering parameters of series stubs in single-ridge, unilateral fin line with narrow gap width. These expressions show the effect of fin gap width, stub length, and frequency and are suitable for computer-aided design.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

Accurate and Simple Formulas for Dispersion in Fin-Lines

J.K. Piotrowski. "Accurate and Simple Formulas for Dispersion in Fin-Lines." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 333-335.

Very simple formulas are derived describing dispersion in both bilateral and unilateral fin-lines. Their excellent accuracy is shown by comparing with results from spectral domain techniques.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

[Click on title for a complete paper.](#)

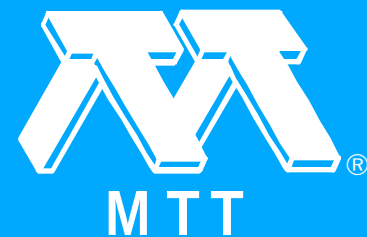


Abstracts

Analysis and Synthesis of Tapered Fin-Lines

P. Pramanick and P. Bhartia. "Analysis and Synthesis of Tapered Fin-Lines." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 336-338.

Fin-line tapers are useful for design of matching networks, filters, circulators, rectangular waveguide to fin-line transition etc. In this paper such tapers have been analysed and a synthesis technique presented using the closed-form expression for the power-voltage definition of the characteristic impedance. Reflection coefficient results are presented for exponential, parabolic and cosine squared tapers. Typical design data, using WR-19 housing and 150 μm RT - Duroid substrate, are presented for unilateral fin-lines.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Transmission-Matrix Representation of Fin-Line Discontinuities

A.S. Omar and K. Schunemann. "Transmission-Matrix Representation of Fin-Line Discontinuities." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 339-341.

A general treatise of cascaded discontinuities is given and applied to fin-line circuits. A transmission matrix representation is superior to a scattering matrix representation as far as cpu-time is concerned. The scattering matrix is, however, advantageous if the line length between any two junctions is large. Numerical examples are given for illustration.

Click on title for a complete paper.



Abstracts



IEEE

Contents

Publications

Issues

Papers

Authors

Power Density Distribution Analysis of Ferrite Loaded Finlines for the Development of Integrated Nonreciprocal Millimeter Wave Elements

A. Beyer and I. Wolff. "Power Density Distribution Analysis of Ferrite Loaded Finlines for the Development of Integrated Nonreciprocal Millimeter Wave Elements." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 342-344.

A hybrid mode field analysis for a finline loaded with a ferrite- and additionally a dielectric speciem is presented. Using this theory the power density distribution of forward and backward waves is calculated and demonstrated. The results are used to design a finline isolator for the 28.5 GHz range with a bandwidth of 2 GHz, an insertion loss smaller than 1.2 dB and an isolation higher than 39 dB.

Click on title for a complete paper.



Abstracts

A Computer-Controlled Integrated Microwave Measurement System in Finline Technique for Automatic Material Parameter Measurements

A. Beyer, W. Muller-Gronau and I. Wolff. "A Computer-Controlled Integrated Microwave Measurement System in Finline Technique for Automatic Material Parameter Measurements." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 345-347.

Integrated circuit elements in finline technique have been developed for the application in an automatic measurement system which determines the complex material parameters of ferrites and dielectrics. These elements render possible a very fast tuning of the measurement setup in comparison with mechanically controlled systems. They can also be produced much cheaper and more easily than waveguide elements. The design of fully integrated microwave measurement systems in finline technique will be discussed.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

The Method of Lines for the Analysis of Planar Waveguides with Magnetized Ferrite Substrate

R. Pregla and S.B. Worm. "The Method of Lines for the Analysis of Planar Waveguides with Magnetized Ferrite Substrate." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 348-350.

It is shown, how the very efficient method of lines can be applied to the analysis of planar waveguides (e.g. microstrip, slotline, finline or more complex structures) on ferrite substrate transversely magnetized perpendicular to the plane of the substrate. Dispersion diagrams for microstrip on magnetized ferrite substrate obtained with a desktop computer are presented.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Magnetostatic Wave Delay Lines Using the Nonuniformly Magnetized YIG Film

M. Tsutsumi, T. Sakurai and N. Kumagai. "Magnetostatic Wave Delay Lines Using the Nonuniformly Magnetized YIG Film." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 351-354.

This paper treats the group delay characteristics of the magnetostatic forward volume waves in a nonuniformly magnetized yttrium iron garnet film in the propagation direction of the wave. The long time delay more than 1 μ second with low propagation loss is observed by the pulse experiment at S band. The tapered transmission line model of the magnetostatic wave guide magnetized nonuniformly is also presented.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Edge-Guided Magnetoplasmons on Curved Interfaces in Submillimeter Wave Devices

D.M. Bolle and J.-F. Wagen. "Edge-Guided Magnetoplasmons on Curved Interfaces in Submillimeter Wave Devices." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 354-355.

We consider an interface between dielectric and semiconductor semispaces, curved along the direction of propagation and infinite in the transverse direction. The semiconductor is magnetically polarized in the Voigt configuration. We give approximate expressions for the loss due to curvature.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Coherent Transmitter Considerations Utilizing Injection Locked Magnetrons

W.S. Best, R.W. Laton and V.H. Smith. "Coherent Transmitter Considerations Utilizing Injection Locked Magnetrons." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 356-357.

The Radio Frequency (RF) power generation capability of various Ka-band transmitter alternatives are discussed. The coherent magnetron can be a low cost method of producing Ka-band RF power efficiently. Additive FM noise characteristics of commercially available X-band magnetrons were measured and their power combining capability studied. Finally, noise theory for coherent magnetrons is reviewed and an equation to predict FM noise performance is derived.

[Click on title for a complete paper.](#)



Abstracts

High-Harmonic Gyrotron Oscillators and Gyro-Klystron Amplifiers

D.B. McDermott, D.S. Furuno and N.C. Luhmann, Jr.. "High-Harmonic Gyrotron Oscillators and Gyro-Klystron Amplifiers." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 359-361.

The design and performance of several millimeter-wave harmonic gyrotron concepts are described in which the interaction is between axis-encircling electrons and cylindrical cavity TE/sub n11/ modes. This allows the magnetic field of the gyrotron to be reduced by an order of magnitude. Efficiencies up to 15% have been measured for moderate harmonic interactions, multi-kW per levels have been attained at the eleventh harmonic of the cyclotron frequency, 65 GHz waves have been produced, and a sixth-harmonic gyro-klystron amplifier has yielded 23 dB gain. Also, an 18 GHz, 1/2 MW fourth-harmonic gyrotron has been constructed and is being tested.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

A Feasibility Study to Monitor Using Microwave Soil Moisture Content Signals

E. Bahar and J.D. Saylor. "A Feasibility Study to Monitor Using Microwave Soil Moisture Content Signals." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 362-364.

The recorded phase difference between the test signal from a buried leaky coaxial cable and a reference signal is used to continuously monitor the average moisture content of irrigated soil at a desired depth.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Performance Characteristics of the Thin-Film, Etched-Circuit Rectenna

W.C. Brown. "Performance Characteristics of the Thin-Film, Etched-Circuit Rectenna." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 365-367.

Measurement of DC power output, temperature rise of the rectifying diode as measured with the fluoroptic temperature probe, and efficiency have been made on the thin-film, etched-circuit rectenna foreplane as a function of incident microwave power and velocity of laminar air flow parallel to rectenna. When the rectenna is illuminated with 2.45 GHz microwave power, DC power output densities of 1 kw/M² and DC power to weight ratios of kw/kg have been obtained with air velocity of 10 ft/sec at sea level density and diode temperature rise of 100°C.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

A Stabilized Broadband Correlator for Medical Microwave Thermography

J.C. Hill and R.B. Goldner. "A Stabilized Broadband Correlator for Medical Microwave Thermography." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 368-370.

A stabilized broadband summing microwave correlator is presented that has particular application to medical microwave thermography. A dual IF is employed to minimize long-term drifts resulting from antenna-source mismatch, RF amplifier gain drifts, and changes in uncorrelated background radiation. The correlation of the source is generated by means of a digital line stretcher, rather than antenna-source movement. Preliminary measurements using a low-temperature thermal source in air are presented.

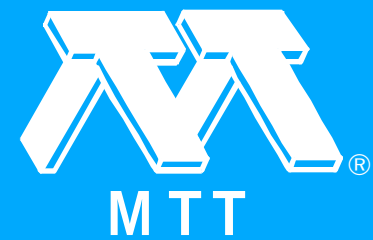
Click on title for a complete paper.



Abstracts

Session 15 -- Semiconductor Control and Frequency Conversion

"Session 15 -- Semiconductor Control and Frequency Conversion." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 371-371.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

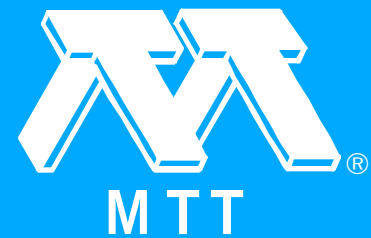


Abstracts

Session 15 Introduction (1984 [MWSYM])

J.F. White. "Session 15 Introduction (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 373-373.

This session treats special semiconductor topics of continuing interest in the microwave field. These include octave and multi-octave phase modulator methods, a very high speed FET phase detector operated to 26 GHz, and a comprehensive analysis for high level varactor upconverters. The four papers were selected for the following respective contributions.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts



IEEE

Contents

Publications

Issues

Papers

Authors

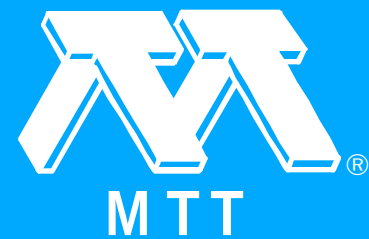
Octave-Band High Precision Balanced Modulator

Z. Adler and B. Smilowitz. "Octave-Band High Precision Balanced Modulator." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 375-377.

This paper describes an octave bandwidth component that closely approximates an ideal bi-phase linear modulator at microwave frequencies. PIN diodes in a balanced configuration of hybrid couplers were combined to realize the component in a microstrip circuit. Phase errors of 2 degrees or less were achieved over an octave band for a bi-phase modulator application. The modulator was also used to form a frequency translator with a minimum carrier suppression of 30dB and sideband suppression of 20dB over the 4-10GHz frequency band.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Multi-Octave Phase Modulators

T. Morawski, J. Zborowska and P. Miazga. "Multi-Octave Phase Modulators." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 378-380.

A new type of reflection circuit for microwave phase modulators is presented. The circuit, which consists of two semi-conductor diodes and two stubs, provides extremely broad-band of modulators. A binary circuit with p-i-n diodes exhibits an over octave frequency band with phase shift error less than 5% and 3-octave band with 10% error. For analog modulator the reflection circuit with varactor diodes gives frequency band 0.8-1.2 GHz with the phase shift $90^\circ \pm 5^\circ$ and nonlinearity of 5.5%. Experimental results for binary reflection circuits and modulators are presented.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Novel GaAs FET Phase Detector Operable to Ka Band

T. Takano, Y. Tozawa, T. Shima, T. Katoh, H. Komizo and H. Yatsuka. "Novel GaAs FET Phase Detector Operable to Ka Band." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 381-383.

A new type of sampling-phase detector using a GaAs FET was developed. This SPD has approximately a 30 mV/rad detection sensitivity at 26.4 GHz with a 19 dBm 100 MHz reference frequency. Detection sensitivity depends on the FET bias voltage in a very unusual way. This paper describes the configuration of the SPD and experimental results of a 50 GHz phase locked oscillator using an oscillator doubler VCO and the SPD .

Click on title for a complete paper.



Abstracts

A FET L-Band Phase/Amplitude Control Module

A. Presser. "A FET L-Band Phase/Amplitude Control Module." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 384-386.

The design and performance of a lumped element analog phase/amplitude control module at L-band is presented. This miniature phaser uses the principle of vector manipulation and employs FETs in a low power consuming passive configuration with good temperature stability.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

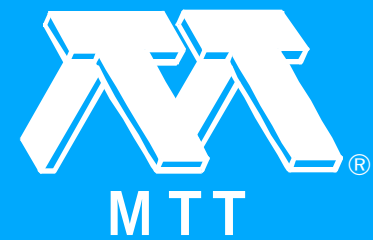
[Click on title for a complete paper.](#)



Abstracts

Session 16 -- Millimeter-Wave Applications

"Session 16 -- Millimeter-Wave Applications." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 387-387.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Session 16 Introduction (1984 [MWSYM])

J.E. Raue. "Session 16 Introduction (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 389-389.

A broad range of subjects is included, indicative of the breadth of recent progress and current interest. Active diode circuit applications include efficient broadband IMPATT power amplifiers, and two very useful new Gunn oscillator applications: fundamental injection harmonic Gunn oscillators and frequency agile active phase shifters. A 35 GHz high power switch comprised of a monolithic array of silicon diodes will also be described. The final paper in the session describes the development of an algebraic treatment of the distortion in nonlinear devices under large signal conditions.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Fundamental Wave Injection Locked 2nd Harmonic Gunn Oscillators at 94 GHz

H. Barth. "Fundamental Wave Injection Locked 2nd Harmonic Gunn Oscillators at 94 GHz." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 391-393.

A new frequency processing system for mm-wave coherent Radar system is discussed briefly to demonstrate the utility of fundamental wave injection locked second harmonic Gunn oscillators. The design and performance of this type of oscillator is the subject of the presented paper. In a CW-mode the oscillator has an output power of 10 dBm which is sufficient to serve as the LO of a balanced mixer. In a pulsed mode (duration 90 nsec, PRF=50 kHz) the oscillator delivers about 15 dBm with a phase ripple below $\pm 4^\circ$. The suitability of this pulsed oscillator to drive a 3 stage 30 dB injection locked impatt amplifier is shown.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Efficient, Broadband Circuit Performance of Millimeter-Wave IMPATT-Diode Power Amplifiers

D.F. Peterson. "Efficient, Broadband Circuit Performance of Millimeter-Wave IMPATT-Diode Power Amplifiers." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 394-396.

A new technique for evaluating and optimizing the operating circuit efficiency of IMPATT-diode amplifiers and oscillators is presented. This design approach has been used to realize a reliable, Single diode Q-band IMPATT amplifier producing 1.5 Watts output from 43.5 to 45.5 GHz with 5 dB gain.

Click on title for a complete paper.



Abstracts

Active Phase Shifters for the Millimeter and Microwave Bands

L.D. Cohen. "Active Phase Shifters for the Millimeter and Microwave Bands." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 397-399.

Frequency agile, varactor controlled, Gunn active phase shifters for the microwave and millimeter wave bands are described. Demonstrated performance includes up to 160 degrees of continuous, electronically controlled active phase shifting at 47 GHz with 160 mw output and up to 320 degrees of phase shift at 94 GHz with 40 mw output.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

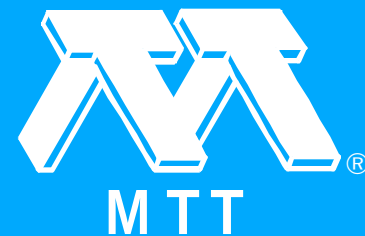


Abstracts

High Power Broadband, 35 GHz Waveguide Switch Using a Monolithic Diode Array

A.L. Armstrong, D.E. Wheeler and J. Goodrich. "High Power Broadband, 35 GHz Waveguide Switch Using a Monolithic Diode Array." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 400-401.

A monolithic array of silicon diodes has been utilized to fabricate a 35 GHz single throw waveguide switch with over 400 W peak and 20 W average power capability. The switch provides 23 dB isolation, 60 nanosecond switching speed, under 1 dB insertion loss and 1.6:1 VSWR over the 26.5 to 40 GHz waveguide bandwidth. A double throw version handles 40 W average power and has a 25% bandwidth.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Large Signal Analysis of Nonlinear Microwave Systems

M.B. Steer and P.J. Khan. "Large Signal Analysis of Nonlinear Microwave Systems." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 402-403.

In some application, microwave systems are subjected to large input signals. For example, with front-end receivers in radar systems, the range of the target determines the size of the input signal. In communications and radar systems, nearby transmitters can result in a large, undesired input signal. The resulting intermodulation products (IP's) can lead to significant degradation performance. However, with some systems, e.g. mixers, intermodulation is an inherent part of system operation. Detailed numerical analysis of a nonlinear system with large signal excitation, is notoriously difficult and often does not yield the qualitative understanding required for design. In this paper we present a noniterative, algebraic treatment of large signal effects. The method provides valuable insight into the way in which circuit and device parameters affect large signal performance. As an example we investigate the gain compression performance of diode mixers and parametric amplifier. (These systems were chosen as they both incorporate the nonlinear resistance and reactance of a diode junction. The resistive nonlinearity is dominant with a mixer and the reactive nonlinearity with a parametric amplifier.) However, the approach can be applied to any system and to other types of nonlinear distortion (e.g. cross-modulation, intermodulation and detuning distortion).

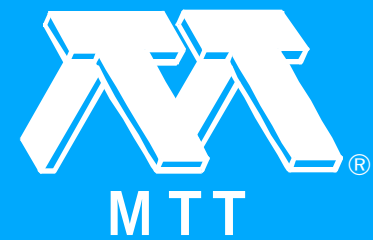
[Click on title for a complete paper.](#)



Abstracts

Session 17 -- MIC Techniques

"Session 17 -- MIC Techniques." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 405-405.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Session 17 Introduction (1984 [MWSYM])

R.L. Camisa. "Session 17 Introduction (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 407-407.

The first theme addressed in this session is the miniaturization of microwave components. It is shown, through the use of lumped-elements, that the circuit area of Wilkinson combiners and branch-like couplers is reduced to less than 20% of conventional distributed realizations at 4 GHz. These savings will be important for future small-size, light-weight microwave components realized in either a hybrid or monolithic integrated circuit format. For MMIC's, the reduction of the ratio of passive-to-active circuit area is of importance for yield considerations.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

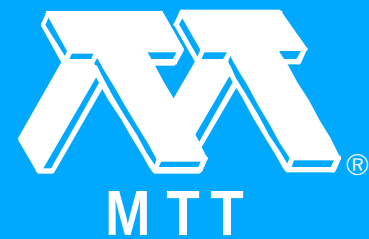
Quasi-Lumped-Element 3- and 4-Port Networks for MIC and MMIC Applications

R.K. Gupta and W.J. Getsinger. "Quasi-Lumped-Element 3- and 4-Port Networks for MIC and MMIC Applications." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 409-411.

Design and analysis techniques are presented for quasi-lumped-element Wilkinson divider/combiner networks (3-port) and branch-line couplers (4-port) for MIC/MMIC applications. The circuit area is reduced to less than 20 percent of conventional transmission line realizations at 4 GHz. Test results are presented for a CPW 10-dB coupler (2 x 2 mm) and an MIC 3-dB Wilkinson divider/combiner circuit (1.75 x 2.75 mm). Good agreement is obtained between measured and modeled results.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

An MMIC/MIC-to-Waveguide Transition for Single- and Dual-Polarization Systems

B.D. Geller and A.I. Zaghloul. "An MMIC/MIC-to-Waveguide Transition for Single- and Dual-Polarization Systems." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 412-413.

A simple, low-cost, 20-GHz MMIC/MIC-to-waveguide septum-type transition is described for rectangular, square, or circular waveguides operating in single- or dual-polarization modes. The MMIC is attached to a dielectric substrate surface with a circuit that transforms the waveguide impedance to that of the MMIC. Good insertion loss, return loss, and cross polarization are measured.

[Click on title for a complete paper.](#)



Abstracts

Transverse Resonance Analysis of Finline Discontinuities

R. Sorrentino and T. Itoh. "Transverse Resonance Analysis of Finline Discontinuities." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 414-416.

A transverse resonance technique is used to compute the resonant frequencies of a finline resonator containing the discontinuity to be analyzed. From this, the parameters of the equivalent circuit of the discontinuity are evaluated as functions of frequency and geometry of the structure.



IEEE

Contents

Publications

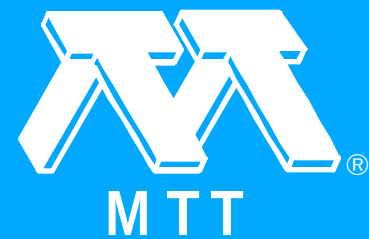
Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Quarter Wave Transformers for Matching Transitions Between Waveguides and Fin Lines

C.J. Verver and W.J.R. Hoefer. "Quarter Wave Transformers for Matching Transitions Between Waveguides and Fin Lines." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 417-419.

This paper presents closed-form expressions for the design of a quarter-wave transition-matching transformer. This structure takes the form of a notch or protrusion cut in the finline substrate at the waveguide-to-finline interface. Measurements show a 5 db improvement in return loss over a full waveguide band due to such a transformer.

[Click on title for a complete paper.](#)



Abstracts

Synthesis of Optimum Fin-Line Tapers

C. Schieblich and J.H. Hinken. "Synthesis of Optimum Fin-Line Tapers." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 420-421.

The theory of TEM matching sections is modified and applied to fin-line tapers. For the VSWR prescribed, the minimum length taper contour is derived, Measurements confirm the synthesis technique.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

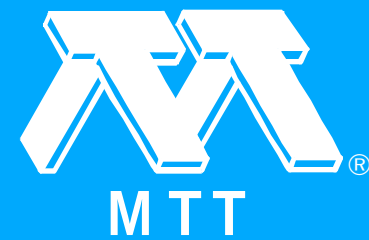
[Click on title for a complete paper.](#)



Abstracts

Session 18 -- FET Modeling and Novel Structures

"Session 18 -- FET Modeling and Novel Structures." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 423-423.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Session 18 Introduction (1984 [MWSYM])

M. Kumar. "Session 18 Introduction (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 425-425.

Rapid performance advances continue to be made at microwave frequencies with amplifiers, mixers, that use field effect transistors as their active element. Significant progress has been made in modeling these devices for determining the accurate equivalent circuit element values for GaAs FETs. First three papers in this session report the progress in modeling of the GaAs FETs for determining the equivalent circuit elements values which serves as an invaluable aid for device diagnostics and for the development of amplifiers, mixers, etc.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Self-Consistent FET Models for Amplifier Design and Device Diagnostics

W.R. Curtice and R.L. Camisa. "Self-Consistent FET Models for Amplifier Design and Device Diagnostics." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 427-429.

A procedure has been developed for producing accurate and unique equivalent circuit models for carrier mounted GaAs FETs. The procedure incorporates zero drain-source bias S-parameter tests as well as Fukui-type, dc measurements. Data for 1 μm gate length, 600 μm periphery GaAs FETs are presented.

Click on title for a complete paper.

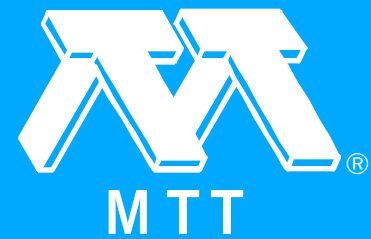


Abstracts

Modeling of Nonlinear Distortion in GaAs MESFETs

R.J. Gilmore and F.J. Rosenbaum. "Modeling of Nonlinear Distortion in GaAs MESFETs." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 430-431.

A modified harmonic balance approach is applied to a GaAs FET model to simulate two-tone intermodulation distortion and multiple signal suppression in MESFET amplifiers and mixers. Experimental results of a single stage FET amplifier are presented.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Analysis and Design of GaAs MESFET Mixers

S.A. Maas. "Analysis and Design of GaAs MESFET Mixers." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 432-433.

A generalized approach to the analysis of GaAs MESFET mixers has been developed, which accurately calculates the input and output impedances and stability conditions, and is applicable to upconverters and harmonic mixers. Two mixer designs are presented along with experimental results yielding conversion gains of 6 and 11 dB, noise figures of 4.5 and 5.5 dB, and third-order intermodulation intercepts of 12 and 15 dBm, respectively. These are state-of-the-art results for single gate FET mixers.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



A Low Noise AlGaAs/GaAs FET with P/sup +/- Gate and Selectively Doped Structure

K. Ohata, H. Hida, H. Miyamoto, M. Ogawa, T. Baba and T. Mizutani. "A Low Noise AlGaAs/GaAs FET with P/sup +/- Gate and Selectively Doped Structure." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 434-436.

A low noise AlGaAs/GaAs FET with p/sup +/- gate and selectively doped structure has been developed. The FET utilizing a two dimensional electron gas has a closely spaced electrode planar structure on an MBE wafer. A 0.5 μm gate FET exhibited marked room temperature performances of 310 mS/mm transconductance and 1.2 dB noise figure with 11.7 dB associated gain at 12 GHz.





IEEE

Contents

Publications

Issues

Papers

Authors

A 6 Watt 6 GHz GaAsFET Power Module with GaAs Matching Circuits

F.M. Magalhaes, J.P. Beccone, J.C. Irvin, S.J. Perelli and W.O. Schlosser. "A 6 Watt 6 GHz GaAsFET Power Module with GaAs Matching Circuits." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 437-438.

A GaAs matched FET (M-FET) technology has been developed which incorporates separate GaAs matching chips and GaAsFETs within a small hermetic package. By using two separately matched 6 mm FET chips in the design, we have achieved 6.3 watts of output power with 9 dB associated gain at 6 GHz.

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A C-Band 10 Watt GaAs Power FET

J. Fukaya, M. Ishii, M. Matsumoto and Y. Hirano. "A C-Band 10 Watt GaAs Power FET." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 439-440.

A new GaAs high power FET has been developed. The FET chip with 10.8mm gate-width employs a deep recess, via hole PHS, an air bridge gate-source cross-over and novel gate feeder network technology. The internally matched device which consists of two chips (total gate-width; 21.6mm) has realized 10 watts of 1dB gain compression power with 8dB gain and 43% power added efficiency at 8GHz.

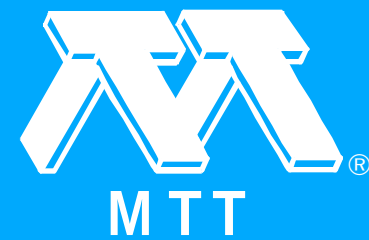
[Click on title for a complete paper.](#)



Abstracts

Session 19 -- Millimeter-Wave Techniques

"Session 19 -- Millimeter-Wave Techniques." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 441-441.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Session 19 Introduction (1984 [MWSYM])

M. Dydyk. "Session 19 Introduction (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 443-443.

Millimeter-wave technology offers solutions to the design and implementation of high-performance weapons and communications systems. However, these solutions depend upon making millimeter-wave systems affordable.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

60 GHz Integrated Circuit Quadriphase Exciter and Modulator

A. Grote and K. Chang. "60 GHz Integrated Circuit Quadriphase Exciter and Modulator." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 445-447.

An integrated circuit quadriphase shift keying (QPSK) exciter and modulator have demonstrated excellent performance directly modulating a carrier frequency of 60 GHz with an output phase error of less than 3 degrees and maximum amplitude error of 0.5 dB. The unit was packaged into a volume of 1.8x2.5x0.35 in. Multigigabit data streams are possible.

Click on title for a complete paper.



Abstracts

Millimeter Wave Silicon Device and Integrated Circuit Technology

P.J. Stabile, A. Rosen, W.M. Janton, A. Gombar and M. Kolan. "Millimeter Wave Silicon Device and Integrated Circuit Technology." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 448-450.

Silicon millimeter wave integrated circuit (SIMMWIC) technology has been developed utilizing novel fabrication techniques. These techniques have been applied to IMPATT and PIN diode fabrication schemes, the results of which are presented.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

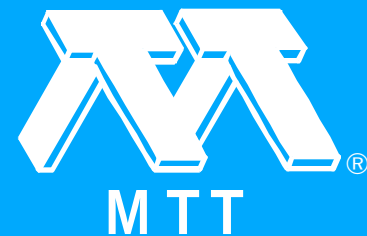


Abstracts

Monolithic Antennas for Millimeter Wave GaAs Integrated Circuits

F.C. Jain and R. Bansal. "Monolithic Antennas for Millimeter Wave GaAs Integrated Circuits." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 451-452.

This paper describes millimeter wave GaAs dipole antennas whose radiation characteristics can be controlled during fabrication and/or operation. The physical layout of a monolithic semiconductor antenna compatible with the GaAs IC technology is also discussed.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Reduction of Propagation Losses in Coplanar Waveguide

D.F. Williams and S.E. Schwarz. "Reduction of Propagation Losses in Coplanar Waveguide." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 453-454.

Coplanar Waveguide (CPW) is finding increasing use in microwave and millimeter wave integrated circuits. CPW has several advantages over microstrip, but its ohmic loss tends to be larger because of the concentration of its currents near the metal edges. Two methods for reducing ohmic loss in CPW are proposed and studied using a numerical technique. It is shown that the propagation loss can be reduced by approximately a factor of four.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Nonreciprocal Effects in Semiconductor Loaded Waveguide at Millimeter Wavelengths

E.M. Godshalk and F.J. Rosenbaum. "Nonreciprocal Effects in Semiconductor Loaded Waveguide at Millimeter Wavelengths." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 455-456.

Nonreciprocal propagation in a waveguide partially loaded with a semiconductor slab in a transverse D.C. magnetic field at 92 GHz is investigated. A model was developed to predict the propagation characteristics and experiments were conducted for comparison. Experimental data for a Si semiconductor slab are reported, which show increased nonreciprocal attenuation when carrier mobility is increased.

[Click on title for a complete paper.](#)



Abstracts

W-Band Broadband Integrated Circuit Receiver

K. Chang, G.M. Hayashibara, R.S. Tahim, A. Grote, T. Pham and C. Sun. "W-Band Broadband Integrated Circuit Receiver." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]).

Paper Withdrawn



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

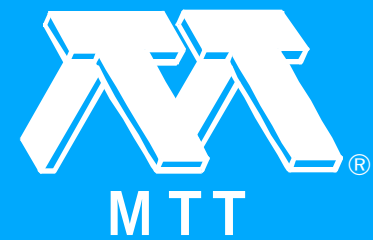
Click on title for a complete paper.



Abstracts

Session 20 -- Planar Transmission Line Structures

"Session 20 -- Planar Transmission Line Structures." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 459-459.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

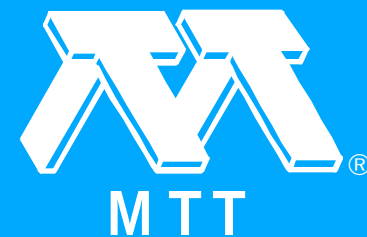


Abstracts

Session 20 Introduction (1984 [MWSYM])

J.M. Owens. "Session 20 Introduction (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 461-461.

This MIC techniques sessions presents analysis techniques and new circuit topologies for microstrip and coplanar circuit media.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Spectral Iterative Technique for Analyzing Multiconductor Microstrip Lines

C. Chan and R. Mittra. "Spectral Iterative Technique for Analyzing Multiconductor Microstrip Lines." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 463-465.

The spectral-iterative technique is used to analyze multiconductor microstrip lines. The iteration procedure is based upon the conjugate gradient technique applied in the spectral domain and employs the FFT algorithm for efficient computation. Numerical results are presented and compared with available data.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A Spectral Domain Hybrid Field Analysis of Periodically Inhomogeneous Microstrip Lines

F.-J. Glandorf and I. Wolff. "A Spectral Domain Hybrid Field Analysis of Periodically Inhomogeneous Microstrip Lines." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 466-469.

Single and coupled periodically inhomogeneous microstrip lines have been analyzed using a hybrid mode spectral domain field analysis. The field computation method will be explained principally, the convergence of the method and the numerical effort will be critically discussed. Applications of the theoretical results have been applied to the design of microstrip- and waveguide filters, to antennas and to the design of a Podell-coupler with equalized even and odd mode phase velocities and a high directivity. Measurements are compared to the theoretical results.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Theoretical and Experimental Investigation of Asymmetric Coplanar Waveguide

V.F. Hanna and D. Thebault. "Theoretical and Experimental Investigation of Asymmetric Coplanar Waveguide." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 469-471.

Conformal mapping techniques are used to obtain analytic closed-form expressions for the characteristic impedance and the relative effective dielectric constant of asymmetric coplanar waveguide with infinite or finite dielectric thickness. The line asymmetry leads to a decrease of its characteristic impedance and to an increase of its relative effective dielectric constant. Six asymmetric coplanar waveguides are raised are their characteristic impedances are measured using time domain reflectometry techniques.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Optimized Microstrip Ring-Star 5-Ports for Broadband 6-Port Measurement Applications

M. Malkomes, G. Kadisch and H.J. Schmitt. "Optimized Microstrip Ring-Star 5-Ports for Broadband 6-Port Measurement Applications." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 472-474.

Results of computer-aided analysis and optimization of symmetrical 5-port microstrip rings with external matching and inner star coupling are presented. Over one octave operational bandwidth with power balance within 1dB and matching better than -20dB has been achieved in theory and measurement for two different design concepts.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Fundamental Superstrate Effects on Printed Circuit Antenna Efficiency

N.G. Alexopoulos and D.R. Jackson. "Fundamental Superstrate Effects on Printed Circuit Antenna Efficiency." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 475-476.

Printed circuit antennas integrated on typically used substrates such as quartz, GaAs or Si exhibit low radiation efficiency due to surface wave effects in the substrate (e.g., a GaAs substrate yields on optimum radiation efficiency of $\epsilon_r / \epsilon_r + 1 \approx 28\%$). It is demonstrated in this paper that $\epsilon_r / \epsilon_r + 1 = 100\%$ is feasible with practical materials either by using a magnetic superstrata layer or by integrating the antennas on the lower side of a dielectric superstrata (such as GaAs), while in this case, the substrate is merely a supporting layer with lower dielectric constant. The effect of the composite layer is to eliminate surface waves, provided the layer thicknesses are chosen properly.

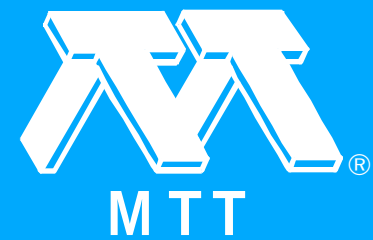
[Click on title for a complete paper.](#)



Abstracts

Session 21 -- IMPATT and Bipolar Oscillators

"Session 21 -- IMPATT and Bipolar Oscillators." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 477-477.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Session 21 Introduction (1984 [MWSYM])

N.W. Cox. "Session 21 Introduction (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 479-479.

System requirements for microwave solid state amplifiers and oscillators continue to demand improvements in both device and circuit performance. Device parameters such as power, frequency, efficiency, and reliability as well as circuit parameters such as bandwidth, power flatness and noise are under extensive investigation in many laboratories. New developments in these areas pertaining to both IMPATT diodes and bipolar transistors will be presented in this session. Three of the papers deal with IMPATT diodes while the fourth involves bipolar transistors.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

GaAs IMPATT Diodes Pulsed at 40 GHz

M.G. Adlerstein and S.L.G. Chu. "GaAs IMPATT Diodes Pulsed at 40 GHz." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 481-482.

Gallium arsenide double-drift Read IMPATT diodes are under development for use at 40 GHz. Such diodes have offered higher efficiency and average power than silicon diodes. The advantage may be ascribed to both the intrinsic properties of GaAs and the more complex doping structures used. In this paper, we describe diodes which give 16 W peak power at efficiencies up to 15%. Duty cycles between 5% and 30% have been employed at various peak power levels. The techniques used to design the double Read doping profiles and their resulting microwave properties are discussed. The characteristics of the Kurokawa test circuit are described in terms of measured S-parameters.

[Click on title for a complete paper.](#)



Abstracts

Analysis of a J-Band Pulsed Read IMPATT Oscillator

J.E. Curran, J.P. Bridge and J.L.B. Walker. "Analysis of a J-Band Pulsed Read IMPATT Oscillator." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 483-485.

A computer analysis of a waveguide IMPATT oscillator has been undertaken with good agreement between theory and experiment. Using this analysis a new technique has been devised for determining package bond-wire inductance and diode capacitance.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Stable Broadband IMPATT Amplifier

C.S. Ward, R.W. Laton and J.A. Spada. "A Stable Broadband IMPATT Amplifier." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 486-488.

A single diode IMPATT amplifier has been demonstrated at X-band which amplifies a 200mw average power input signal by 9 dB over a 1 dB locking bandwidth of 3.7%. This result is believed to be the largest gain-bandwidth product yet achieved with a single IMPATT diode for this power level.



IEEE

Contents

Publications

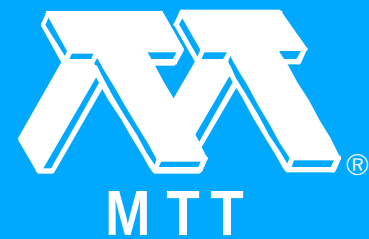
Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

8 GHz Low Noise Bias Tuned VCO

M.E. Znojkwicz. "8 GHz Low Noise Bias Tuned VCO." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 489-491.

Design and performance of an 8 GHz cavity stabilized silicon bipolar transistor voltage controlled oscillator is presented. Very linear electronic frequency tuning with minimal output power variations are achieved without varactor by means of the transistor bias control. The VCO is mechanically tuned over 1 GHz frequency range with dielectric tuner. It delivers 50 mW of output power with 17% transistor efficiency and phase noise of -60 dBc/Hz at 1 kHz from carrier.

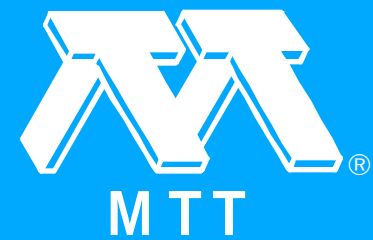
[Click on title for a complete paper.](#)



Abstracts

Session 22 -- Dielectric Waveguides

"Session 22 -- Dielectric Waveguides." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 493-493.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

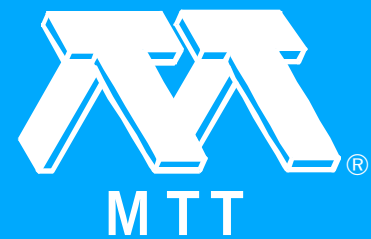


Abstracts

Session 22 Introduction (1984 [MWSYM])

D. Kajfez. "Session 22 Introduction (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 495-496.

In the conventional microwave range of centimeter wavelengths, the transmission of energy with the lowest amount of attenuation is achieved by using hollow metal waveguides. At much higher end of the electromagnetic spectrum, at optical frequencies, the lowest attenuation is achieved by using the dielectric fibers. At millimeter wavelengths, both metal and dielectric waveguides can be used. Nevertheless, much of the research effort in this area is presently concentrated on the dielectric waveguides.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Powder Core Dielectric Waveguides

W.M. Bruno and W.B. Bridges. "Powder Core Dielectric Waveguides." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 497-498.

A powder-filled surface of a led groove in the teflon substrate has been demonstrated as a dielectric waveguide at 94 GHz. Guide wavelengths measured for combinations of guide dimensions and powders agree within 10% of values predicted by Marcatili's approximate theory. Attenuation constants of 0.2 to 0.3 dB/cm were measured for barium tetra-titanate.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Directly-Connected Image Guide 3dB Coupler with very Flat Coupling

D.I. Kim, D. Kawabe, K. Araki and Y. Naito. "Directly-Connected Image Guide 3dB Coupler with very Flat Coupling." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 499-501.

Design method of the broadband, compact, and mechanically stable 3dB coupler with very flat coupling are demonstrated using a directly-connected image guide. The experimental results agree reasonably well with the theoretical ones by forming appropriate tapers even at frequencies where higher modes could be excited.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Phase-Matched Waveguide Using the Artificial Anisotropic Structure and its Application to Mode Converter

T. Mizumoto, H. Yamazaki and Y. Naito. "Phase-Matched Waveguide Using the Artificial Anisotropic Structure and its Application to Mode Converter." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 502-504.

Phase-matching technique by the artificial anisotropic structure and its application to mode converter are proposed for the millimeter-wave dielectric circuitry. Phase-matched dielectric planar waveguide is designed and mode conversion characteristics are studied. Mode conversion experiment is successfully performed.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Transition to Non-Radiating Dielectric Waveguide

J.A.G. Malherbe, J.H. Cloete and I.E. Losch. "A Transition to Non-Radiating Dielectric Waveguide." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 505-507.

A transition between standard X-band waveguide and Non-radiating Dielectric (NRD) waveguide is described. It features an impedance taper from air-to- dielectric-filled waveguide cascaded with an impedance taper and mode converter to NRD. In both cases the taper shape and length are obtained through a theoretical calculation. The main property of the transition is a low reflection coefficient so that conventional waveguide equipment tank used for measurements in NRD waveguide.

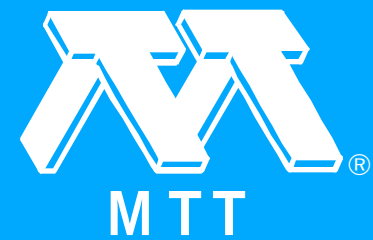
[Click on title for a complete paper.](#)



Abstracts

Session 23 -- Microwave and Millimeter-Wave Measurements

"Session 23 -- Microwave and Millimeter-Wave Measurements." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 509-509.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Session 23 Introduction (1984 [MWSYM])

B.S. Perlman. "Session 23 Introduction (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 511-511.

This session covers a wide variety of measurement topics concerned with microwave and millimeter-waves. Papers will be presented on new methods, techniques and solutions that extend and improve the state of the measurement art.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

An Analysis of the AC Bandwidth of Transmission Line Discriminators for FM Noise Measurement

R.S. Brozovich and J.R. Ashley. "An Analysis of the AC Bandwidth of Transmission Line Discriminators for FM Noise Measurement." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 513-514.

An error in [1] motivated a derivation of the frequency response of transmission line discriminators. The derivation properly handles the limit as $f/\omega_m \rightarrow 0$. Experiments are reported which confirm the DC response of transmission line discriminators and the $(\sin x)/x$ shape of the frequency response characteristics.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Optimizing an Electromagnetic Field Sensor for Microwave Amplitude and Phase Detection via Fiber Optic Transmission Link

M.T. Avalos and R.M. Sega. "Optimizing an Electromagnetic Field Sensor for Microwave Amplitude and Phase Detection via Fiber Optic Transmission Link." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 515-516.

A study of amplitude and phase detection using an electromagnetic field sensor is presented. A time varying magnetic field probe modulates a high frequency semiconductor GaAlAs laser diode ($\lambda = 840\text{nm}$). The laser light is then transmitted via a fiber optic transmission line, minimizing the electromagnetic field perturbations, and is detected using a P-I-N photodiode. The frequency band is limited in this study to 2.0-3.0 GHz.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

Large Signal Pulsed Network Analyzer Operation

T.R. Apel and R.J. Weber. "Large Signal Pulsed Network Analyzer Operation." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 517-519.

A new method for measurement of pulsed RF impedance, gain, and phase information is presented. This method provides for direct network analyzer measurement in a pulsed high power environment . Enhanced performance was obtained by making measurements in a low impedance system.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Measurement of the Complex Dielectric Constant of Casting Resins at Millimeter Wavelengths Low-Loss

F.I. Shimabukuro and S. Lazar. "Measurement of the Complex Dielectric Constant of Casting Resins at Millimeter Wavelengths Low-Loss." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 520-521.

A quasi-optical method for measuring the complex dielectric constant of materials is described. The determination is derived from measurements of the transmission of a perpendicularly polarized wave through a dielectric slab at different angles of incidence. The complex permittivities of various low-loss casting resins have been measured using this method.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Dielectric Properties of Millimeter Wave Materials

M.N. Afsar and K.J. Button. "Dielectric Properties of Millimeter Wave Materials." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 522-524.

It is no longer necessary to use extrapolated microwave dielectric values when designing millimeter wave components, devices and systems. We are now furnishing highly accurate millimeter wave (5 mm to 1/2 mm) data on complex dielectric permittivity and loss tangent to engineers for a variety of materials such as common ceramics, semiconductors, crystalline and glass materials. For most materials the dielectric loss increases with frequency in the millimeter, unlike the microwave, is an important feature of our new data. Reliable measurements also reveal that the method of Preparation of nominally identical specimens can change the dielectric losses by many factors.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Application of a Dielectric Resonator on Microstrip Line for a Measurement of Complex Permittivity

S. Maj and J.W. Modelski. "Application of a Dielectric Resonator on Microstrip Line for a Measurement of Complex Permittivity." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 525-527.

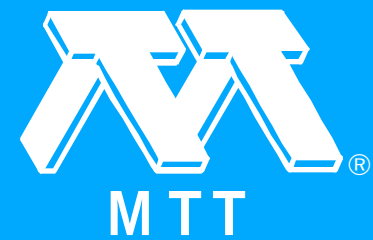
A cylindrical dielectric resonator placed on microstrip line is used for measuring the complex permittivity of microwave low-loss high ϵ_r dielectric materials. The method is based on the accurate solution of this resonator with $TE_{01\delta}$ mode and is compared to the method of dielectric rod resonator with TE_{11} mode. The accuracy of the both method is similar - the measurement accuracy of relative dielectric constant is better than 0.2 percent and measurement accuracy of loss tangent is about $1 \cdot 10^{-4}$.



Abstracts

Session 24 -- Optical and Submillimeter Wave Technology

"Session 24 -- Optical and Submillimeter Wave Technology." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 529-529.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Analog Microwave Fiber Optic Communications Links

W.E. Stephens, T.R. Joseph and B.U. Chen. "Analog Microwave Fiber Optic Communications Links." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 533-534.

Analog microwave fiber optic communication links have the potential to replace coaxial systems for transmission of RF signals at frequencies up to 15 GHz and beyond. Potential applications include antenna remoting, distribution networks, and communications. At TRW, prototype bandpass RF fiber optic links have been constructed with center frequencies up to 5 GHz. The performance of these links will be discussed.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A New Method for the Modal Analysis Having Symmetrically Distributed of Optical Fibers Multiple Cores

E. Yamashita, S. Ozeki and K. Atsuki. "A New Method for the Modal Analysis Having Symmetrically Distributed of Optical Fibers Multiple Cores." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 535-536.

A new modal analysis method based on the combination of a point-matching method and a group theoretic approach is proposed by which optical fibers having symmetrically distributed multiple cores on a circumference can be studied. The case of sextet cores is treated. The results of numerical calculations and microwave model experiments are compared.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

2.24 Gbit/s Direct Modulation of Injection Laser by Monolithic Silicon Multiplexer

B.G. Bosch, U. Langmann and D. Daniel. "2.24 Gbit/s Direct Modulation of Injection Laser by Monolithic Silicon Multiplexer." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 537-539.

It is shown that direct laser-diode pulse-code modulation at 2.24 Gbit/s can be performed by a fast Si monolithic integrated bipolar circuit (2.5 μm design rules, pn-junction isolation, $f_{\text{sub T}}/f_{\text{ap}}/7 \text{ GHz}$ at $V_{\text{CE}} = 1 \text{ V}$) : The current switch output stage of a 4:1-time-division multiplexer IC feeds a modulation current swing of 4 mA into a TJS injection laser biased above threshold. The measured laser diode response for different static data input patterns are reported.

Click on title for a complete paper.



Abstracts

Direct DC to RF Conversion by Picosecond Optoelectronic Switching

C.S. Chang, M.C. Jeng, M.J. Rhee, C.H. Lee, A. Rosen and H. Davis. "Direct DC to RF Conversion by Picosecond Optoelectronic Switching." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 540-541.

Conversion of dc energy to RF pulses has been demonstrated by picosecond optoelectronic switching in silicon. Sequential waveform of two and one half cycles has been generated with voltage conversion efficiency better than 90%. This type of device has the potential of generating megawatt power at frequencies extending into the millimeter-wave region.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Polarization-Sensitive Imaging Arrays

P.P. Tong, D.B. Rutledge, D.P. Neikirk, P.E. Young, W.A. Peebles and N.C. Luhmann, Jr.. "Polarization-Sensitive Imaging Arrays." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 542-544.

Two different monolithic imaging arrays have been developed that image polarization as well as intensity at near-millimeter wavelengths. One array is a row of linearly polarized bow-tie antennas that lean alternately left and right. This array has measured the polarization with a precision of 7 arc-minutes, and has demonstrated diffraction-limited resolution of a 20° step change in polarization. The other array is a row of circularly polarized equiangular spiral antennas, alternately spiraling clockwise and counterclockwise, that respond to left-handed and right-handed circular polarization.



IEEE

Contents

Publications

Issues

Papers

Authors

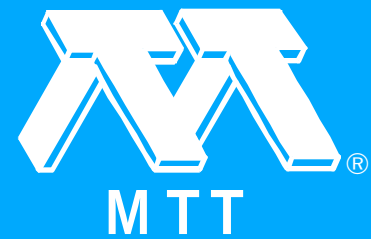
Click on title for a complete paper.



Abstracts

Session 25 -- Millimeter-Wave Mixers

"Session 25 -- Millimeter-Wave Mixers." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 545-545.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Session 25 Introduction (1984 [MWSYM])

S. Dixon, Jr.. "Session 25 Introduction (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 547-547.

The current research and development in the area of millimeter wave mixers is involved in the fabrication and processing of better Schottky barrier diodes for their applications in unique imbedding circuits. Because of their covertness and ability to penetrate battle field smoke, haze and fog, providing all weather capability in the millimeter-wave region, millimeter-wave mixers and subsystems are finding widespread application in tactical and strategic systems, such as communications, radar, target acquisition and submunitions. However, the use of conventional waveguide mixers for system applications often is hampered by their size, weight and labor intensive fabrication. To produce these mixers and subsystems at affordable cost, the use of hybrid planar integrated or monolithic circuit techniques will prove to be attractive because a large quantity of circuits can be fabricated by batch-processing of wafers using advanced semiconductor processing techniques.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

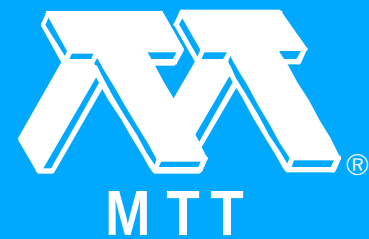
A Comparison of the Measured and Theoretical Performance of a 140-220 GHz Schottky Diode Mixer

P.H. Siegel, A.R. Kerr and R.J. Mattauch. "A Comparison of the Measured and Theoretical Performance of a 140-220 GHz Schottky Diode Mixer." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 549-551.

The results of a theoretical study of a 140-220 GHz Schottky diode mixer are described. Close agreement is obtained between the measured performance and the performance predicted by the mixer analysis program GISSMIX. The importance of making separate sideband conversion loss measurements is demonstrated. A sensitivity analysis shows the effects of various diode and mount characteristics on the mixer performance.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Noise Measurements and Noise Mechanisms in Microwave Mixer Diodes

A. Jelenski, M.V. Schneider, A.Y. Cho, E.R. Kollberg and H. Zirath. "Noise Measurements and Noise Mechanisms in Microwave Mixer Diodes." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 552-554.

Classic work on optimized heterodyne receivers has been concentrated on the network aspects of mixers with limited emphasis on device properties. We present an in depth analysis of the best possible mixer diode and of mechanisms limiting its performance.

[Click on title for a complete paper.](#)



Abstracts

A D-Band Millimeter-Wave Crossbar Mixer

L.Q. Bui, N. Ton and D. Ball. "A D-Band Millimeter-Wave Crossbar Mixer." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 555-556.

Broadband crossbar mixers in the frequency range from 110-170 GHz using Schottky beam lead diodes were designed and fabricated using 5-mil Duroid substrate. Conversion loss is as low as 7 dB for IF as high as 18 GHz.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Low-Noise, Fixed Tuned, Broadband Mixer for 200-270 GHz

J.W. Archer and M.T. Faber. "Low-Noise, Fixed Tuned, Broadband Mixer for 200-270 GHz." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 557-559.

A cryogenic, single-ended, fundamental frequency mixer is reported. Contrary to common practice, the mixer utilizes a Schottky diode with high zero bias capacitance of 7 fF and a very short whisker (less than 90 μm). This unusual approach together with a careful design and optimization have yielded an extremely broadband, low-noise mixer which, when fixed tuned and cooled to 21K, has a single sideband (SSB) mixer temperature less than 600K for a local oscillator frequency range of greater than 200 GHz to 270 GHz.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Session 26 -- Six-Port Measurement Techniques

"Session 26 -- Six-Port Measurement Techniques." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 561-561.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Session 26 Introduction (1984 [MWSYM])

G.F. Engen. "Session 26 Introduction (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 563-563.

In the field of microwave metrology, interest continues to focus on the dual six-port automatic network analyzer, and refinements of it. While the technique is demonstrably capable of unprecedented accuracy, the realization of this performance potential requires a signal source which is both "cleaner" (free from harmonics, etc.) and of higher power (by 10-20 dB.) than required by other network analyzers. In addition, and for the most part, the existing six-port systems fail to provide a real time display, although some interesting results in this area have been reported in England.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

A Dual Six-Port Automatic Network Analyzer and its Performance Tests

N.S. Chung, J.H. Kim and J. Shin. "A Dual Six-Port Automatic Network Analyzer and its Performance Tests." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 565-565.

A computer controlled six-port ANA (Automatic Network Analyzer) capable of measuring complex reflection coefficients of one-port devices, effective efficiencies of power sensors, and S-parameters of two-port devices over 2-18 GHz is described. System calibration, based on the TRL technique is discussed and performance tests on measuring reflection coefficient and S-parameters are summarized.

Click on title for a complete paper.



Abstracts

Evaluation of a 94 GHz Diode-Based Dual Six-Port Network Analyzer

R.A. Fong-Tom. "Evaluation of a 94 GHz Diode-Based Dual Six-Port Network Analyzer." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 567-568.

The feasibility and accuracy diode-based dual six-port network of a 94 GHz analyzer is demonstrated. Consistency experiment show that the systematic errors are acceptably small: the attenuation measurement uncertainty is 0.01 dB at low attenuation increasing to 0.3 dB at high attenuation (40 dB); the reflection coefficient measurement uncertainty is less than 0.008.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A New Real-Time Six-Port A N A Method

L. Kaliouby and R.G. Bosisio. "A New Real-Time Six-Port A N A Method." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 569-571.

A method for real-time six-port automatic network analyzer (ANA) measurements based on the use of a pre-calculated six-port chart is developed. It is shown that a swept frequency generator can be used to read the module and/or phase of the reflection coefficient (Γ) on a computer screen at sweep rates of up to 75 Hz. The test band is determined by the six-port design, typically 9:1, the accuracy of measurement is dependent on the swept frequency interval and on the six-port circuit design.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

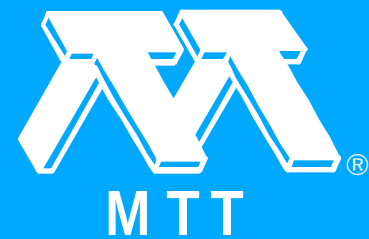
A Calibration Method for a Six-Port Reflectometer Which the Effect of Power Measurement Errors Minimizes

J.A. Dobrowolski, E. Bridges and L. Shafai. "A Calibration Method for a Six-Port Reflectometer Which the Effect of Power Measurement Errors Minimizes." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 572-574.

A calibration method for a six-port reflectometer which minimizes the effect of power measurement errors is presented. It is based on the minimization of an error expressions to obtain estimates of the six-port calibration constants. A load and four offset shorts are used as reflection standards. Computer simulation results are presented to show that the described procedure substantially reduces the overall error in the calibration constants.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Theoretical Comparison of Six-Port Reflectometer Junction Designs

E.J. Griffin and T.E. Hodgetts. "Theoretical Comparison of Six-Port Reflectometer Junction Designs." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 575-577.

This paper derives numerical procedures for comparing different theoretical designs of six-port junctions for measuring the voltage reflection coefficient Γ of passive loads ($|\Gamma| \leq 1$). It shows that the maximum uncertainty of measuring any $|\Gamma| \leq 1$ can be minimised, by a suitable choice of components, for each of three published designs.

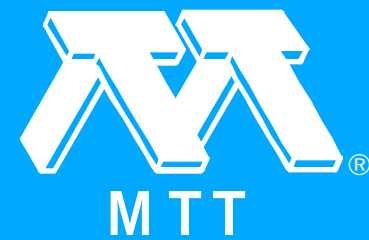
[Click on title for a complete paper.](#)



Abstracts

MTT-S International Symposia Future Locations (1984 [MWSYM])

"MTT-S International Symposia Future Locations (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 578-578.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Symposium Schedule (1984 [MWSYM])

"Symposium Schedule (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 579-579.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

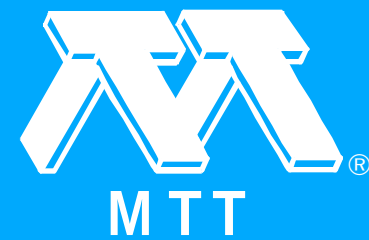
Click on title for a complete paper.



Abstracts

Golden Gate Ballroom - Hyatt Regency (1984 [MWSYM])

"Golden Gate Ballroom - Hyatt Regency (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 580-581.



- Contents
- Publications
- Issues
- Papers
- Authors

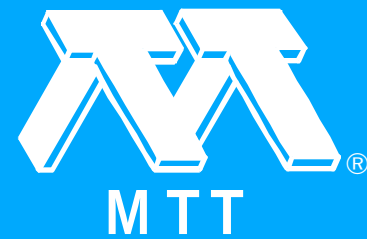
Click on title for a complete paper.



Abstracts

Main Floor, San Francisco Civic Auditorium (1984 [MWSYM])

"Main Floor, San Francisco Civic Auditorium (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 583-589.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

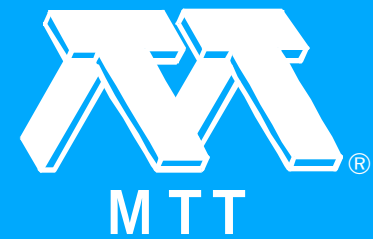
Click on title for a complete paper.



Abstracts

Exhibition List (1984 [MWSYM])

"Exhibition List (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 588-588.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Exhibition Guide (1984 [MWSYM])

"Exhibition Guide (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 589-598.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

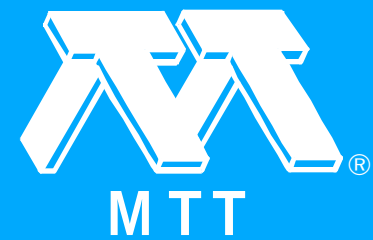
Click on title for a complete paper.



Abstracts

Index of Authors (1984 [MWSYM])

"Index of Authors (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 601-602.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

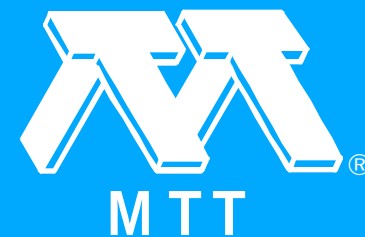
Click on title for a complete paper.



Abstracts

Schedule of Additional Activities and Meetings (1984 [MWSYM])

"Schedule of Additional Activities and Meetings (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): 603-604.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (1984 [MWSYM])

"Back Cover (1984 [MWSYM])." 1984 MTT-S International Microwave Symposium Digest 84.1 (1984 [MWSYM]): b1-b2.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (1985 [MWSYM])

"Front Cover (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): f1-f1.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Copyright (1985 [MWSYM])

"Copyright (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): i-ii.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

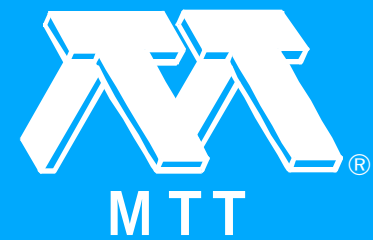
Click on title for a complete paper.



Abstracts

A Welcome from the Chairman (1985 [MWSYM])

"A Welcome from the Chairman (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): iii-iii.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Table of Contents (1985 [MWSYM])

"Table of Contents (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): v-v.



MTT



IEEE

Contents

Publications

Issues

Papers

Authors

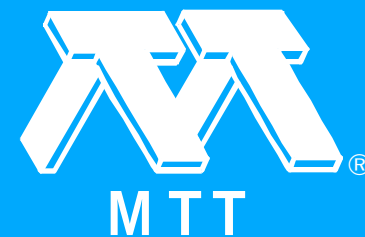
Click on title for a complete paper.



Abstracts

1985 Symposium Committees, Awards, Panel Sessions, and Workshops (1985 [MWSYM])

*"1985 Symposium Committees, Awards, Panel Sessions, and Workshops (1985 [MWSYM])."
1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 1-1.*



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Committees (1985 [MWSYM])

"Committees (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 2-9.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Awards (1985 [MWSYM])

"Awards (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 10-15.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

New Fellows in IEEE/MTT-S (1985 [MWSYM])

"New Fellows in IEEE/MTT-S (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 16-17.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

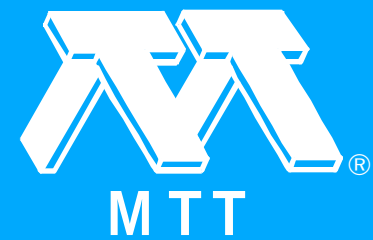
Click on title for a complete paper.



Abstracts

Panel Sessions (1985 [MWSYM])

"Panel Sessions (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 18-18.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Workshops (1985 [MWSYM])

"Workshops (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 20-21.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

1985 IEEE Microwave and Millimeter Wave Monolithic Circuits Symposium (Announcement) (1985 [MWSYM])

"1985 IEEE Microwave and Millimeter Wave Monolithic Circuits Symposium (Announcement) (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 22-22.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Technical Program Contents (1985 [MWSYM])

"Technical Program Contents (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 24-46.



- Contents
- Publications
- Issues
- Papers
- Authors

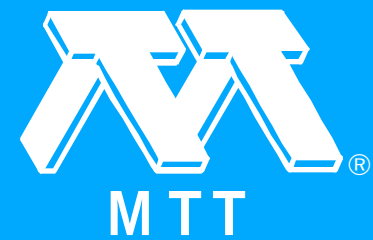
Click on title for a complete paper.



Abstracts

Session A -- Plenary Session

"Session A -- Plenary Session." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 47-47.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Session B -- Monolithic Receiver Circuits

"Session B -- Monolithic Receiver Circuits." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 49-49.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

X-band Monolithic Series Feedback LNA (1985 [MWSYM])

R.E. Lehmann and D.D. Heston. "X-band Monolithic Series Feedback LNA (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 51-54.

An X-band monolithic three-stage low noise amplifier (LNA) employing series feedback has demonstrated 1.8 dB noise figure with 30.0 dB gain and an input VSWR less than 1.2:1 at 10 GHz. The key to this design is using monolithic technology to obtain an exactly repeatable series feedback inductance to achieve a simultaneous noise match and input VSWR match.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

0.5-2.6GHz Si-Monolithic Wideband Amplifier IC (1985 [MWSYM])

T.-a. Nakata, S.-I. Miyazaki and K. Shirotori. "0.5-2.6GHz Si-Monolithic Wideband Amplifier IC (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 55-59.

Using Si, an excellent performances, 0.5-2.6GHz bandwidth and 23dB gain, monolithic wideband amplifier IC has been developed, of which input and output impedances are matched to 50 Omega. The $f_{sub T}/=10\text{GHz}$ DNP-11 manufacturing process with optimization for microwave analog ICs has been developed for this IC. And a single-ended three stages circuit with local feedback adopted for this monolithic amplifier loops is circuit.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications (1985 [MWSYM])

K. Kanazawa, M. Kazumura, S. Nambu, G. Kano and I. Teramoto. "A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 60-62.

A double-balanced dual-gate FET mixer has been developed aiming at the application to a front-end circuit of the UHF receivers. An experimental IC has exhibited a 6 - 8 dB conversion gain without matching over a wide frequency range from 100 MHz to 800 MHz with the well suppressed RF/LO feedthrough by more than 20 dB and third-order intermodulation product of -60 dB.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Air Bridge Gate FET for GaAs Monolithic Circuits (1985 [MWSYM])

E.M. Bastida and G.P. Donzelli. "Air Bridge Gate FET for GaAs Monolithic Circuits (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 63-67.

The paper describes a novel technology for producing micron and submicron gate FET devices, with improved gain and noise performances. The technique is particularly attractive for the production of very low noise devices and is very useful in monolithic circuit fabrication. In the production of high-power devices the technique has the advantage of not requiring complicated interdigitated structures. A noise figure improvement of 0.4 dB at 10 GHz was achieved using this technology. As an example of the developed technique, a two-stage monolithic preamplifier (2.8 dB N.F., 15 dB gain between 11.7 and 12.5 GHz) is described.

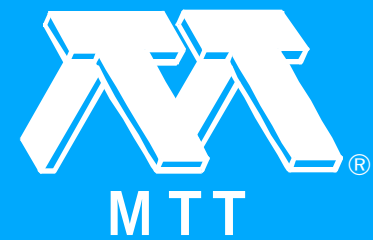
[Click on title for a complete paper.](#)



Abstracts

Session C -- Biomedical Aspects of Microwaves

"Session C -- Biomedical Aspects of Microwaves." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 69-69.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Microwave Radiometric Detection of Thermal Asymmetry of Varicocele

T.P. Felderman, J. Shaeffer, A.M. El-Mahdj, K.L. Carr and J.F. Stecker, Jr.. "Microwave Radiometric Detection of Thermal Asymmetry of Varicocele." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 71-74.

Varicocele, a varicose enlargement of the veins in the spermatic cord, is found in 21-39% of men being evaluated for infertility. Thermometric detection of this condition was attempted by microwave radiometry as well as by contact thermometry using thermistor probes. The inguinal and scrotal regions of 44 male subjects and inguinal regions of 11 female subjects were studied. Substantially different thermal patterns were obtained by thermistors (surface temperature) and microwave radiometry (subsurface temperature). There was a correlation between left scrotal varicocele and a temperature elevation of the left spermatic cord using microwave radiometry. This thermal defect appeared to be corrected following surgery.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Inversion of Microwave Thermographic Data by the Singular Function Method

F. Bardati, M. Mongiardo and D. Solimini. "Inversion of Microwave Thermographic Data by the Singular Function Method." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 75-77.

The potential of the singular function method for retrieving temperature profiles in biological structures from microwave radiometric data is examined. A numerical simulation has been carried out in which the temperature distribution during hyperthermic treatments is reconstructed from radiometric measurements both at six and four frequencies. The results are compared and discussed in view of the practically relevant case of noise-corrupted data.

[Click on title for a complete paper.](#)



Abstracts

Exact Image Theory for Field Calculation in Layered Biological Medium

E. Alanen and I.V. Lindell. "Exact Image Theory for Field Calculation in Layered Biological Medium." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 78-81.

A method based on the exact image theory to calculate the near field distribution of a horn antenna in direct contact with the skin is introduced. Being exact, the method is not restricted by parameter values and can be applied in optimization of horn aperture function to produce focus fields in the human body. The method observes the effect of the skin layer and can be applied for an arbitrary aperture function. The optimization is demonstrated with few examples.



IEEE

Contents

Publications

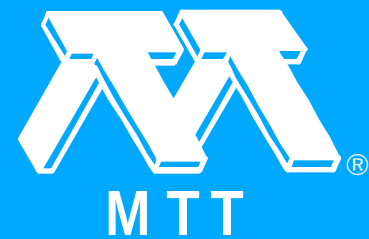
Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Coplanar Waveguide Short Gap Resonator for Medical Applications

Y.X. Wang. "Coplanar Waveguide Short Gap Resonator for Medical Applications." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 82-85.

A coplanar waveguide short gap resonator as an electromagnetic energy coupler for medical applications is described. The principles and design formulas are given and the experimental results are provided. From the data, obtained on a phantom, it can be shown that this coupler can couple the EM energy more efficiently.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Direct Contact Applicator with Convergent Effect of EM Field for Microwave Hyperthermia

Y. Takahashi, Y. Nikawa, T. Katsumata, S. Mori, M. Nakagawa and M. Kikuchi. "Direct Contact Applicator with Convergent Effect of EM Field for Microwave Hyperthermia." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 86-89.

A new type applicator for microwave hyperthermia operated at 433 MHz is proposed. This applicator, which is a waveguide array type, has a convergent effect of the electromagnetic field radiated from the applicator, and focal length of can be changeable. The electric field distributions in the model of human tissues from the aperture of the applicator were measured, and the simulation of temperature distributions was performed in the model heated with the applicator.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Microwave Apparatus for Producing Uniform Hyperthermic Temperatures Over Large Surfaces

F. Sterzer, R.W. Paglione, E. Friedenthal and J. Mendecki. "A Microwave Apparatus for Producing Uniform Hyperthermic Temperatures Over Large Surfaces." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 90-92.

A microwave apparatus that can produce uniform hyperthermic temperatures over large surface fields is described. The apparatus consists of a 2450 MHz power generator, a PIN diode power controller, a low-leakage non-contacting microwave applicator with an integral non-contacting infrared thermometer, a thermostat that provides feedback control and can be set to the desired tissue temperature, and a computer controlled mechanical arm that scans the applicator and the infrared thermometer over the treatment field.

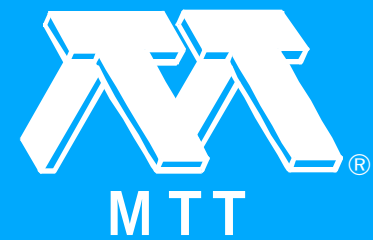
[Click on title for a complete paper.](#)



Abstracts

Session D -- Communication Systems

"Session D -- Communication Systems." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 93-93.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

A Novel Technique to Realize SMSK Conversion and Matched Filters at Microwave Frequencies

F. Ananasso. "A Novel Technique to Realize SMSK Conversion and Matched Filters at Microwave Frequencies." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 95-98.

In modern, high-capacity satellite systems Serial Minimum-Shift Keying (SMSK) has been recently proposed as a valid alternative to PSK digital systems. The well known low-sidelobe, constant-envelope properties of MSK, very attractive in Time Division Multiple Access (TDMA) environment (as they limit the Adjacent Channel Interference (ACI) and phase distortion) do in fact join with quite simple on-board hardware if Serial Demodulation is foreseen on-board the satellite. SMSK modems are essentially constituted by Binary PSK (BPSK) modems and particular transmitting (Conversion) and receiving (Matched) Filters. These filters represent a crucial point in the design, as they perform the proper spectrum shaping which allows exploiting the MSK capabilities. The paper presents a novel, easy technique to realise Conversion and Matched filters directly at microwave frequencies. This technique is satisfactorily applicable to medium/high bit rate SMSK systems.

Click on title for a complete paper.



Temperature Controlled Predistortion Circuits for 64 QAM Microwave Power Amplifiers

M. Nannicini, P. Magni and F. Oggioni. "Temperature Controlled Predistortion Circuits for 64 QAM Microwave Power Amplifiers." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 99-102.

This report deals with the problem of nonlinearity characteristics in microwave power amplifiers for digital radio link systems with multi-level modulation (ex. 64 QAM); and in particular With reference to their degradations vs temperature variations. Moreover various possible methods of compensation are taken into account. After a brief examination of the not temperature controlled predistortion method operating at intermediate frequency, solutions are suggested to keep the non-linearity characteristics independent from thermal conditions. By presenting the experimental results and the comparative considerations, the use of the "feed-back controlled predistorter" and the "predictive method" is analysed.



Abstracts

Up/Down Converter for SCPC Applications

A.K. Ghose, M.S. Ravichandran, A. Chattopadhyay and N.M. Ahmad. "Up/Down Converter for SCPC Applications." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 103-106.

A compact 6/4 GHz Up/Down converter has been developed specifically for single channel per carrier (SCPC) satellite communications . For operation at remote locations where elaborate instrumentation and skilled personnel are generally not available high reliability and low down time are the prime objectives. These are achieved through extensive use of modular construction and built-in diagnostics employing proven technology.



MTT



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



MIC Assembly for 12-GHz Direct Broadcast Satellite Receiver

G. Molin, H. Chuandong, Z. Shaoshi, G. Zhongru and X. Qiang. "MIC Assembly for 12-GHz Direct Broadcast Satellite Receiver." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 107-110.

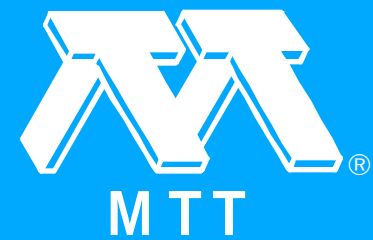
This paper describes the MIC assembly for 12-GHz direct broadcast satellite (DBS) earth-station receivers. It is a compact assembly consisting of a GaAsFET amplifier, an image rejection filter, a diode mixer, a dielectric resonator oscillator and an IF amplifier. A DBS receiver incorporating this unit achieves an overall noise figure <3.0dB for frequencies from 11.7 to 12.2GHz.



Abstracts

Session E -- Monolithic Millimeter-Wave Circuits

"Session E -- Monolithic Millimeter-Wave Circuits." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 111-111.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



A W-Band Monolithic Balanced Mixer (1985 [MWSYM])

L.T. Yuan and P.G. Asher. "A W-Band Monolithic Balanced Mixer (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 113-115.

A fully monolithic balanced mixer fabricated on a GaAs substrate for operation at W-Band (75 to 110 GHz) is described. The overall size of the mixer chip is 0.075"x 0.075"x0.004". A minimum conversion loss of 4.6 dB has been measured at 91.1 GHz for narrow band operation. For broadband operation, a conversion loss of less than 8 dB has been achieved over an RF range of 73.6 to 83.6 GHz with a corresponding IF range of 8 to 18 GHz.





IEEE

Contents

Publications

Issues

Papers

Authors

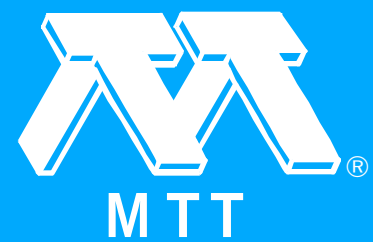
A 30 GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element (1985 [MWSYM])

S.J. Nightingale, M.A.G. Upton, U.K. Mishra, S.C. Palmateer and P.M. Smith. "A 30 GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 116-117.

A 30 GHz monolithic low noise balanced mixer has been developed using an integrated 'bow tie' antenna/WG transition and low parasitic Mott diodes. The diodes and mixer circuit were developed on General Electric grown MBE material and were fabricated using a plated air bridge technology. Measurements on the diode at DC and RF showed that the zero bias junction capacitance was 0.025 pF and the series resistance was 10 ohms. A conversion loss of 6 dB was measured at 30 GHz with a 1 GHz IF.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Dual Function Mixer Circuit for Millimeter Wave Transceiver Applications (1985 [MWSYM])

A. Chu, W.E. Courtney, L.J. Mahoney, M.J. Manfra and A.R. Calawa. "Dual Function Mixer Circuit for Millimeter Wave Transceiver Applications (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 120-123.

A monolithic performing either function has been mixer circuit capable of a receiver or transmitter fabricated. The mode of operation is determined by applying either forward bias or reverse bias to a pair of mixer diodes. The circuit integrates Schottky-barrier diodes, bias lines, $Ta_{sub} 2/0/sub 5/$ blocking and by-pass capacitors, a radial line stub filter and a microstrip branch-line coupler. For the receiver function the unit exhibits a conversion loss of 6.5 ± 0.5 dB from 34 to 36 GHz. For the transmitter function the circuit directs the signal from the local oscillator port to the antenna port with an insertion loss of approximately 2 dB at 33.5 GHz over a bandwidth of 1 GHz.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

High Efficiency Millimeter Wave Monolithic IMPATT Oscillators (1985 [MWSYM])

B. Bayraktaroglu and H.D. Shih. "High Efficiency Millimeter Wave Monolithic IMPATT Oscillators (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 124-127.

This paper describes methods of integrating GaAs IMPATT diodes and impedance matching circuits on the same chip. Lumped element as well as distributed element matching circuits were used in two separate approaches. The common technology to both approaches is the use of thick layers of polyimide that form the dielectric medium for passive circuit elements. MBE grown double-drift GaAs IMPATT structures with AlGaAs etch stop layers were used to fabricate monolithic oscillators for the 30-90 GHz applications. The best overall performance was achieved at 32.5 GHz with 1.25 W cw output power and 27% efficiency.

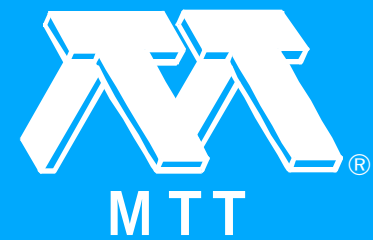
[Click on title for a complete paper.](#)



Abstracts

Session F -- Guided Waves

"Session F -- Guided Waves." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 129-129.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Wave Interaction in Doubly Periodic Structures

S.T. Peng, J.M. Dong and L.M. Wang. "Wave Interaction in Doubly Periodic Structures." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 131-134.

A rigorous analysis is presented for the propagation in a doubly periodic structure. General wave characteristics are established and various types of wave interaction are identified. Numerical examples are shown to illustrate new interesting physical phenomena.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

Formulation of the Singular Integral Equation Technique for General Planar Transmission Lines

A.S. Omar and K. Schunemann. "Formulation of the Singular Integral Equation Technique for General Planar Transmission Lines." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 135-138.

The singular integral equation technique is used to determine the normal modes of propagation in general planar transmission lines. Taking fin-lines as example it is demonstrated, how high-order modes can effectively and accurately be calculated. Some of these modes show an unusual evanescent nature for certain combinations of parameters. The modes of this type exist always in pairs with their squared propagation constants being complex conjugate.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Development of a Coupler in Finline Technique

A. Beyer, D. Kother and I. Wolff. "Development of a Coupler in Finline Technique." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 139-142.

Among other components directional couplers are employed in millimeterwave finline circuits. The method presented here allows a simple calculation of all modes which can exist on such couplers under consideration of the thickness of the metallization. In this way a 3-dB coupler has been developed for the Ka-band. Numerical and experimental results illustrate the applicability of this method.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

The Influence of Metallization Thickness and Mounting Grooves on the Characteristics of Finlines

R. Vahldieck and W.J.R. Hoefer. "The Influence of Metallization Thickness and Mounting Grooves on the Characteristics of Finlines." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 143-144.

The influence of metallization thickness and mounting grooves in unilateral and bilateral finlines is investigated with a fully hybrid mode analysis. The effect of these parameters on both the dominant mode propagation and the operating bandwidth can be significant and must be considered for accurate design.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Effects of Side-Wall Grooves on Transmission Characteristics of Suspended Strip Lines (1985 [MWSYM])

E. Yamashita, B.Y. Wang and K. Atsuki. "Effects of Side-Wall Grooves on Transmission Characteristics of Suspended Strip Lines (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 145-148.

The use of suspended strip lines is becoming a powerful transmission technique at millimeter wavelengths because of low attenuation, weak dispersion, and various merits in manufacturing processes. This paper estimates effects of side-wall grooves of these lines on transmission characteristics within the TEM wave approximation.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

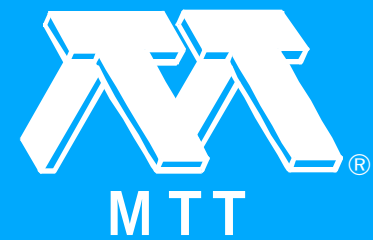
Click on title for a complete paper.



Abstracts

Session G -- Integrated Microwave Systems

"Session G -- Integrated Microwave Systems." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 149-149.



IEEE

[Contents](#)

[Publications](#)

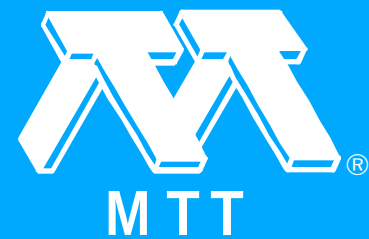
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Integrated Ka-Band Front End with Monolithic Mixer

P.J. Meier, J.A. Calviello, A.J. Cappello, L.D. Cohen, R.J. Pomian and P.R. Bie. "Integrated Ka-Band Front End with Monolithic Mixer." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 151-154.

A Ka-band front end has been developed that integrates a low-loss wide-band monolithic mixer, a two-stage IF amplifier on semi-insulating GaAs, and a lumped-element Gunn LO. Small size (0.5 in³) and good performance (11-dB gain with a DSB noise figure of 7 dB) have been obtained by applying synergistic IC construction techniques.

Click on title for a complete paper.

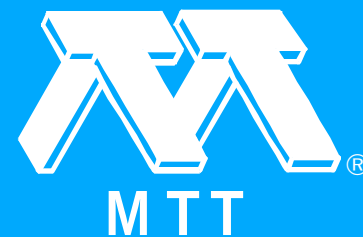


Abstracts

A Low Cost, Accurate, Target Detecting Device for Altimetry and Fuzing

T.O. Perkins, III, J.A. Teunas, A.J. Cann, M.R. Richmond and W.J. Bradley. "A Low Cost, Accurate, Target Detecting Device for Altimetry and Fuzing." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 155-158.

An accurate, simple, reliable, low-cost target detecting device for radar altimetry and fuzing applications is reported. The system employs a single active microwave solid state device for both transmit and receive while requiring only one antenna.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Miniature Millimeter-Wave Integrated Circuit Wideband Downconverters

A. Grote, R.S. Tahim and K. Chang. "Miniature Millimeter-Wave Integrated Circuit Wideband Downconverters." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 159-162.

The miniature millimeter-wave integrated circuit LO/mixer assembly was developed with over the full waveguide band coverage and good temperature stability. A conversion loss of less than 7 dB was achieved over 16 GHz instantaneous IF frequency with the RF swept from 30 to 46 GHz and the LO at 48 GHz. With another mixer, when the RF was swept from 18 to 30 GHz and the LO was at 32 GHz, similar results were achieved. Using resonant stub and dielectric temperature compensation produced good temperature stability.

[Click on title for a complete paper.](#)



Abstracts

Session H -- Open Forum I

"Session H -- Open Forum I." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 163-163.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Characterisation of Large-Signal Bipolar Transistors in L-Band

J.L. Hutchings. "Characterisation of Large-Signal Bipolar Transistors in L-Band." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 165-167.

Practical problems encountered in the characterisation of an L-band common base bipolar power transistor using three different characterisation techniques are discussed. One of the techniques, an improved "load-pull" measurement technique, is shown to be a superior characterisation method. Results obtained from this method can be used to design a collector matching network.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A New Approach for the Design of Microwave and Filters Using Dielectric Oscillators Resonators

A. Podcameni and L.F.M. Conrado. "A New Approach for the Design of Microwave and Filters Using Dielectric Oscillators Resonators." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 169-172.

A comprehensive model for the transmission-mode dielectric resonator coupled to microstrip line is given. New approach design for parallel feedback oscillators and bandpass filters are discussed. A low-noise oscillator and two different filters, using both the same hardware, are presented.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Gaussian Beam Imaging with Cylindrical Optics

P.F. Goldsmith. "Gaussian Beam Imaging with Cylindrical Optics." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 173-174.

We review the propagation of Gaussian beams of radiation through asymmetric elements which focus in only one direction perpendicular to the axis of propagation: these are most commonly cylindrical lenses or mirrors. We develop formulas for Gaussian beam imaging with fixed total distance between input and output waists, and use them to derive simple expressions for the case where the input and output waists are located in the same plane. This situation is required for correcting the beam patterns of certain types of feedhorns to improve the symmetry of their radiation patterns, as well as for the illumination of asymmetric antennas. A cylindrical lens has been used to transform the symmetric beam of a 100 GHz scalar feedhorn into an elliptical pattern; the results are in good agreement with the imaging formulas and demonstrate the utility of this technique.

[Click on title for a complete paper.](#)

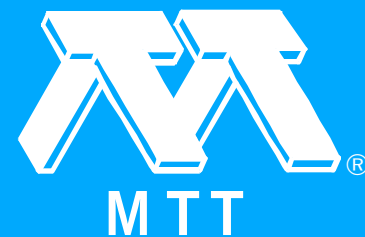


Abstracts

Planar Integrated Microwave Components for Terrestrial and Satellite Application

A.M.K. Saad. "Planar Integrated Microwave Components for Terrestrial and Satellite Application." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 175-177.

A new class of planar integrated microwave components is developed for terrestrial and space application. Triple planar integrated band pass harmonic filters and E-plane single and triple planar antenna diplexers are presented. Design approach, theoretical analysis and results achieved are also included.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Optoelectronic Techniques for Microwave and Millimeter-Wave Applications

C.H. Lee, M.G. Li, C.S. Chang, A.M. Yurek, M.J. Rhee, E. Chauchard, R.P. Fischer, A. Rosen and H. Davis. "Optoelectronic Techniques for Microwave and Millimeter-Wave Applications." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 178-181.

Three different experiments using optoelectronic techniques are reported. They are: (1) kilovolt sequential waveform generation by picosecond optoelectronic switching, (2) Direct DC to RF conversion by impulse excitations of a resonant cavity, and (3) high speed optoelectronic modulation of millimeter-waves in a silicon-on-sapphire waveguide.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A New Class of Optimized Finline and E-Plane Metal Insert Filters with Improved Characteristics

R. Vahldieck and W.J.R. Hoefer. "A New Class of Optimized Finline and E-Plane Metal Insert Filters with Improved Characteristics." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 182-184.

A new class of optimized finline and metal insert filters is introduced. In these filters, the ladder-type insert is located in a waveguide section which is either wider or narrower than the embedding standard waveguide. An abrupt step junction at each end forms the transition to the standard waveguide and is included in the analysis. Both filter types provide a better suppression of spurious passbands and have significantly improved stopband attenuation. Filters with enlarged section are useful for design at the lower end of the waveguide band, whereas the narrower version is appropriate for bandend design.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

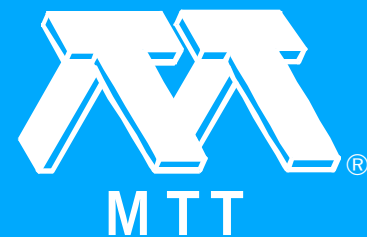


Abstracts

Microwave Characterization of Liquid Films

R.P. Roy, J. Ku, I. Kaufman and S.P. Kalra. "Microwave Characterization of Liquid Films." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 185-187.

A simple microwave technique is described that measures the instantaneous local thickness of a film of liquid flowing down the inner wall of a tube while at the same time a current of gas flows in the opposite direction. Such a measurement technique is significant because of the extensive occurrence of such liquid/gas flows in chemical process and energy industries.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Investigation and Evaluation of Low Loss Interconnects on Soft Substrates Clad to Aluminum

T.M. Nelson and M.D. Kline. "Investigation and Evaluation of Low Loss Interconnects on Soft Substrates Clad to Aluminum." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 188-191.

The purpose of this study is to provide a comparative evaluation of the quality of RF grounds used with microstrip circuitry on aluminum clad soft substrates. The data obtained by the study is documented and analyzed in the report with appropriate conclusions and recommendations provided.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

GaAs MESFET Optimization and New Device Applications Based on Wave Property Studies

K. Fricke and H.L. Hartnagel. "GaAs MESFET Optimization and New Device Applications Based on Wave Property Studies." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 192-195.

The results to be presented are obtained by an experimental investigation of the wave properties on FET structures using especially fabricated MESFETs. The use of this information for an optimization of MESFET structures and for a development of new devices is discussed. It will be demonstrated that a significant improvement of the FET gain is obtainable.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Microwave Heating System Using Lens Applicator for Localized Hyperthermia

Y. Nikawa, Y. Takahashi, H. Watanabe, M. Kikuchi and S. Mori. "Microwave Heating System Using Lens Applicator for Localized Hyperthermia." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 196-199.

A computer controlled microwave heating system for hyperthermia was developed with direct contact lens applicator to deposit the energy of electromagnetic field deep in human tissues. The results show that with the applicator operate at 2450 MHz, over double of heating depth was realized compared with simple waveguide applicators. And the heating result using the developed system show that the fluctuations of temperature at the heating location in the model of human tissues were maintained within ± 0.3 °C of the set temperature. These results are available for the clinical hyperthermia treatment of cancer.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Sensitivity Analysis of a 15.0 GHz Monopulse Radar Receiver Using a Logarithmic Amplifier Detector Scheme

G.W. Stilwell, A.M. Madni and L.A. Wan. "Sensitivity Analysis of a 15.0 GHz Monopulse Radar Receiver Using a Logarithmic Amplifier Detector Scheme." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 200-203.

Sensitivity analysis of a 15.0 GHz monopulse radar receiver using logarithmic amplifiers as the detection scheme is presented. The effects of receiver gain, noise figure, bandwidth, and phase and amplitude balance on system tracking performance are discussed. Special emphasis is given to the influence of noise on tracking sensitivity. A brief overview of the system as well as actual test results are included.

[Click on title for a complete paper.](#)



Abstracts

The Relationship of Magnetotransconductance Mobility Profiles and RF Performance of GaAs FETs

S.K. Chan, K.M. Lau and P.M. White. "The Relationship of Magnetotransconductance Mobility Profiles and RF Performance of GaAs FETs." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 204-206.

The mobility profiles of FET channels were measured on fabricated low noise and power GaAs MESFETs, using the recently developed magnetotransconductance technique. The results are used to study the correlation between the RF performance and the material parameter.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Performance of Microwave FM Signal Frequency Division Circuits

A. Jacob and M. Jenett. "Performance of Microwave FM Signal Frequency Division Circuits." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 207-210.

A comparison between different frequency divider circuits is presented. Both the large-signal behaviour and the transfer properties have been investigated in detail. The results of the computer simulations are supported by experiments.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Optically Controlled Microwave Devices and Circuits

P.R. Herczfield, A.S. Daryoush, V.M. Contarino, A. Rosen, Z. Turski and A.P.S. Khana.
"Optically Controlled Microwave Devices and Circuits." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 211-214.

There is a growing interest in optically controlled microwave devices and systems. This paper is concerned with two experiments in this emerging area. The first describes the design, fabrication and application of optically controlled microwave PIN diodes. The utilization of these devices for phase-shifting and switching at X-band was demonstrated. The second experiment involved the optical tuning and indirect optical injection locking of a X-band dielectric resonator oscillator. A locking range of 400 KHz was achieved utilizing a third harmonic.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Multiconductor Planar Transmission-Line Structures for High-Directivity Coupler Applications

B.J. Janiczak. "Multiconductor Planar Transmission-Line Structures for High-Directivity Coupler Applications." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 215-218.

The spectral domain technique is used to analyze multiconductor printed transmission-line structures containing layered dielectric substrate. Starting from general analytical formulation a useful modification of the procedure is suggested for accurate description of multiconductor interdigitated microstrip circuit with equally dimensioned conductors. Frequency dependent numerical results for some new microstrip and coplanar structures with more than two coupled lines are shown, discussed with respect to high-directivity multiconductor coupler applications.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

A Dual-Gate FET Constant Phase Variable Power Amplifier

D.M. Drury, D.C. Zimmerman and D.E. Zimmerman. "A Dual-Gate FET Constant Phase Variable Power Amplifier." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 219-222.

A 1-Watt X-band variable power amplifier is described which employs an 1800 μm GaAs dual-gate FET. Small-signal models of the device are presented and used to design for minimum insertion phase change over the gain control range. The amplifier has a power-added efficiency of 25 percent and its insertion phase varies less than 15 degrees over a 15 dB gain control range.

Click on title for a complete paper.



Abstracts

A Study of W Band Subharmonically Pump Mixer

W. Yun-yi and S. Yon-hui. "A Study of W Band Subharmonically Pump Mixer." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 223-226.

A W band subharmonically pumped mixer with packaged Schottky diodes has been developed. The double sideband conversion loss of the mixer at $2f_{\text{sub lo}} = 94\text{GHz}$ is 6.35dB. A new method for measuring the embedding network parameters of subharmonically pumped mixer was developed and the measurement has been carried out directly at $2f_{\text{sub lo}}$ and $2f_{\text{sub lo}} \pm f_{\text{sub if}}$. A special program for analysis of subharmonically pumped mixer has been developed and computed results are given in are given in comparison with measured results.



MTT



IEEE

Contents

Publications

Issues

Papers

Authors

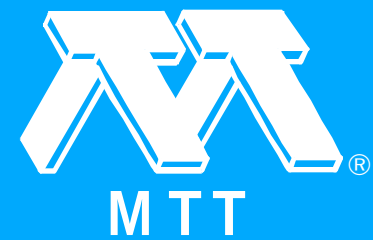
Click on title for a complete paper.



Abstracts

Session I -- Acoustics and Ferrites

"Session I -- Acoustics and Ferrites." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 227-227.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A High Performance Hexagonal Ferrite Tunable Bandpass Filter for the 40-60 GHz Region

D. Nicholson. "A High Performance Hexagonal Ferrite Tunable Bandpass Filter for the 40-60 GHz Region." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 229-232.

The first ferrite tuned bandpass filter, tunable with hexagonal ferrite spheres over the whole of U band (40-60 GHz) is described. This filter has an insertion loss of $4.5 \pm .5$ dB, typical bandwidth of 325 MHz, and a maximum tuning current of 350 mA (at 24 volts) at 60 GHz, giving it better performance than any previously reported hexagonal ferrite bandpass filter.

[Click on title for a complete paper.](#)



Abstracts

140 and 220 GHz Ferrite Components

J.A. Rabel, S.W. Schell and D. Davidson. "140 and 220 GHz Ferrite Components." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 233-236.

Presented is the design development of waveguide junction circulators in the 140 and 220 GHz spectrum. The development emphasizes wideband performance and design simplicity. A cylindrical junction design obtained 8 GHz of bandwidth at 140 GHz with 1.5 dB loss. Spherical junction results are reported at both 140 and 220 GHz.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Millimetric Non-Reciprocal Coupled-Slot Fin-Line Components

L.E. Davis and D.B. Sillars. "Millimetric Non-Reciprocal Coupled-Slot Fin-Line Components." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 237-239.

Promising preliminary results are presented for an isolator and a 4-port circulator in novel fin-line structures in the frequency range 26.5 - 40.0 GHz. The basic configuration is a ferrite-loaded coupled-slot fin-line with the ferrite magnetised parallel with the direction of propagation. It is suggested that such structures would also be suitable for higher frequencies.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

UHF Film Resonator Evaluation and Resonator-Controlled Oscillator and Filter Design Using Computer-Aided Design Techniques

M.M. Driscoll, S.V. Krishnaswamy, R.A. Moore and J.R. Szedon. "UHF Film Resonator Evaluation and Resonator-Controlled Oscillator and Filter Design Using Computer-Aided Design Techniques." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 239-242.

RF magnetron-sputtered piezoelectric films on silicon semiconductor substrates provide the basis for high Q, temperature-stable, bulk acoustic resonators in monolithic, UHF signal processing circuits. This paper describes the design of UHF oscillators using such resonators as the frequency-controlling elements. RF circuit analysis/optimization software has been used for determining resonator equivalent electrical circuit parameters and oscillator sustaining-stage optimum small-signal impedance characteristics, based on automated measurement of resonator and transistor S-parameters. Oscillator circuits have been designed for potential implementation using silicon and GaAs technology. A prototype oscillator has been fabricated that is realizable in monolithic form and allows resonator utilization as a one port.

Measurement of oscillator output-signal phase-noise sideband spectra indicates achievement of $L(f) = -110$ dB/Hz at 1 kHz carrier offset frequency.

Click on title for a complete paper.



Abstracts

Stable Microwave Source Using High Overtone Bulk Resonators

*J.T. Haynes, M.S. Buchalter, R.A. Moore, H.L. Salvo, S.G. Shepherd and B.R. McAvoy.
"Stable Microwave Source Using High Overtone Bulk Resonators." 1985 MTT-S International
Microwave Symposium Digest 85.1 (1985 [MWSYM]): 243-246.*

The high overtone bulk acoustic resonator (HBAR) provides the basis for stable microwave sources. The HBAR's high Q, closely spaced, periodic resonances provide stabilization for multiple frequency microwave sources. Recently an L-band source with 5 MHz channels has been developed. This HBAR source has phase noise performance equivalent to that of sources based on low frequency quartz crystal stabilization and multiplication, but it requires only a fraction of the hardware.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

SAW Resonator Filters: Applications and Capabilities

B.H. Horine. "SAW Resonator Filters: Applications and Capabilities." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 247-250.

The current state-of-the-art in multipole SAW Resonator Filters is presented. Applications are discussed including preselector, I.F., and L.O. clean up filters. A brief review of their operation is presented along with a detailed explanation of their capabilities. Various tradeoffs are discussed for filters from 50 MHz to 1 GHz and from 0.02% to 0.2% fractional 3 dB bandwidths. The Intermodulation suppression of SAW Resonator Filters is presented in a later section.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A 16 Tap Hybrid Programmable Transversal Filter Using Monolithic GaAs Dual-Gate FET Array

D.E. Zimmerman and C.M. Panasik. "A 16 Tap Hybrid Programmable Transversal Filter Using Monolithic GaAs Dual-Gate FET Array." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 251-254.

A hybrid programmable transversal filter (HPTF) is described that employs a LiNbO₃/sub 3/ SAW delay line and two monolithic dual-gate GaAs FET arrays to control magnitude and sign of the 16 tap weights. The HPTF is completely programmable and is constrained only by the bandwidth (100 MHz centered at 250 MHz) and the number of taps. Theoretical calculations of tap weight control range and dynamic range are presented, compared with experiment and used to justify the hybrid LiNbO₃/sub 3/ SAW - GaAs FET combination. A dynamic range of 85 dB and a continuously variable tap weight control range of 70 dB are demonstrated.

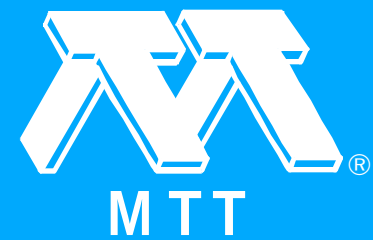
[Click on title for a complete paper.](#)



Abstracts

Session J -- FET Oscillators

"Session J -- FET Oscillators." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 255-255.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Novel GaAs FET Oscillator with Low Phase Noise

A.N. Riddle and R.J. Trew. "A Novel GaAs FET Oscillator with Low Phase Noise." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 257-260.

A novel GaAs FET oscillator circuit is presented. This circuit is capable of reducing phase noise up to 20 db. A source-coupled pair of GaAs FETs has a balanced characteristic which can eliminate both the reactive and resistive modulation mechanisms which upconvert 1/f noise. This circuit is inherently broadband and ideal for monolithic implementations.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

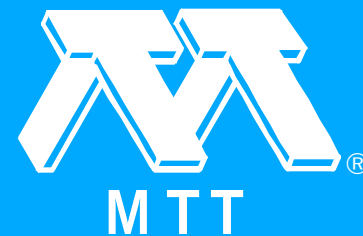


Abstracts

An Approach to Realizing Multi-Octave Performance in GaAs-FET YIG-Tuned Oscillators

C.F. Schiebold. "An Approach to Realizing Multi-Octave Performance in GaAs-FET YIG-Tuned Oscillators." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 261-263.

An approach to developing multi-octave GaAs-FET YIG-tuned oscillators is described. A short discussion of the theory is given, followed by a presentation of experimental results for a 3.5 to 19.5 GHz YIG-tuned oscillator.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Miniature FET Oscillator Stabilized by a Dual Mode Dielectric Resonator Loaded Cavity

S.J. Fiedziuszko. "Miniature FET Oscillator Stabilized by a Dual Mode Dielectric Resonator Loaded Cavity." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 264-265.

A novel configuration of a stabilized FET oscillator is based on a dual mode dielectric resonator loaded cavity. Two orthogonal modes in such a cavity are utilized in a feedback loop as well as for additional output filtering. The principle of operation and experimental results are presented.

[Click on title for a complete paper.](#)



Abstracts

Push-Push Dielectric Resonator Oscillator

A.M. Pavio and M.A. Smith. "Push-Push Dielectric Resonator Oscillator." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 266-269.

A novel coupling method is employed in the design of a push-push broadband dielectric resonator oscillator for K- and Ka-band operation. The oscillators realized with this technique exhibit excellent spectral purity, power output, and suppression of spurious outputs.



IEEE

Contents

Publications

Issues

Papers

Authors

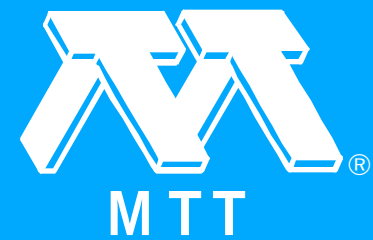
Click on title for a complete paper.



Abstracts

Session K -- Microwave Filter Networks

"Session K -- Microwave Filter Networks." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 271-271.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

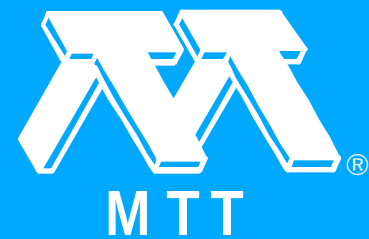
Distributed Microwave Active Filters with GaAs FETs

C. Rauscher. "Distributed Microwave Active Filters with GaAs FETs." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 273-276.

The study focuses on the application of transversal and recursive principles to the design of broadband active filters for microwave frequencies, employing microwave transistors as active elements. Physical implementation of these concepts is illustrated with a transversal-type and a recursive-type experimental filter. To offer a convenient basis for comparison, both examples are chosen to provide 9-to-15-GHz bandpass responses.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Dielectric Waveguide Band-Pass Filters with Broad Stop Bands

P.K. Ikalainen, G.L. Matthaei, D.C. Park and M.S. Wei. "Dielectric Waveguide Band-Pass Filters with Broad Stop Bands." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 277-280.

Techniques for the design of band-pass filters using dielectric waveguide gratings are discussed. Direct-coupled-resonator filter theory is applied to synthesize a prescribed pass band having a Chebyshev or maximally flat characteristic, and at the same time a broad, absorptive stop band is provided through the use of parallel-coupled gratings. Experimental results are also presented which show good agreement between theoretical and measured results.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Influence of Conductor Shields on the Q-Factors of a Te/sub 0/ Dielectric Resonator

Y. Kobayashi, T. Aoki and Y. Kabe. "Influence of Conductor Shields on the Q-Factors of a Te/sub 0/ Dielectric Resonator." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 281-284.

Based on the mode-matching method useful for computing the accurate resonant frequencies, two approaches due to the complex frequency and to the perturbation theory are described to accurately compute Q-factors of TE/sub 0/ dielectric rod resonators placed between two parallel conductor plates and in a conductor cavity. Influence of the conductor shields on the Q-factors is discussed from the computed results.

[Click on title for a complete paper.](#)



Abstracts

A Bandpass Filter Using YIG Film Grown by LPE

Y. Murakami and S. Itoh. "A Bandpass Filter Using YIG Film Grown by LPE." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 285-288.

A 1.575 GHz bandpass filter using YIG film grown by liquid phase epitaxy (LPE) has been developed. Low insertion loss, high spurious suppression and small temperature drift have been achieved, and the performance of this filter satisfies the requirements for use in a microwave receiver.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

800 MHz Band Dielectric Channel Dropping Filter Using TM/sub 110/ Triple Mode Resonance

T. Nishikawa, K. Wakino, H. Wada and Y. Ishikawa. "800 MHz Band Dielectric Channel Dropping Filter Using TM/sub 110/ Triple Mode Resonance." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 289-292.

High power and temperature stable "Channel Dropping Filters" for Transmission Multiplexer of base stations have been miniaturized to almost 1/3 the size of the dielectric TM/sub 010/ resonator filter by using triple mode resonance, and we reported on this at the last symposium. The triple mode resonator works as resonators of three independent one-section filters. The isolation level between each two filter was about 40dB.

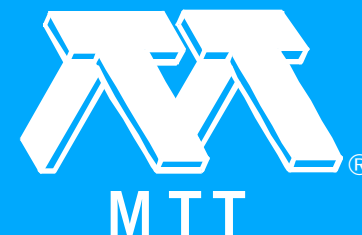
Click on title for a complete paper.



Abstracts

Session L -- Optical and Submillimeter Wavelength Technology

"Session L -- Optical and Submillimeter Wavelength Technology." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 293-293.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Optics for Microwave Applications

P.K. Wahi. "Optics for Microwave Applications." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 295-298.

Advances in Laser technology, high speed modulation of light and optical interaction with solid state microwave devices have demonstrated the potential of optics for microwave applications such as RF spectrum analysis, fiber optic RF links and delay lines, phased array steering, microwave power control devices etc. This paper brings into focus current developments in the general area of optoelectromagnetics.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Acoustooptic Interaction of Acoustic Surface Waves with Guided Optical Waves in Planar Tantalum-Pentoxide Waveguides

S. Patela, J. Radojewski and J. Kadziela. "Acoustooptic Interaction of Acoustic Surface Waves with Guided Optical Waves in Planar Tantalum-Pentoxide Waveguides." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 299-302.

We have investigated acoustooptic properties of acoustic and planar thin-film Ta/sub 2/O/sub 5/ waveguides with ZnO surface acoustic wave (SAW) transducer. We have measured velocity and attenuation of SAW and acoustooptic interaction efficiency as a function of Ta/sub 2/O/sub 5/ waveguide thickness. Measured SAW velocity in Ta/sub 2/O/sub 5/ has equaled 2250 m/s. Maximum diffraction efficiency per unit acoustic power and unit transducer aperture has equaled 0.61 %/mW·mm.

[Click on title for a complete paper.](#)



Analog Signals Transmission Over Optical Fiber Systems

M. Ramadan. "Analog Signals Transmission Over Optical Fiber Systems." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 303-306.

A theoretical and experimental investigation is made to determine the feasibility of transmitting analog video signal over fiber at $1.3 \mu\text{m}$. Effects of LED current and optical modulation index on various parameters such as second and third order intermodulation, and differential gain (DG) and differential phase (DP) were evaluated. Preemphasis effects on signal-to-noise ratio (S/N) and DG and DP were also presented. Experimental results were in close agreement with theory.



Abstracts

A New Approach to Dispersion Analysis of Graded Index Optical Fibers

H.J. Carlin and H. Zmuda. "A New Approach to Dispersion Analysis of Graded Index Optical Fibers." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 307-310.

The dispersion characteristics of graded index optical fiber are studied using a transverse transmission line circuit representation. For round fibers new approximations have been developed which significantly simplifies the analysis. An interesting perspective as to the physical mechanisms underlying the dispersion characteristics of such fibers result from circuit theoretic considerations.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Very Low-Noise, Fixed-Tuned Mixer for 240-270 GHz

M.T. Faber, J.W. Archer and R.J. Mattauch. "A Very Low-Noise, Fixed-Tuned Mixer for 240-270 GHz." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 311-314.

A cryogenic, single-ended, fundamental frequency mixer is reported. The use of a small-area Schottky barrier diode ($C_{\text{sub}} = 4 \text{ fF}$) having low series resistance, together with a careful design and optimization, have yielded a very low-noise, broadband mixer which, when fixed-tuned and cooled to 20K, has a single-sideband noise temperature less than 400K for a local oscillator frequency between 242 and 272 GHz. At 266 GHz the mixer has only 6.4 dB of conversion loss and its SSB noise temperature is only 275K. This is the lowest noise temperature ever reported for a Schottky diode mixer in this frequency range.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Theoretical Efficiency for Triplers Using Real Varister Diodes at Submillimeter Wavelengths

K. Benson and M.A. Frerking. "Theoretical Efficiency for Triplers Using Real Varister Diodes at Submillimeter Wavelengths." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 315-318.

The theoretical efficiency for frequency triplers from 300 to 900 GHz has been calculated for real GaAs Schottky diodes operating in the varister mode. The maximum efficiency is determined to be about 7%, only slightly smaller than that for ideal varisters. Guidelines for optimum bias conditions and embedding network impedances have been determined using the large signal analysis computer program of Siegel and Kerr.

[Click on title for a complete paper.](#)



Abstracts

Session M -- FET Amplifiers

"Session M -- FET Amplifiers." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 319-319.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

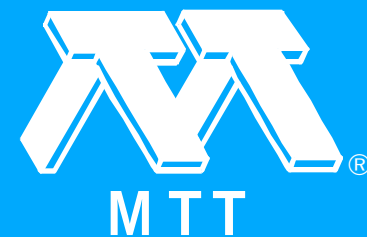


Abstracts

A 30 GHz Low Noise FET Amplifier

E.T. Watkins, J.M. Schellenberg and H. Yamasaki. "A 30 GHz Low Noise FET Amplifier." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 321-323.

A low noise FET amplifier has been developed for the 27.5 to 30 GHz communications band using a new 1/4 m gate GaAs FET device. The 3-stage amplifier exhibits a maximum noise figure of 3.2 dB across the 27.5 to 30 GHz band with an associated gain of 23 ± 0.5 dB.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A 1 Watt 28 GHz Band Amplifier Using Clustered FETs

T. Takagi, K. Seino, A. Iida, M. Kobiki, Y. Mitsui and F. Takeda. "A 1 Watt 28 GHz Band Amplifier Using Clustered FETs." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 324-327.

The clustered FET operating at Ka-band, in which four FET cells with 800 μm gate width are combined by the new 4-way monolithic combiner, has been developed. The amplifier using these clustered FETs has been demonstrated with more than 1 watt power output with 6 dB associated gain over 27.6 - 29.3 GHz.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Wide-Band Limiting Amplifiers with Low Second Harmonic Distortion, Utilizing GaAs MMIC Limiters

E.J. Crescenzi, Jr., R.S. Besser, B.A. Tucker and T.R. Kritzer. "Wide-Band Limiting Amplifiers with Low Second Harmonic Distortion, Utilizing GaAs MMIC Limiters." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 328-331.

A 2-6 GHz microwave limiting amplifier has been constructed using alternating MMIC limiters and GaAs FET amplifier stages. The function of the limiters is to restrict signal levels such that the gain stages operate in a linear region. A multistage prototype amplifier maintained second harmonic levels at least 28 dB below the fundamental output, when driven 30 dB into saturation.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

High-Power and High-Efficiency Ion-Implanted Power GaAs FETs for C and X Bands

S. Yanagawa, Y. Yamada, M. Itoh, K. Arai and N. Tomita. "High-Power and High-Efficiency Ion-Implanted Power GaAs FETs for C and X Bands." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 332-335.

C- and X-band multichip operation power GaAs FETs have been developed using an ion implantation technique. Uniformity among chips superior to and breakdown voltage comparable to those of conventional GaAs FETs have been obtained. The 4-chip C-band device, with a total gate width (W_g) of 57.6 mm, delivers a CW output power at 1-dB gain compression ($P_{\text{sub 1dB}}$) of 21 W with 9 dB gain (G) and 42 % power-added efficiency ($\eta_{\text{sub add}}$), and a saturated output power ($P_{\text{sub sat}}$) of 25 W at 5 GHz. The 8-chip X-band device with $W_g=32$ mm gives $P_{\text{sub 1dB}}=10.5$ W with $G=5$ dB and $\eta_{\text{sub add}}=25$ %, and $P_{\text{sub sat}}=12$ W at 10 GHz. The channel temperature rise is estimated from IR measurement to be 40 °C and 47 °C at 21-W and 10.5-W output power for the C- and X-band devices, respectively.



Abstracts

High-Voltage FET Amplifiers for Satellite and Phased-Array Applications

A. Ezzeddine, H.-L.A. Hung and H.C. Huang. "High-Voltage FET Amplifiers for Satellite and Phased-Array Applications." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 336-339.

The high-voltage FET amplifier (HVFA) configuration for power amplifier applications in satellite communications and phased-array systems can offer substantial improvement in DC-to-RF conversion efficiency. A proof-of-concept experiment, design considerations, and the RF results of MIC implementation at C- and X-band are reported. An X-band MMIC HVFA design is also presented.



IEEE

Contents

Publications

Issues

Papers

Authors

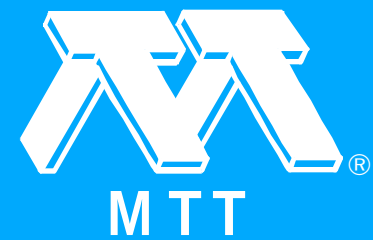
Click on title for a complete paper.



Abstracts

Session N -- Filters and Multiplexers

"Session N -- Filters and Multiplexers." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 341-341.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Dielectric Resonator Output Multiplexer for C-Band Satellite Applications

W.C. Tang, J. Sferrazza, B. Beggs and D. Siu. "Dielectric Resonator Output Multiplexer for C-Band Satellite Applications." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 343-345.

A 3-channel C-band manifold-coupled multiplexer using dielectric-loaded filters has demonstrated a viable approach for future satellite output multiplexer. The new multiplexer configuration utilizes dual- and triple-mode dielectric resonator filters coupled onto a ridged waveguide manifold. This design offers significant size and weight reduction while preserving the optimum electrical performance. It is therefore expected that this new output multiplexer design will be used for future C-band satellite systems.

Click on title for a complete paper.



Abstracts

A Ku-Band Contiguous Multiplexer Employing Low-Loss, Odd-Order, Mixed Dual-Triple Mode Cavity Filters

M. Pley and W.C. Tang. "A Ku-Band Contiguous Multiplexer Employing Low-Loss, Odd-Order, Mixed Dual-Triple Mode Cavity Filters." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 346-348.

A Ku-band, 3-channel contiguous multiplexer has been developed using 5-pole quazi-elliptic function filters. The channel filters are realized as a cascade of dual- and triple-mode cavities operating in the higher order TE/sub 113/ and TM/sub 012/ resonant modes. Measured data from the triplexer correlates well with theory.



MTT



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Design and Performance of a W-Band Broadband Finline Diplexer with Over 20 GHz Bandwidth

C. Nguyen and K. Chang. "Design and Performance of a W-Band Broadband Finline Diplexer with Over 20 GHz Bandwidth." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 349-352.

This paper describes the design and performance of a contiguous 90- to 112-GHz diplexer using the integrated finline technique. State-of-the-art results of 1.5 dB insertion losses have been achieved. There is good agreement between the experimental results and those predicted theoretically; these results demonstrate a significant technological advance of millimeter-wave multiplexer using printed circuit techniques. Results of an extremely wideband H-plane tee with a VSWR of less than 1.4 over the full W-band (75 to 110 GHz) are also presented.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

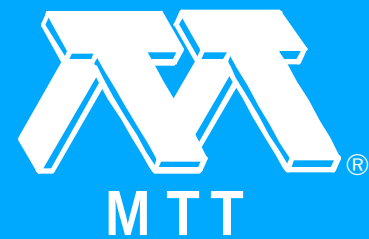
Practical Aspects and Limitations of Dual Mode Dielectric Resonator Filters

S.J. Fiedziuszko. "Practical Aspects and Limitations of Dual Mode Dielectric Resonator Filters." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 353-356.

In-line configuration of dual-mode dielectric resonator filters is discussed from practical point of view. Available ceramics , mounting arrangements and materials , size limitations , temperature stability and power handling capabilities are addressed. Examples of realized fitters for 1.8 GHz , 4 GHz and 12 GHz frequencies are presented.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Two-Path Cutoff Waveguide Dielectric Resonator Filters (1985 [MWSYM])

H. Shigesawa, M. Tsuji and K. Takiyama. "Two-Path Cutoff Waveguide Dielectric Resonator Filters (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 357-360.

We propose here a new idea to design filters for achieving new levels of performance. This type of filters is made of a rectangular waveguide with a partial H-plane bifurcation. Each bifurcated section finite in length operates as a cutoff waveguide, at the central part of which low permittivity dielectric resonators are loaded. An accurate CAD program is developed which is based on a procedure that takes into account the effect of not only the dominant, but also a large number of higher order modes generated at discontinuities. Experiments for X-band trial filters designed by a new program show good agreements with the theory.

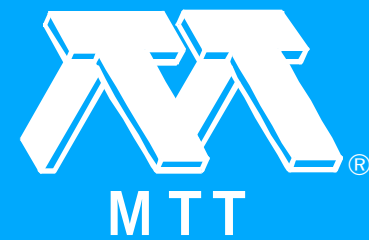
[Click on title for a complete paper.](#)



Abstracts

Session O -- Millimeter-Wave Component Technology I

"Session O -- Millimeter-Wave Component Technology I." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 361-361.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A High Efficiency Frequency Doubler for 100 GHz

M.T. Faber, J.W. Archer and R.J. Mattauch. "A High Efficiency Frequency Doubler for 100 GHz." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 363-365.

Development of a high efficiency varactor frequency doubler for 100 GHz is reported. The efficiency of the doubler is greater than 32% at any frequency between 97 GHz and 102 GHz and reaches 35% at 98 GHz. This is the highest efficiency ever reported for a frequency multiplier above 75 GHz. The measured efficiency is in very good agreement with a theoretically predicted value. The doubler is very suitable for the realization of a W-band, all solid-state, local oscillator source.

[Click on title for a complete paper.](#)



Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

GaAs Gunn Oscillators Reach the 140 GHz Range

H. Barth and W. Menzel. "GaAs Gunn Oscillators Reach the 140 GHz Range." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 367-369.

Design and performance of an 135 GHz, 3rd harmonic oscillator utilizing a 45 GHz Ga As-Gunn device is described. The nonlinear capacitance of the Gunn-device is used for frequency triplication. Hence an idler circuit for the 2nd harmonic wave is built in. This raises the efficiency of fundamental wave to 3rd harmonic wave conversion considerably. Output power was measured as 3 mW.

[Click on title for a complete paper.](#)



Abstracts

W-Band (75 to 110 GHz) Microstrip Components (1985 [MWSYM])

K. Chang, R. Tahim, D. English, A. Grote, T. Pham, C. Sun, G. Hayashibara, P. Yen and W. Piotrowski. "W-Band (75 to 110 GHz) Microstrip Components (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 371-374.

Various microstrip components, including mixers, IMPATT oscillators, Gunn oscillators, doublers, and circulators, have been developed at W-band with state-of-the-art performance. The use of microstrip drastically reduces fabrication costs due to the less stringent machining tolerance. The design and performance of these components will be reported.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Wideband Electronically Tunable GaAs Gunn VCO's at W-Band (75-110GHz)

J. Ondria. "Wideband Electronically Tunable GaAs Gunn VCO's at W-Band (75-110GHz)." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 375-378.

A series tuned GaAs VCO employing a second harmonic radial disk circuit has provided up to 10 percent electronic tuning bandwidth (ETB) at 94GHz. Packaged GaAs Gunn and Hyperabrupt Varactor Diodes are employed. Analysis of the series equivalent circuit provides insight into methods of controlling trade-off between output power and tuning bandwidth, e.g. by restricting the ETB to 1.5GHz around 92.3GHz an output power of 18 to 22mW was achieved; with tighter coupling an output power of 11 to 12.8mW from 91.5 to 95.5GHz resulted.

Click on title for a complete paper.



Abstracts

An 18-40 GHz Double Balanced Microstrip Mixer

M.A. Smith and A.M. Pavio. "An 18-40 GHz Double Balanced Microstrip Mixer." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 379-380.

An analytical design approach has been used to develop a broadband planar mixer for continuous operation in K- and Ka-bands. The double balanced design, fabricated on fused quartz, exhibits excellent conversion loss and isolation characteristics, and can be used with either coaxial RF connectors (K-Connector) or integrated directly with other planar components.



IEEE

Contents

Publications

Issues

Papers

Authors

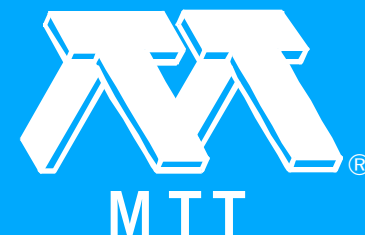
Click on title for a complete paper.



Abstracts

Session P -- Solid-State Sources and Amplifiers

"Session P -- Solid-State Sources and Amplifiers." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 381-381.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A 0.5 μm Silicon Bipolar Transistor for Low Phase Noise Oscillator Applications Up to 20 GHz

C.C. Leung, C.P. Snapp and V. Grande. "A 0.5 μm Silicon Bipolar Transistor for Low Phase Noise Oscillator Applications Up to 20 GHz." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 383-386.

An interdigitated silicon bipolar transistor with 0.5 micrometer emitter width and 2 micrometer emitter-emitter pitch has been fabricated which has a measured F_{max} greater than 30 GHz. Low phase noise YIG-tuned oscillators with fundamental frequency bands of 4-18 and 8-22 GHz have been demonstrated using this transistor.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

500 MHz, 100 W X-Band Solid State Amplifier

R. Mallavarpu and G. MacMaster. "500 MHz, 100 W X-Band Solid State Amplifier." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 387-390.

This paper describes advances made in developing a wideband, high power solid state amplifier at X-band. Presently a bandwidth of 500 MHz with peak power levels of 100 W at 30% duty have been obtained by combining only four GaAs IMPATT diodes in a spatial field type of power combiner/amplifier. Key features of this device are its high combining efficiency (~ 95%), a high degree of isolation (>30 dB) between elemental amplifier modules and a 10 dB stable dynamic range.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

EHF Solid State Amplifier

G.H. Nesbit and W.H. Leighton. "EHF Solid State Amplifier." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 391-394.

Two 5 watts Q-band solid state amplifiers have been developed. These amplifiers have a minimum of 24 dB gain over a 2 GHz bandwidth. The amplifier can operate from -20°C to +65°C utilizing an electronic temperature stabilization circuit. The experimental test results and the integration of the amplifiers will be presented in this paper.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Gain Saturation in Circulator-Coupled Reflection Amplifiers

M.B. Steer. "Gain Saturation in Circulator-Coupled Reflection Amplifiers." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 395-398.

In this paper we present an analytic treatment of large-signal gain saturation in reflection amplifiers and present design curves for optimizing large signal performance. General recommendations for the design of reflection amplifiers, notably of IMPATT amplifiers, are presented. The design curves are verified by comparing analytic results with large signal nonlinear numerical analyses of gain saturation in parametric amplifiers.

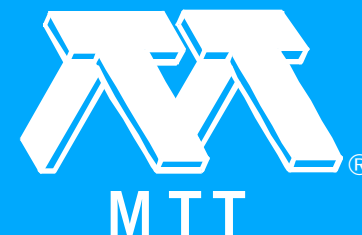
[Click on title for a complete paper.](#)



Abstracts

Session Q -- Computer Modeling and Design of Nonlinear Networks

"Session Q -- Computer Modeling and Design of Nonlinear Networks." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 399-399.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A New Frequency Domain Approach to the Analysis of Nonlinear Microwave Circuits

G.W. Rhyne and M.B. Steer. "A New Frequency Domain Approach to the Analysis of Nonlinear Microwave Circuits." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 401-404.

Design of Microwave Monolithic Integrated Circuits (MMIC's) is currently limited by the lack of suitable analysis and computer aided design tools capable of efficiently handling large-scale analog nonlinear circuits. In this paper we address this problem and present a new multi-frequency technique for the analysis of nonlinear circuits. A novel feature of the method is that nonlinear analysis is performed entirely in the frequency domain using a generalized power series. We show how this technique can be applied to the analysis of MESFET circuits and, as an example, we consider gain saturation in a GaAs MESFET amplifier.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Nonlinear GaAs FET Model for Use in the Design of Output Circuits for Power Amplifiers (1985 [MWSYM])

W.R. Curtice and M. Ettenberg. "A Nonlinear GaAs FET Model for Use in the Design of Output Circuits for Power Amplifiers (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 405-408.

A nonlinear equivalent circuit model for the GaAs FET has been developed based upon the small-signal device model and separate current measurements, including drain-gate avalanche current data. The harmonic balance technique is used to develop the FET rf load-pull characteristics in an amplifier configuration under large signal operation. Computed and experimental load-pull results show good agreement.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Power Characterisation of a MESFET Amplifier Using Small Signal Measurements and Volterra Series

G. Lambrianou and C.S. Aitchison. "Power Characterisation of a MESFET Amplifier Using Small Signal Measurements and Volterra Series." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 409-413.

The power performance of a microwave GaAs MESFET amplifier is predicted from small signal measurements based on the Volterra Series representation. Expressions for the non-linear power gain frequency response, the output power and gain compression factor are presented. The major sources of gain compression are identified. Experimental verification of the theory is presented by means of a 1.3 μ m gate MESFET amplifier at 7.8GHz.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Circuit Design to Reduce 3rd Order Intermodulation Distortion in FET Amplifiers

R.J. Gilmore, R. Kiehne and F.J. Rosenbaum. "Circuit Design to Reduce 3rd Order Intermodulation Distortion in FET Amplifiers." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 413-416.

Using a large-signal computer model for the MESFET with a modified harmonic balance technique the third-order intermodulation response of general amplifier circuits is found. The effect of device, bias, and impedance changes is investigated and compared with experimental results for a single-stage feedback amplifier. The method is useful for the design of microwave linearizers. A novel scheme for the reduction of intermodulation distortion in power amplifiers operating near compression is presented with experimental data.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

A General CAD Tool for Large-Signal GaAs MESFET Circuit Design

J.M. Golio, P.A. Blakey and R.O. Grondin. "A General CAD Tool for Large-Signal GaAs MESFET Circuit Design." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 417-420.

An accurate and general CAD tool for large-signal GaAs MESFET design has been developed. It is based upon incorporation of an accurate GaAs MESFET model in the SPICE circuit simulation. The tool has been utilized in the analysis of microwave power amplifiers, oscillators and mixers, and GaAs digital IC's. Examples of some of these studies are presented.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

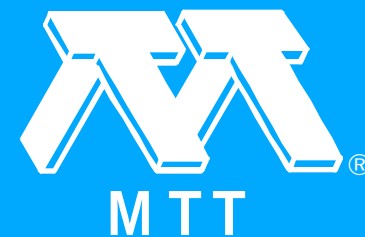
Click on title for a complete paper.



Abstracts

Session R -- Millimeter-Wave Component Technology II

"Session R -- Millimeter-Wave Component Technology II." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 421-421.



IEEE

[Contents](#)

[Publications](#)

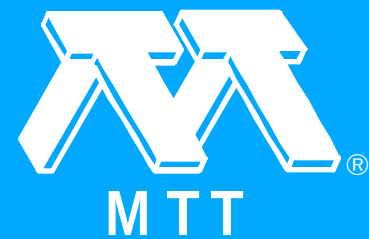
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Contiguous-Domain Transferred-Electron Oscillators

J.A. Cooper, Jr. and K.K. Thornber. "Contiguous-Domain Transferred-Electron Oscillators." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 423-426.

We describe a new monolithic millimeter-wave semiconductor oscillator which is capable of supporting a contiguous sequence of charge domains in the drift channel. The frequency is not determined by a transit time effect, but rather by the spacing between adjacent domains, and can be electrically tuned from a few gigahertz to a few hundred gigahertz.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

GaAs Monolithic Transferred-Electron Devices for Millimeter Wave Applications

P.A. Rolland, A. Cappy and M.R. Friscourt. "GaAs Monolithic Transferred-Electron Devices for Millimeter Wave Applications." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 427-430.

In this paper the authors point out the existence of two different operating modes in a planar GaAs transferred-electron oscillator with a current limiting MESFET cathode. The respective advantages and drawbacks of these two modes are discussed on the basis of further monolithic integration. The influence of the operating conditions on the RF performance are given in the 100 GHz window.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Limitations of Microwave and Millimeter-Wave Mixers Due to Excess Noise (1985 [MWSYM])

G. Hegazi, A. Jelenski and S. Yngvesson. "Limitations of Microwave and Millimeter-Wave Mixers Due to Excess Noise (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 431-435.

Excess intervalley included in noise due to hot electrons, scattering and traps in the diode is the mixer noise analysis. Its influence is discussed for room temperature as well as for cooled mixers.

[Click on title for a complete paper.](#)



Abstracts

Comparative Study of Mode Matching Formulations for Microstrip Discontinuity Problems (1985 [MWSYM])

Y.C. Shih, T.S. Chu and T. Itoh. "Comparative Study of Mode Matching Formulations for Microstrip Discontinuity Problems (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 435-438.

Several matrix formulations for the microstrip step discontinuity problem are compared. Although they are theoretically identical, one of them has a decided advantage in numerical labor, relative and absolute convergence. Results by this method are checked with other published data and with those independently derived by the modified residue calculus technique.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Dielectric Measurements of Common Polymers at Millimeter Wavelength

M.N. Afsar. "Dielectric Measurements of Common Polymers at Millimeter Wavelength." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 439-442.

Complex refractive index and Complex dielectric permittivity and loss tangent data for polyethylene, polypropylene, poly-4 methyl pentene-1 (TPX) and polytetrafluoroethylene (Teflon) are presented over the frequency range 40-300 GHz. All of these non-polar polymers are extremely low loss material. Like the microwave region, polyethylene demonstrates exceptionally low loss characteristic in the entire millimeter wave region. Polar polymers such as Nylon and plexiglass exhibit much higher absorption (nearly an order of magnitude higher) loss compared to non-polar polymers.

[Click on title for a complete paper.](#)



Abstracts

Session S -- Open Forum II

"Session S -- Open Forum II." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 443-443.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Analysis and Design of Spurline Bandstop Filters

C. Nguyen and K. Chang. "Analysis and Design of Spurline Bandstop Filters." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 445-448.

The chain matrices of spurline bandstop filters employing asymmetrical two lines and symmetrical three lines in an inhomogeneous medium were derived and used for accurate filter design. One-section spurline bandstop filters at 26.5 to 40 GHz have been designed and tested. There is an excellent agreement between the experimental results and those predicted theoretically.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Analysis and Design of Five Port Circular Disc Structures for Six-Port Analyzers

M. Abouzahra and K.C. Gupta. "Analysis and Design of Five Port Circular Disc Structures for Six-Port Analyzers." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 449-452.

This paper presents a method for designing a five-port disc microstrip circuit suitable for the six-port network analyzers. The method is based on the planar circuit approach in which the two-dimensional Green's function of a circular segment is used. It is found that a bandwidth of about 44% can be obtained (for $|S_{11}|$ less than 0.2).



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

CAD Models for Millimeter-Wave Suspended Substrate Microstrip Lines and Fin-Lines

P. Pramanick and P. Bhartia. "CAD Models for Millimeter-Wave Suspended Substrate Microstrip Lines and Fin-Lines." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 453-456.

Simple and accurate equations for determining the propagation characteristics of suspended and inverted microstrip lines and fin-lines are presented. These equations are vital to the use of computer aided design techniques for such lines and circuits based on these media.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A Generalized Algorithm for the Modeling of the Dispersive Characteristics of Microstrip, Inverted Microstrip, Stripline, Slotline, Finline, and Coplanar Waveguide Circuits on Anisotropic Substrates

A. Nakatani and N.G. Alexopoulos. "A Generalized Algorithm for the Modeling of the Dispersive Characteristics of Microstrip, Inverted Microstrip, Stripline, Slotline, Finline, and Coplanar Waveguide Circuits on Anisotropic Substrates." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 457-459.

Substrate materials typically used for microwave or millimeter wave applications may exhibit inherent anisotropy or may be chosen to be anisotropic for some particular device. This paper presents techniques which compute the dispersive properties of slotlines, coplanar waveguides, finlines, inverted microstrip and striplines on anisotropic substrates.



[Contents](#)

[Publications](#)

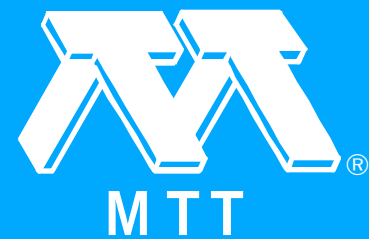
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Field Distribution of Hybrid Modes in Dielectric Loaded Waveguides

K.A. Zaki and C. Chen. "Field Distribution of Hybrid Modes in Dielectric Loaded Waveguides." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 461-464.

Plots of the electric and magnetic field distributions of several propagating and evanescent hybrid modes in dielectric loaded circular waveguides are derived and presented. These plots have not been reported in the literature before, and can be very valuable in applications using the dielectric loaded waveguides and resonators, including microwave, millimeter wave and optical guiding structures.

[Click on title for a complete paper.](#)



Abstracts

Loss Mechanisms in Dielectric Loaded Resonators (1985 [MWSYM])

K.A. Zaki and C. Chen. "Loss Mechanisms in Dielectric Loaded Resonators (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 465-468.

Analysis is presented of resonators consisting of a section of a dielectric loaded waveguide shorted at both ends. The analysis includes resonant frequency calculation, mode charts and unloaded Q computation. Numerical results are presented for the unloaded Q's of various modes, as a function of the resonator parameters. Effects of losses in different parts of the resonator wall on the unloaded Q are discussed, and methods of improving these Q's are explored.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Self Equalized, Equiripple Microwave Filter

L.W. Hendrick and P.J. Tatomir. "Self Equalized, Equiripple Microwave Filter." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 469-472.

A computer program for designing self-equalized equiripple, even order filters is presented. The program permits its operator to attempt to meet a given set of filter response specifications by positioning either the imaginary axis zeros (i.e., the insertion loss poles) or the complex plane zeros (i.e., the equalization poles) of $S_{21}(s)$, or both. Once the zeros are optimally located, the program will first synthesize a symmetric canonical, cross-coupled array filter from the two-port, short-circuit Y-parameters. Next, the program will convert this structure, by a series of plane rotations of the coupling matrix, into an asymmetric canonical configuration. Both calculated and measured response data are presented.

[Click on title for a complete paper.](#)



Abstracts

The Use of Higher Resonant Modes in Measuring the Dielectric Constant of Dielectric Resonators

P. Wheless, Jr. and D. Kajfez. "The Use of Higher Resonant Modes in Measuring the Dielectric Constant of Dielectric Resonators." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 473-476.

In the measurement procedure known as Courtney method, the dielectric constant of a cylindrical dielectric resonator is determined by measurement of the resonant frequency of the TE/sub 011/ mode. The reliability and accuracy of this method can be improved by also utilizing higher resonant modes. A procedure for identification of the modes is described, and some example results for measured dielectric constant are presented.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

A High Performance - Wide Band - Diplexing - Tracking - Depolarization Correcting Satellite Communication Antenna Feed

A. Prata, Jr., E.A. Filho and S. Ghosh. "A High Performance - Wide Band - Diplexing - Tracking - Depolarization Correcting Satellite Communication Antenna Feed." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 477-480.

A wide bandwidth diplexing feed system consisting of a pair of multihole corrugated directional couplers and a dual-depth corrugated horn, has been developed for satellite communication antenna applications. The feed has capacity to handle any arbitrary dual orthogonally polarized signals and to incorporate independent depolarization correction for these signals in the downlink and uplink. It shows a very good isolation between orthogonally polarized signals at each reused frequency over the recently allocated bands which extend from 3.4 to 4.2 GHz in the downlink and 5.85 to 6.775 GHz in the uplink for fixed satellite systems. Two modular devices which operate for high or low frequency beacon to extract difference modes for tracking purpose, are also described. Based on beacon allocation, the suitable module can be conveniently incorporated in the feed system without disturbing the electrical performances at the communication links.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

MICROS 3 - A CAD/CAM Program for Fast Realization of Microstrip Masks

J.-F. Zurcher. "MICROS 3 - A CAD/CAM Program for Fast Realization of Microstrip Masks." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 481-484.

A program for fast realization of microstrip masks is presented. It runs on a desktop computer and allows to directly cut the mask on a plotter. Most elements needed to realize a circuit are directly computed and drawn by the program, and the user can also define his own elements.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Analysis of Dielectric Resonators with Tuning Screw and Supporting Structure (1985 [MWSYM])

F. Hernandez-Gil and J. Perez. "Analysis of Dielectric Resonators with Tuning Screw and Supporting Structure (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 485-488.

The finite Element Method is applied to calculate the resonant frequencies and electromagnetic field distributions of axisymmetric dielectric resonator modes. Analysis of several resonator shapes is made including ring resonator, double resonator, and rod resonator with tuning screw and supporting structure.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Complete Determination of Circulator Eigenvalues With-Out Transmission Phase Measurement

C. Schiebllich and U. Goebel. "Complete Determination of Circulator Eigenvalues With-Out Transmission Phase Measurement." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 489-492.

A method has been developed to determine all scattering parameters or their eigenvalues of a symmetrical three-port junction. Vector measurements are reduced to reflection coefficient measurements taken at one port. A versatile minicomputer controlled system is presented for analyzing and optimizing symmetrical junction circulators of any kind.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

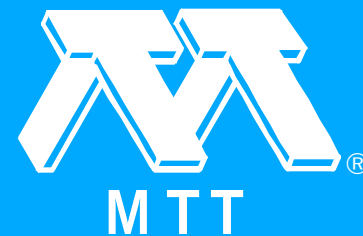


Abstracts

Finline Taper Design Made Easy

A. Beyer and I. Wolff. "Finline Taper Design Made Easy." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 493-496.

In this paper a method is presented which permits the quick and exact fabrication of tapers in finline technique. This method uses tapers in the form of circular area which are matched to the slotwidth as a function of the characteristic impedance. For the application of the described method the field distributions and the characteristic impedances of finlines must be known.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Equivalent Circuit of Broadside-Coupled Microstrip Open Ends

S.K. Koul and B. Bhat. "Equivalent Circuit of Broadside-Coupled Microstrip Open Ends." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 497-498.

In this paper a simple technique to determine the parameters of the equivalent circuit of the broadside-coupled microstrip open ends is described. This technique is based on the quasi-static spectral domain formulation in conjunction with the transverse transmission line method. Numerical data on the even-and odd-mode lumped capacitances of broadside-coupled square conductor patches in suspended microstrip configuration are presented. Further, data on the even-and odd-mode edge-capacitances and also the end effects are computed. This data should find extensive application in designing filters and directional couplers in broadside-coupled microstrip configurations.

[Click on title for a complete paper.](#)



Abstracts

Analysis and Synthesis of Guides with Closely Spaced Discontinuities

B.L. Harris and P.E. Mayes. "Analysis and Synthesis of Guides with Closely Spaced Discontinuities." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 499-502.

Techniques have previously been developed to determine the scattering parameters for lines or guides with a single geometric step discontinuity. However, for a system with more than one closely spaced discontinuity the field interaction between the discontinuities must be taken into account. A technique outlined below, can in theory handle any number of closely spaced discontinuities.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Stokes Vector Representation of the Six-Port Network Analyzer: Calibration and Measurement

T. Oishi and W.K. Kahn. "Stokes Vector Representation of the Six-Port Network Analyzer: Calibration and Measurement." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 503-506.

Calibration of six-port network analyzer is shown to be equivalent to the determination of four Stokes vectors. Analyzer performance can then be visualized in terms of the Stokes vector representing the unknown, relative to those representing the analyzer.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Short Millimeter Wave Region High Accuracy Power Meter with Self-Calibration Function

M. Sasaki, T. Nunotani, T. Inoue and I. Yokoshima. "Short Millimeter Wave Region High Accuracy Power Meter with Self-Calibration Function." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 507-510.

A high-precision power meter with a self-calibration function in the short-millimeter wave region (94GHz) has been developed. As a result of self-calibration, a high effective efficiency (99.86%) of the built-in thin-film barretter mount has been obtained, and a reliable measurement of millimeter wave power with an overall accuracy of $\pm 1\%$ has become possible.

Click on title for a complete paper.



Abstracts

A Simple Network Analog Approach for the Quasi-Static Characteristics of General Lossy, Anisotropic, Layered Structures (1985 [MWSYM])

V.K. Tripathi and R.J. Bucolo. "A Simple Network Analog Approach for the Quasi-Static Characteristics of General Lossy, Anisotropic, Layered Structures (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 511-514.

The quasi-static parameters of multilayered planar structures consisting of lossy and/or anisotropic dielectric media are computed by utilizing a simple, versatile discrete network analog having complex (e.g., RL, RC) branches. The method is applied to compute the propagation constants, impedances, and field distribution for typical single and coupled strip structures.



[Contents](#)
[Publications](#)
[Issues](#)
[Papers](#)
[Authors](#)

Click on title for a complete paper.



Abstracts

TM/sub 0 gamma delta/ Mode of Cylindrical Dielectric Resonators Applications to Microwave Filters

B. Byzery and P. Guillon. "TM/sub 0 gamma delta/ Mode of Cylindrical Dielectric Resonators Applications to Microwave Filters." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 515-518.

The aim of this paper is to describe an analytical method which permits to characterize the TM/sub 0 gamma delta/ mode (frequency, quality factor) and to show that we can use the dielectric resonators, excited in this mode, in many applications.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Collinearly Excited Edge Coupled Resonators

K.W. Reed, A.K. Reddy and W.A. Davis. "Collinearly Excited Edge Coupled Resonators." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 519-522.

A magnetostatic surface wave resonator using adjacent microstrip transducers edge coupled to a rectangular YIG film cavity has been built and evaluated. Loaded Qs higher than 1000 were obtained with resonant insertion losses as low as 8 dB. Sidelobe suppression exceeded 12 dB, yielding a usable tunability spanning 3 to 5 GHz.

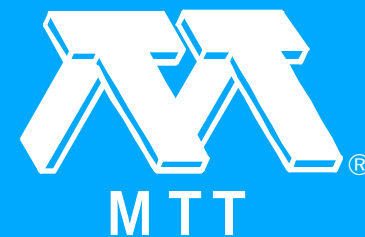
[Click on title for a complete paper.](#)



Abstracts

Session T -- Solid-State Device Topics

"Session T -- Solid-State Device Topics." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 523-523.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

20 GHz GaAs IMPATT Diode Development for Solid State Transmitter

M.J. Delaney, M.H. Jones and C. Sun. "20 GHz GaAs IMPATT Diode Development for Solid State Transmitter." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 525-527.

Double drift Read GaAs IMPATT diodes were fabricated for K Band from high quality MBE material. Single diode oscillator performance of 4.36w output and 19% efficiency were obtained at the flange of a reduced height cavity. A maximum power of 5.37W was obtained at a reduced efficiency.

Click on title for a complete paper.



Abstracts

Controlled Bias Preheating for Variable Duty Factor IMPATT Transmitter

R.L. Eisenhart and R.S. Robertson. "Controlled Bias Preheating for Variable Duty Factor IMPATT Transmitter." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 529-530.

A biasing technique has been devised compensates for thermal changes in solid state transmitter which operation. Use of this technique allows operation over a range of duty factors and extended environmental temperature conditions. The concept is discussed and test results presented.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

High Speed Varactor Tuned Notch Filter

M. Mehdizadeh and B. Smilowitz. "High Speed Varactor Tuned Notch Filter." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 531-534.

A design procedure for a varactor tuned notch filter is presented. The filter provides speed and agility required for ECM applications where a large interfering signal must be suppressed. The circuit is based on varactor tuned microstrip resonator which is edge coupled to the signal transmission line. A three stage filter is described which tunes to any frequency between 1070 and 1240 MHz in less than 5 microseconds. It has a 1 dB bandwidth of 100 MHz, a 20 dB bandwidth of 20 MHz, and an RF power capability of 10 mW.

Click on title for a complete paper.

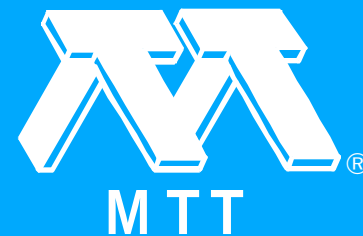


Abstracts

Dynamic Diode Mixer Damage Measurements

R.V. Garver, C. Fazi and H. Bruns. "Dynamic Diode Mixer Damage Measurements." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 535-536.

An experiemntal setup has been developed which permits the progressive degradation of a mixer to be observed while it is being exposed to high-power-microwave pulses at a low repetition rate.



IEEE

Contents

Publications

Issues

Papers

Authors

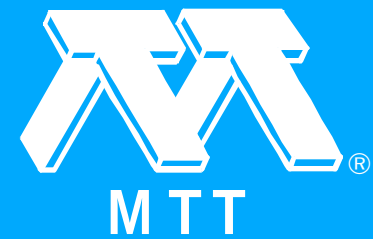
Click on title for a complete paper.



Abstracts

Session U -- Low Noise HEMT Amplifiers

"Session U -- Low Noise HEMT Amplifiers." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 537-537.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



X-Band Noise Parameters of HEMT Devices at 300K and 12.5K

S. Weinreb and M. Pospieszalski. "X-Band Noise Parameters of HEMT Devices at 300K and 12.5K." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 539-542.

The four noise parameters of room-temperature and cryogenically-cooled HEMT's have been investigated. Two previously described structures, the quantum-well HEMT and the high-transconductance HEMT have been tested and compared with noise parameters of a MESFET (NE67383). It was demonstrated that the cryogenic noise performance of a HEMT is dependent on light illumination and may be or may not be better than that of a MESFET, depending on the device structure. The minimum noise temperature of $T_{\text{sub min}} = 10.5 \pm 1.5\text{K}$ of the quantum-well HEMT, illuminated with light, measured at $f = 8.4\text{ GHz}$ and $T_{\text{sub a}} = 12.5\text{K}$ is the best yet published for field effect transistors.





IEEE

Contents

Publications

Issues

Papers

Authors

Low Noise Amplifiers Using Two Dimensional Electron Gas FETs

T. Mochizuki, K. Honma, K. Handa, W. Akinaga and K. Ohata. "Low Noise Amplifiers Using Two Dimensional Electron Gas FETs." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 543-546.

Recently developed LNAs incorporating two dimensional electron gas (2 DEG) FETs for satellite communications earth stations are disclosed, which give epoch-making low noise as FET LNAs to operate. in the 2, 4, 12, and 20 GHz bands at room temperature, especially under cooled state. Typically detailed further is newly developed 4 GHz band LNA with 55 K max. noise temperature at room temperature, noise temperatures of the order of 30 K across 800 MHz bandwidth (3.4 to 4.2 GHz) under thermoelectrically (TE-) cooled state (about-45°C), which has been adopted in the new earth station conducted by KDD.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Broadband HEMT and GaAs FET Amplifiers for 18 - 26.5 GHz

K. Shibata, B. Abe, H. Kawasaki, S. Hori and K. Kamei. "Broadband HEMT and GaAs FET Amplifiers for 18 - 26.5 GHz." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 547-550.

Two types of broadband amplifiers operating over 18 to 26.5 GHz have been developed by using newly developed 0.4- μm gate HEMTs and conventional 0.25- μm gate GaAs FETs. The four-stage EEMT amplifier exhibits a noise figure of ≤ 7.2 dB and a gain of 19.3 ± 1.8 dB and the five-stage GaAs FET amplifier exhibits a noise figure of ≤ 12 dB and a gain of 22.7 ± 2.2 dB over 18 to 26.5 GHz. The minimum noise figures in the measured frequency range are 5.0 dB and 7.5 dB for the HEMT and GaAs FET amplifiers, respectively. No essential difference is found between the amplifiers in input/output VSWR, output power and temperature variation of noise figure and gain.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A 20 GHz Peltier-Cooled Low Noise HEMT Amplifier

M. Iwakuni, M. Niori, T. Saito, T. Hamabe, H. Kurihara, K. Jyoshin and M. Mikuni. "A 20 GHz Peltier-Cooled Low Noise HEMT Amplifier." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 551-553.

A 20 GHz band 135 K (NF=1.66dB) low-noise HEMT amplifier with 38 dB gain has been developed. This was achieved by extremely low-loss input circuits, accurate device characterization method with a strip line tuner and a compact cooling system. The amplifier is cooled to -55°C by a Peltier-cooling unit which consumes only 60 watts.

[Click on title for a complete paper.](#)



Abstracts

36.0 - 40.0 GHz HEMT Low Noise Amplifier

M. Sholley, J. Berenz, A. Nichols, K. Nakano, R. Sawires and J. Abell. "36.0 - 40.0 GHz HEMT Low Noise Amplifier." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 555-558.

This paper describes the design and development of a multistage low noise High Electron Mobility Transistor (HEMT) amplifier that exhibits state-of-the-art performance over the frequency range of 36-40 GHz. The amplifier utilizes a series of three single ended stages that are each designed around TRW's HEMT device. Typical performance to date has been 15-17 dB gain with an associated noise figure of 4.0 to 4.6 dB.



IEEE

Contents

Publications

Issues

Papers

Authors

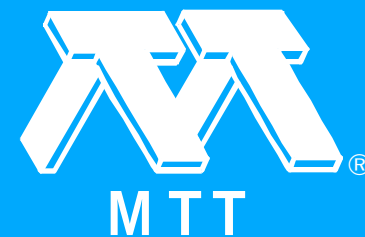
Click on title for a complete paper.



Abstracts

Session V -- Continuous and Discontinuous Microstrip Structures

"Session V -- Continuous and Discontinuous Microstrip Structures." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 559-559.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Perturbation Theory for Microstrip Propagation

R.E. Collin and B. Kretch. "A Perturbation Theory for Microstrip Propagation." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 561-562.

A perturbation theory for propagation on an open microstrip transmission line is developed by expanding the field and the propagation constant in a power series in $k/\text{sub } 0/$, the free space wave number. This theory only requires the use of two relatively simple static Green's functions.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Surface Wave Losses at Discontinuities in Millimeter Wave Integrated Transmission Lines

R.W. Jackson and D.M. Pozar. "Surface Wave Losses at Discontinuities in Millimeter Wave Integrated Transmission Lines." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 563-565.

Using a fullwave analysis we have calculated the loss due to surface wave and space wave radiation at three types of discontinuities in planar millimeter wave transmission lines. The open ended microstrip, the microstrip gap and the short circuited coplanar waveguide were investigated on electrically thick substrates. Results on typical high dielectric substrates are presented.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Millimeter-Wave Diplexers with Printed Circuit Elements (1985 [MWSYM])

Y.C. Shih, L.Q. Bui and T. Itoh. "Millimeter-Wave Diplexers with Printed Circuit Elements (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 567-569.

A novel design of W-band (75-110 GHz) non-contiguous diplexers is described. The common port of the diplexer is fed by suspended probe transitions which are suitable for wide-band applications. The circuit is printed on a single substrate and easily assembled in a split-block housing. The insertion loss at the passbands is about 1 dB.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

Microstrip Discontinuity Modelling for Millimetric Integrated Circuits

P.B. Katehi and N.G. Alexopoulos. "Microstrip Discontinuity Modelling for Millimetric Integrated Circuits." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 571-573.

A theoretical approach for the representation of microstrip discontinuities by equivalent circuits with frequency dependent parameters is presented. The method accounts accurately for the substrate presence and associated surface wave model, strip finite thickness and radiation losses. The method can also be applied for the solution of microstrip components in the millimetric frequency range.

Click on title for a complete paper.



Abstracts

Convergence of Numerical Solutions of Open-Ended Waveguide by Modal Analysis and Hybrid Modal-Spectral Techniques (1985 [MWSYM])

J.A. Encinar and J.M. Rebollar. "Convergence of Numerical Solutions of Open-Ended Waveguide by Modal Analysis and Hybrid Modal-Spectral Techniques (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 575-578.

Two different methods are considered to deal with open-ended waveguides with infinite metallic flange. The first one, Modal Analysis, is valid only when the aperture is radiating into a lossy media. The second one is based on a hybrid modal-spectral technique, and it is valid for any media with or without losses.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Session W -- Network Analyzer Techniques

"Session W -- Network Analyzer Techniques." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 579-579.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Pulse Network Analyzer

D.L. Landt and R.J. Weber. "Pulse Network Analyzer." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 581-584.

A pulse network analyzer is described which, when added to an existing CW Analyzer, is capable of pulsed impedance and transmission measurements in time frames as narrow as 250 nanoseconds. The analyzer operates in a swept or fixed frequency mode from 0.5 - 12.5 GHz. Measurement results are presented on a GaAs, X-Band, IMPATT diode and a multistage, L-Band power amplifier.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Vector Method of Characterizing Nonlinearity in Microwave Power Devices

W.J. Thompson and K.K. Agarwal. "Vector Method of Characterizing Nonlinearity in Microwave Power Devices." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 585-587.

A new vector method for simultaneously measuring the nonlinear amplitude and phase distortion is described. This simple method, particularly suited for repetitive measurements, is used to characterize high-power amplifiers for 64-QAM digital microwave systems. Graphic display on a "T-chart" clearly identifies gain, compression, expansion, and the order of distortion in devices.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Calibrating a Six-Port Reflectometer Using Three Known Loads

M.E. Bialkowski and G.S. Woods. "Calibrating a Six-Port Reflectometer Using Three Known Loads." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 589-592.

A technique for calibrating an arbitrary six-port network using nine unknown loads and three known loads is described. The technique is similar to the self-calibration technique first developed by Engen. However, it uses full six-port to four-port reduction so that it is quite insensitive to errors. The theory is illustrated with typical measurement results showing an accuracy of better than 1.0% achievable without optimization of the six-port to four-port reduction constants.

[Click on title for a complete paper.](#)



Abstracts

Waveguide Star Junction Used in Ka Band Dual Six Port Measurements

M. Riazat and G. Zdasiuk. "Waveguide Star Junction Used in Ka Band Dual Six Port Measurements." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 593-594.

An automatic dual six port network analyzer has been designed and tested over the frequency band of 26.5 to 40 GHz. The six port design utilizes a matched symmetrical five port waveguide junction. A method of matching avoiding the use of tuning screws is discussed, and an analysis of the sensitivity of six port parameters to the matching of the star junction is presented.



IEEE

Contents

Publications

Issues

Papers

Authors

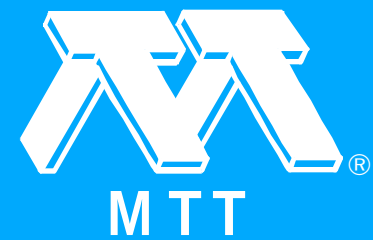
Click on title for a complete paper.



Abstracts

Session X -- FET Applications

"Session X -- FET Applications." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 595-595.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Miniature Ceramic Circuit Components for Ku Band Receivers

B. Dornan, G. Lan, P. Goldgeier, P. Pelka and F. Sechi. "Miniature Ceramic Circuit Components for Ku Band Receivers." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 597-600.

Components for a 14 GHz receiver were developed using the Miniature Ceramic Circuit (MCC) technology. These components are remarkable for their small size and high level of integration. MCC technology combines many of the desirable characteristics of the monolithic approach and with the flexibility of the hybrid approach.

Click on title for a complete paper.



Abstracts

A 4.5 to 18 GHz Phase Shifter

D.C. Boire, J.E. Degenford and M. Cohn. "A 4.5 to 18 GHz Phase Shifter." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 601-604.

This paper describes a wideband phase shifter suitable for hybrid and monolithic phased array modules. The phase shifter employs a 180° digital bit and one or two analog sections to obtain a full 360° phase shift range. The design of the phase shifter and experimental results are presented.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



A Practical Microwave Travelling-Wave MESFET Gate Mixer

O.S.A. Tang and C.S. Aitchison. "A Practical Microwave Travelling-Wave MESFET Gate Mixer." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 605-608.

The theoretical analysis of Travelling-Wave (Distributed) Mixing is briefly described. Experimental verification on a 2-section design, comparing theoretical and measured results is presented for the first time. The tradeoffs between circuit variables are briefly explained. It exhibits around 4dB of conversion loss over the signal frequency band from below 2GHz to 10GHz for an I.F. of GHz.



Abstracts

Broadband and Broad Dynamic Range GaAs Dual-Gate MESFET Linearize for TWTA and SSPA Used in Satellite Transponder

M. Kumar, J.C. Whartenby and H.J. Wolkstein. "Broadband and Broad Dynamic Range GaAs Dual-Gate MESFET Linearize for TWTA and SSPA Used in Satellite Transponder." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 609-612.

This paper presents a broadband predistortion technique using dual-gate FETs to linearize the Traveling Wave Tube Amplifiers (TWTA) and Solid State Power Amplifiers (SSPA) used in satellite transponders. The results for a linearized TWTA operating over 11.7-12.2 GHz and a linearized SSPA operating over 3.8-4.2 GHz are presented. The improvement in linearity has been achieved over a broad dynamic range of output power.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

30 dB of AGC from an FET

B.R. Hallford. "30 dB of AGC from an FET." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 613-616.

A low-noise single-gate GaAs MESFET has been successfully used to provide a 30-dB AGC range for low-noise amplifiers in down-converters used in microwave communication systems from 4 to 11 GHz. Threshold NF is not affected. With 30 dB of AGC, the FET amplifier NF is 18 dB.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Session Y -- Waveguiding Structures

"Session Y -- Waveguiding Structures." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 617-617.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Leakage from a Gap in NRD Guide

A.A. Oliner, S.T. Peng and K.M. Sheng. "Leakage from a Gap in NRD Guide." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 619-622.

Results are presented for the effect of an air gap between the top metal plate and the dielectric strip in nonradiative dielectric (NRD) guide, a promising candidate for millimeter wave integrated circuits. The leakage from small gaps can cause crosstalk between components, and that from larger gaps can furnish a new type of leaky wave antenna.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Microwave Network Representation of Discontinuity in Open Dielectric Waveguides and its Applications to Periodic Structures

H. Shigesawa, M. Tsuji and K. Takiyama. "Microwave Network Representation of Discontinuity in Open Dielectric Waveguides and its Applications to Periodic Structures." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 623-626.

A network approach is proposed for analyzing the interaction of discontinuities in open dielectric waveguides by taking account of the continuous spectrum accurately. This approach develops an unprecedented method to investigate the effect of finite length of periodic structures on their transmission characteristics. This paper discusses this effect on the radiation patterns when a finite periodic structure is operated in the leaky wave region, while in a different regime of operation, we present a new and completely theoretical accurate procedure for the design of grating filters on a dielectric image waveguide, demonstrating successful experiments.

[Click on title for a complete paper.](#)



Abstracts

Scattering of Surface Waves by Nonuniform Waveguides

S.T. Peng, S.J. Xu and F.K. Schwering. "Scattering of Surface Waves by Nonuniform Waveguides." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 627-630.

We present here an analysis of a class of nonuniform dielectric waveguides by the method of staircase approximation. Numerical data are obtained to develop guidelines for the design of transition dielectric waveguides for integrated optical or millimeter-wave applications.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Finite Element Analysis Applied to Gyroelectrically Loaded Waveguiding Structures

N. Mohsenian, T.J. Delph and D.M. Bolle. "Finite Element Analysis Applied to Gyroelectrically Loaded Waveguiding Structures." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 631-634.

A finite element formulation has been used to obtain the dispersion relation for a single dielectric-semiconductor interface bounded by two perfectly conducting planes. This system represents a suitable canonical problem for the design of non-reciprocal devices such as circulators, isolators, and phase shifters. The finite element solution for the dispersive behavior was compared against the exact solution for the lowest real branches, and excellent agreement was found between the two.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

On the Question of the Dyadic Operation of Dyadic Green's Functions at the Source Region

P. Shenggen. "On the Question of the Dyadic Operation of Dyadic Green's Functions at the Source Region." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 635-636.

A systematic and novel approach is developed for the dyadic operation of dyadic Green's functions (DGF). The complete forms of the dyadic operation of the DGF for cylindrical waveguides are given. Ambiguities associated with the dyadic operation in the literature are clarified and the errors are redressed.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

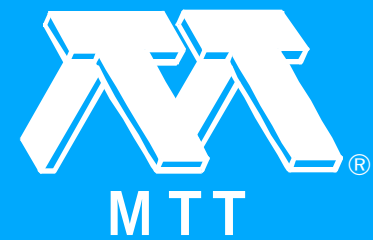
[Click on title for a complete paper.](#)



Abstracts

Session Z -- Microwave Measurements

"Session Z -- Microwave Measurements." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 637-637.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

An Improved Method of Mixer Noise Figure Measurement As Applied to Beam Lead Schottky Diodes at 94 GHz.

F. Azan, P. Boireau and J. Lacombe. "An Improved Method of Mixer Noise Figure Measurement As Applied to Beam Lead Schottky Diodes at 94 GHz.." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 639-642.

We present here an improved method of determining the intrinsic SSB mixer noise figure from noise measurements in single and "imperfect" balanced configurations. We describe the experimental set-up as applied to beam-lead Schottky diodes at 94GHz, and give results of NF, suppression factor and LO noise level.



IEEE

[Contents](#)

[Publications](#)

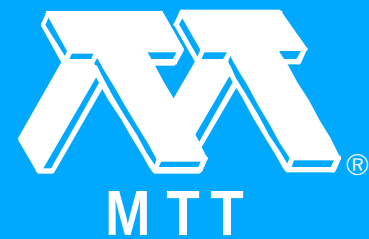
[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Quasi-Optical Slot Ring Mixer Noise Figure Measurements

K.D. Stephan and G. Perks. "Quasi-Optical Slot Ring Mixer Noise Figure Measurements." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 643-644.

Noise-figure measurements of an X-band slot-ring mixer using quasi-optical coupling of LO and RF energy are described. The mixer noise figure varies from 5.5 to 9 dB over the IF band, and extension of this design to millimeter wavelengths should be straight-forward.

[Click on title for a complete paper.](#)



Abstracts

Dynamic Measurements of Complex Permittivity and Temperature During Microwave Heating

M.R. Ollivon. "Dynamic Measurements of Complex Permittivity and Temperature During Microwave Heating." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 645-646.

A simple, fast and fully automated method for the measurement of complex permittivities and temperature of solid or liquid samples heated by microwave absorption at 2.43 GHz, using the small perturbation technique, is described. First results are discussed.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Measurement of TDC in Engine by Microwave Technique (1985 [MWSYM])

T. Yamanaka, M. Esaki and M. Kinoshita. "Measurement of TDC in Engine by Microwave Technique (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 647-650.

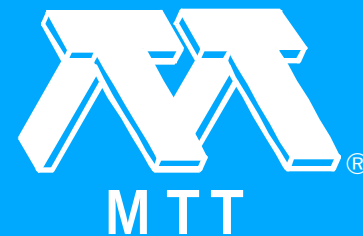
A microwave technique for determining the top dead center (TDC) of engine has been developed. Factors affecting systematic errors were investigated experimentally using high resolution pulses (0.015°) and a uniquely designed probe. Consideration is made for cycle change of the cylinder wall temperature. The main factors are attributable to the thermal expansion of the cylinder and the cylinder pressure change. Under well defined engine conditions, accuracy of $\pm 0.1^\circ$ is possible for TDC measurement.

Abstracts

A Novel Cavity Resonator Measurement Method for Leaky Waveguides

A.A. Oliner and J.-S. Myung. "A Novel Cavity Resonator Measurement Method for Leaky Waveguides." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 651-654.

In this novel cavity resonator method for measuring the phase and leakage constants of leaky waveguides, power is sent in transversely, in a reversal of the leakage process itself. The cavity therefore requires no coupling holes, and the method is accurate and convenient to use, as shown in an illustrative example.



IEEE

Contents

Publications

Issues

Papers

Authors

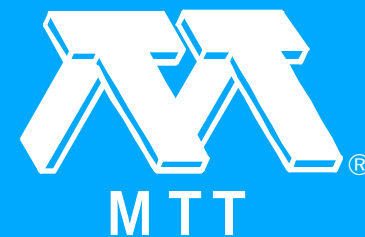
Click on title for a complete paper.



Abstracts

Session AA -- Solid-State Device Applications (Non-FET)

"Session AA -- Solid-State Device Applications (Non-FET)." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 655-655.



IEEE

[Contents](#)

[Publications](#)

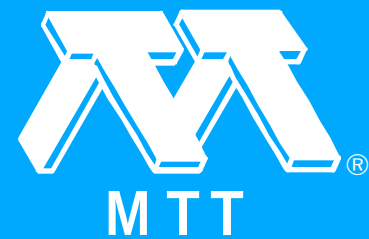
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Linear Analog Hyperabrupt Varactor Diode Phase Shifters

E.C. Niehenke, V.V. DiMarco and A. Friedberg. "Linear Analog Hyperabrupt Varactor Diode Phase Shifters." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 657-660.

Design and performance of analog phase shifters using hyperabrupt varactors with linear phase versus voltage is presented. Phase linearity of 22 degrees per volt ± 8 percent was achieved for a 100 degree S-band device with a phase deviation of 1 degree from linearity. At X-band, linear phase control of 270 degrees was achieved. The selection of the varactor diode capacitance versus voltage and matching circuits for linear performance are presented.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Reflective Diode Linearize for Spacecraft Applications

A. Katz, R. Sudarsanam and D. Aubert. "A Reflective Diode Linearize for Spacecraft Applications." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 661-664.

There is an increasing interest in the use of predistortion linearizes to improve Carrier-to-Intermodulation ratios (C/I) of spacecraft power amplifiers. This paper describes a Ku band reflective diode linearizer designed to provide high reliability and to function over the changing environmental conditions required for space applications. This linearize is electrically tunable to allow its characteristics to be easily trimmed to compensate for the different non-linearities of a variety of amplifiers. When used in conjunction with a TWTA, it is capable of providing a two-tone C/I of 30 dB or an improvement of greater than 10 dB over the critical power back-off range from -3 to -8 dB. Both two and multi-tone C/I performance are reported and the performance degradations of aging, temperature and bandwidth are discussed.

[Click on title for a complete paper.](#)





IEEE

Contents

Publications

Issues

Papers

Authors

An Experimental Linearized Power Upconverter for SSB Signals

E.H. Loser. "An Experimental Linearized Power Upconverter for SSB Signals." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 665-668.

An experimental 3-band varactor diode power upconverter for SSB-AM communications has been linearized by predistortion at IF. Several types of simple predistortion linearizes have been tested and compared. Linearization factors from 10 to 22 dB have been achieved within a frequency band of 40 MHz or a dynamic range of 10 to 20 dB.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Simple Integrated Matching Element for SIS Quasiparticle Mixers

A.V. Raisanen, W.R. McGrath, P.L. Richards and F.L. Lloyd. "A Simple Integrated Matching Element for SIS Quasiparticle Mixers." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 669-672.

An integrated superconducting microstrip is shown to be a convenient, flexible, and well characterized matching element for a superconductor-insulator-superconductor (SIS) heterodyne mixer. An open-circuited microstrip stub that reflects a parallel inductance across the junction is used to broaden the bandwidth of the RF match of a 30-40 GHz SIS mixer. Measurements with Pb-alloy junctions in a full-height waveguide mixer with fixed mechanical tuning give an instantaneous bandwidth of 10 to 15 percent with a mixer noise temperature $T_{\text{sub M}}/(\text{DSB})=10\pm 2.5$ K.

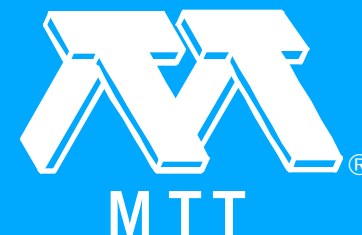
[Click on title for a complete paper.](#)



Abstracts

Session BB -- Microwave Integrated Circuit Techniques

"Session BB -- Microwave Integrated Circuit Techniques." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 673-673.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

An Experimental Investigation of Microstrip Properties on Soft Substrates from 2 to 40 GHz

R.R. Romanofsky, K.B. Bhasin, G.E. Ponchak, A.N. Downey and D.J. Connolly. "An Experimental Investigation of Microstrip Properties on Soft Substrates from 2 to 40 GHz." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 675-678.

Dispersion and loss characteristics of microstrip lines on 10 mil and 31 mil electrodeposited and electroless copper clad-Teflon substrates were experimentally obtained from 2-40 GHz. The roles of surface roughness and radiation in total loss are examined.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Modelling and Measurement of Microstrip Transmission Line Structures

P.R. Shepherd and P. Daly. "Modelling and Measurement of Microstrip Transmission Line Structures." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 679-682.

New techniques have been employed in both the modelling and measurement of microstrip transmission line structures. The modelling employs a dual potential approach using finite element analysis to derive exact bounds to the microstrip characteristics. The measurement uses an "on-chip" calibration method with microstrip calibration pieces.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A New Slotline-Microstrip Frequency Halver

G.A. Kalivas and R.G. Harrison. "A New Slotline-Microstrip Frequency Halver." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 683-686.

A novel frequency-halving structure employs a matched pair of varactors in a configuration composed of both slotline and microstrip transmission-line sections. A planar 4th-order Marchand balun simultaneously provides both output matching and a balance-to-unbalance transition.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Microstrip Mixer Design with Image Cancellation and Low Conversion Loss

C. Ansorge. "Microstrip Mixer Design with Image Cancellation and Low Conversion Loss." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 687-688.

A new layout of a microstrip mixer circuit for low intermediate frequencies will be described which uses a dielectric resonator in a simple configuration. It shows low conversion loss (3.2 dB at 7 GHz) due to image cancellation and a low noise figure.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Small Size VCO Module for 900 MHz Band Using Coupled Microstrip-Coplanar Lines

K. Kawamoto, K. Hirota, N. Niizaki, Y. Fujiwara and K. Ueki. "Small Size VCO Module for 900 MHz Band Using Coupled Microstrip-Coplanar Lines." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 689-692.

A hybrid mode analysis of the coupled microstrip-coplanar lines was done, and the transmission and reflection characteristics at each port of the lines were calculated. Applying the coupling characteristics of these lines, a double-sided and miniaturized VCO was made.

Click on title for a complete paper.



Abstracts

Frequency Agile Circular Microstrip Antennas

G.-L. Lan and D.L. Sengupta. "Frequency Agile Circular Microstrip Antennas." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 693-695.

A method to control the operating frequency of circular microstrip antennas has been investigated theoretically and experimentally. The method consists in the placement of shorting posts at appropriate locations within the input region of the antenna. The analytic and measured results have been compared to prove the validity of the models developed.



IEEE

Contents

Publications

Issues

Papers

Authors

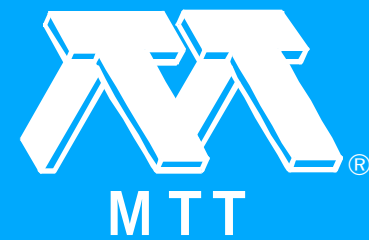
Click on title for a complete paper.



Abstracts

Session CC -- Computer-Aided Design Techniques for Linear Circuits

"Session CC -- Computer-Aided Design Techniques for Linear Circuits." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 697-697.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A CAD Solution to the Generalized Problem of Noise Figure Calculation

V. Rizzoli and A. Lipparini. "A CAD Solution to the Generalized Problem of Noise Figure Calculation." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 699-702.

The paper describes a new algorithm for computing the noise figure of a linear two-port network of arbitrary topology. The discussion is oriented towards CAD applications, making the approach easy to be implemented into any existing general-purpose analysis and/or design program. A few sample results are compared with measured data drawn from the technical literature.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

A SPICE Model for Multiple Coupled Microstrips and Other Transmission Lines (1985 [MWSYM])

V.K. Tripathi and J.B. Rettig. "A SPICE Model for Multiple Coupled Microstrips and Other Transmission Lines (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 703-706.

A general multiple coupled line model compatible with standard CAD programs, such as SPICE, is presented. It is shown that the model can be used to help analyze and design coupled line (e.g., microstrip) circuits with linear, as well as non-linear/ time varying terminations, and to help study the pulse propagation characteristics in high speed digital and optical circuits.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)



Abstracts

MIDAS a New Microwave/RF CAD Program

D. Rhodes and S. Perlow. "MIDAS a New Microwave/RF CAD Program." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 707-710.

A new software CAD tool entitled MIDAS has been developed for microwave RF network design. MIDAS allows use of algebraic expressions to define and value necessary for network analysis. In addition, any expression may be frequency-dependent. MIDAS is fully integrated with PLANA, a network measurement program, allowing PLANA networks to be sub-networks of MIDAS. New component models may be entirely expressed in MIDAS language, alleviating the need to program in other languages.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.

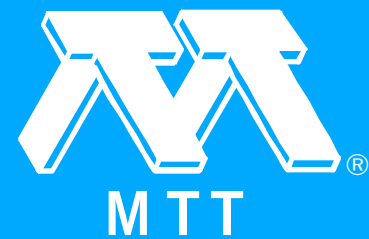


Abstracts

A Novel CAD Tool and Concept Compatible with the Requirements of Multilayer GaAs MMIC Technology

R.H. Jansen. "A Novel CAD Tool and Concept Compatible with the Requirements of Multilayer GaAs MMIC Technology." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 711-714.

An efficient field-theoretical tool applicable to a broad class of passive circuit structures has been developed as a CAD kernel component for multilayer GaAs MMIC design. It is based on a new, enhanced spectral domain technique (ESDT) which results in a reduction of CPU-times by one or two orders of magnitude compared to the conventional spectral domain approach. The field-theoretical package can be used, therefore, to generate multidimensional lookup tables in the frame of a general purpose linear CAD program. Together with the associated CAD concept and interpolation technique, the new tool constitutes a shift away from analytical models obtaining improvements with respect to generality, reliability of prediction, accuracy and even efficiency.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Addendum (1985 [MWSYM])

"Addendum (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 715-715.



MTT



IEEE

[Contents](#)

[Publications](#)

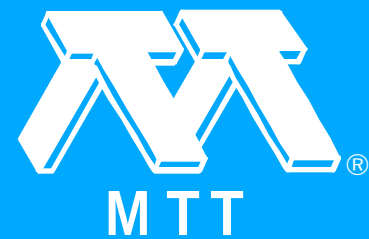
[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

The Design and Performance of a Double Balanced Mixer Using FETs

S.J. Nightingale, M.A.G. Upton and N.V. Dandekar. "The Design and Performance of a Double Balanced Mixer Using FETs." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 717-720.

A new theoretical approach has been developed to analyze and design a double balanced mixer using FETs. This approach also enables single ended and single balanced mixer designs to be analyzed. Theoretical and practical results will be presented for a wideband (6-18 GHz) double balanced mixer for EW applications.

Click on title for a complete paper.



Abstracts

A Superlinearly Convergent Minimax Algorithm for Microwave Circuit Design (1985 [MWSYM])

J.W. Bandler, W. Kellermann and K. Madsen. "A Superlinearly Convergent Minimax Algorithm for Microwave Circuit Design (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 721-724.

A new and highly efficient algorithm for nonlinear minimax optimization is presented. A novel approach to worst-case design of microwave circuits using the present algorithm is proposed. The algorithm is proved through practical design of multiplexers, involving up to 75 design variables.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

A Broadband Homodyne Network Analyser with Binary Phase Modulation

U. Gartner and B. Schiek. "A Broadband Homodyne Network Analyser with Binary Phase Modulation." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 725-728.

An automatic homodyne network analyser system using cascaded binary phase shifters is described which operates over the full X-band with a high dynamic range due to an auxiliary modulation and linear detection technique. A general analytic solution of the complex, nonlinear system equations is given which allows the use of a coupled modulator/phase shifter structure. Measurement results are reported.

Click on title for a complete paper.



Abstracts

Index of Authors (1985 [MWSYM])

"Index of Authors (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 729-731.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

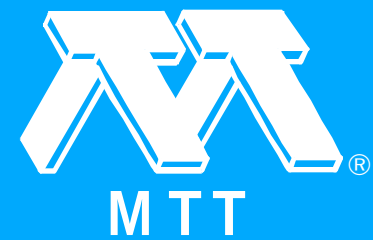
Click on title for a complete paper.



Abstracts

Exhibition Guide (1985 [MWSYM])

"Exhibition Guide (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): 733-743.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (1985 [MWSYM])

"Back Cover (1985 [MWSYM])." 1985 MTT-S International Microwave Symposium Digest 85.1 (1985 [MWSYM]): b1-b1.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (1985 [MCS])

"Front Cover (1985 [MCS])." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): f1-f1.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

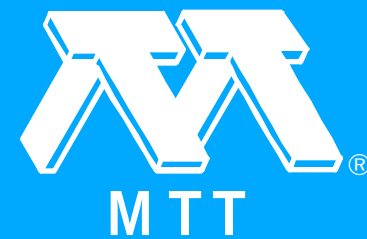
Click on title for a complete paper.



Abstracts

Copyright (1985 [MCS])

"Copyright (1985 [MCS])." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): i-ii.



- Contents
- Publications
- Issues
- Papers
- Authors

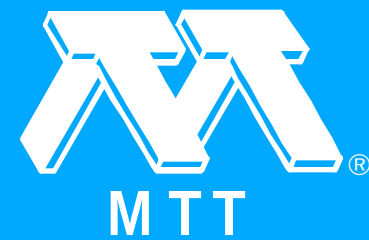
Click on title for a complete paper.



Abstracts

Message from the General Chairman (1985 [MCS])

"Message from the General Chairman (1985 [MCS])." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): iii-iii.



- Contents
- Publications
- Issues
- Papers
- Authors

Click on title for a complete paper.



Abstracts

Committees (1985 [MCS])

"Committees (1985 [MCS])." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): iv-iv.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

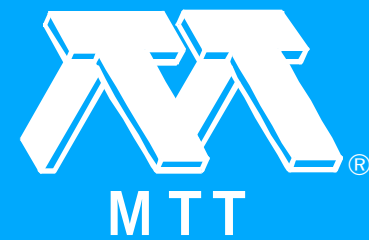
Click on title for a complete paper.



Abstracts

Message from the Technical Program Chairman (1985 [MCS])

"Message from the Technical Program Chairman (1985 [MCS])." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): v-v.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Committee Photographs (1985 [MCS])

"Committee Photographs (1985 [MCS])." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): vi-vii.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

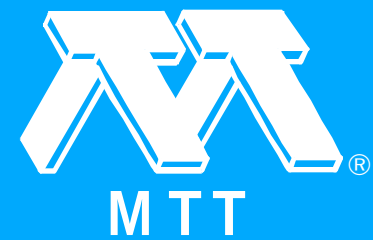
Click on title for a complete paper.



Abstracts

Table of Contents (1985 [MCS])

"Table of Contents (1985 [MCS])." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): viii-ix.



Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Index of Authors (1985 [MCS])

"Index of Authors (1985 [MCS])." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): x-x.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Monolithic GaAs Dual-Gate FET Variable Power Amplifier Module

P. Saunier, H.Q. Tserng, B. Kim and G.H. Westphal. "Monolithic GaAs Dual-Gate FET Variable Power Amplifier Module." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): 1-3.

The design, fabrication, and microwave performance of a monolithic four-stage GaAs dual-gate FET amplifier are described. A linear gain of 23 dB with 250 mW output power has been measured at 18 GHz. The highest power obtained was 500 mW with 21 dB gain at the same frequency. By varying the second gate bias voltage, a dynamic gain control range of more than 60 dB has been observed. The chip size is 6.45mm x 2.1mm x 0.1mm.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

30 GHz Multi-Bit Monolithic Phase Shifters

P. Bauhahn, C. Butter, V. Sokolov and A. Contolatis. "30 GHz Multi-Bit Monolithic Phase Shifters." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): 4-7.

The design and performance of GaAs monolithic 3-bit and 4/5 bit switched line phase shifters for Ka-band operation are discussed. Both conventional recessed and self-aligned gate (SAG) switching FET designs are presented. The insertion loss was as low as 2dB per bit for the recessed gate and 2.9 dB per bit with the SAG gate devices for the particular doping levels used.

[Click on title for a complete paper.](#)



C-Band 6-Bit GaAs Monolithic Phase Shifter (1985 [MCS])

C. Andricos, I. Bahl and E. Griffin. "C-Band 6-Bit GaAs Monolithic Phase Shifter (1985 [MCS])." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): 8-9.

The design, fabrication and test result of a GaAs monolithic 6-bit digital controlled phase shifter for use in the 5 to 6 GHz region are described. The chip includes an analog control bit, (0-11°) for phase correction in a closed loop configuration. Less than ± 1 -degree phase error was achieved on the 11.25°, 22.5°- and 45°-bits, with ± 6 -degrees on the 90-degree and 180-degree bits. Over 5 to 6 GHz the return loss was > 15 dB and flatness ± 1 dB.

Abstracts

A Novel MMIC, X-Band, Phase Shifter

K. Wilson, J.M.C. Nicholas and G. McDermott. "A Novel MMIC, X-Band, Phase Shifter." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): 10-14.

A novel, single chip, monolithic, four bit phase shifter is described. The first sample to be measured exhibited full 360° coverage at the design frequency, operation throughout X band, good match and an insertion loss of 5-8 dB.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)



Nonlinear Slow-Wave Propagation on Periodic Schottky Coplanar Lines

D. Jager. "Nonlinear Slow-Wave Propagation on Periodic Schottky Coplanar Lines." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): 15-17.

Nonlinear wave propagation along periodic Schottky slow-wave structures with voltage dependent capacitance is analytically described by simple wave equations. As an exemplary result of the theory, a special structure is proposed which can be used for traveling-wave second harmonic generation or parametric amplification with high efficiency. This is experimentally verified on a model line.

[Click on title for a complete paper.](#)

Abstracts

A 3-Bit GaAs Analog-to-Digital Converter

M.R. Namordi, M.R. O'Connell and P.F. Newman. "A 3-Bit GaAs Analog-to-Digital Converter." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): 18-21.

A 3-bit GaAs analog-to-digital converter (ADC) using a parallel architecture has been designed and fabricated. A latched regenerative comparator design approach is used. Depletion mode MESFET technology was used for circuit implementation. Successful functionality tests of the comparator and the ADC have been completed on the first circuits. These show that comparator offset uniformity needs to be improved. High-speed tests will be underway shortly with results to be presented at the conference.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

A 2 Gb/s Throughput GaAs Digital Time Switch LSI Using LSCFL (1985 [MCS])

T. Takada, Y. Shimazu, K. Yamasaki, M. Togashi, K. Hoshikawa and M. Idda. "A 2 Gb/s Throughput GaAs Digital Time Switch LSI Using LSCFL (1985 [MCS])." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): 22-26.

A GaAs four channel digital time switch having a 2.0 Gb/s throughput is developed. Low Power Source Coupled FET Logic (LSCFL) and 0.55 μm gate length buried p-layer SAINT-FETs are applied. The switch includes 1176 devices (FETs, diodes, and resistors). The 75 % fabrication yield is attained using dislocation free wafers.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

A 2-W Ku-Band Monolithic GaAs FET Amplifier

H.M. Macksey, H.Q. Tserng and H.D. Shih. "A 2-W Ku-Band Monolithic GaAs FET Amplifier." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): 27-30.

A monolithic three-stage Ku-band GaAs FET power amplifier has been designed, fabricated. Epitaxial layers are grown by molecular beam epitaxy FETs have a source overlay geometry with the n+ ledge channel structure. The amplifiers have up to 2 W output power at 16.5 GHz with 12 dB gain, 20% efficiency.

Click on title for a complete paper.



A Ka-Band GaAs Power MMIC

M. Kobiki, Y. Mitsui, Y. Sasaki, M. Komaru, K. Seino and T. Takagi. "A Ka-Band GaAs Power MMIC." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): 31-34.

A Ka-band GaAs power MMIC with source island via-hole PHS structure and monolithic power divider/combiner circuits was developed and reliability study was performed. This source island via-hole technique successfully reduced both thermal resistance and source parasitic inductance of the MMIC. The 3200 μm MMIC gave power output at 1dB gain compression of 1.1 W, linear power gain of 4.0 dB and power added efficiency of 10.8 % at 28 GHz. No failure was observed in the temperature cycling, the DC running and the high temperature storage tests.



High Power Distributed Amplifier Using MBE Synthesized Material

B. Kim, H.Q. Tserng and H.D. Shih. "High Power Distributed Amplifier Using MBE Synthesized Material." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): 35-37.

The main limitations of the output power of a distributed amplifier are the gate line loss and the gate-to-drain breakdown voltage. A novel circuit concept to reduce the gate loss using series capacitors on the gate feeding lines has been implemented. The device breakdown voltage has been improved by using an MBE grown material with two layers (low doped gate buffer layer and usual active layer). A monolithic GaAs distributed amplifier using $6 \times 300 \mu\text{m}$ FETs has achieved an output power of 800 mW with 4dB gain. The power added efficiency was about 15%.

Abstracts



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A Miniaturized 6.5 - 16 GHz Monolithic Power Amplifier Module

S.D. Bingham, S.D. McCarter and A.M. Pavio. "A Miniaturized 6.5 - 16 GHz Monolithic Power Amplifier Module." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): 38-41.

A miniaturized 6.5 - 16 GHz power amplifier module, which includes T/R switch, dual polarity power supply, switch driver and gate functions was designed using two types of broadband MMIC amplifiers. The two cascade designs were a 900 μm - 1200 μm FET amplifier and a 300 μm - 300 μm feedback amplifier which were used to provide large and small gain functions respectively. The module exhibits 35 dB of gain, 1 watt power output and 55 dB T/R switch isolation.

[Click on title for a complete paper.](#)



Abstracts

Design and Process Sensitivity of a Two Stage 6-18 GHz Monolithic Feedback Amplifier (1985 [MCS])

J.M. Beall, S.R. Nelson and R.E. Williams. "Design and Process Sensitivity of a Two Stage 6-18 GHz Monolithic Feedback Amplifier (1985 [MCS])." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): 42-45.

The design of a 6-18 GHz, two stage monolithic feedback amplifier is discussed, and the critical process and FET parameters are identified. Variations in circuit performance experienced during a pilot production run are correlated with the predictions of a sensitivity analysis. The critical parameters are substrate height, GaAs sheet resistivity, gate-source capacitance, transconductance, and drain-source resistance. Measured results show the importance of substrate height and sheet resistivity in the control of gain flatness.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Production Technology Development for High Yield, High Performance X-Band Monolithic Power and Low Noise Amplifiers

*C.D. Chang, S.K. Wang, L.C.T. Liu, M. Siracusa, H. Yamasaki and J.M. Schellenberg.
"Production Technology Development for High Yield, High Performance X-Band Monolithic Power and Low Noise Amplifiers." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): 46-49.*

A production technology for high yield and high performance MMIC's has been developed. Two stage X-band power amplifier and low noise amplifiers were used as test vehicles in this producibility study. The power amplifier chips have consistently demonstrated a 1.5 watt output power with 9 dB gain and 20% power added efficiency. The low noise amplifier chips have achieved a reproducible performance of less than 3 dB noise figure with 20 dB gain. Producibility improvement of MMIC chip fabrication has achieved an average yield well in excess of 10%.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Power Saturation Characteristics of GaAs/AlGaAs High Electron Mobility Transistors

A.K. Gupta, R.T. Chen, E.A. Sovero and J.A. Higgins. "Power Saturation Characteristics of GaAs/AlGaAs High Electron Mobility Transistors." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): 50-53.

High electron mobility transistors (HEMTs) employing both single and quadruple GaAs/AlGaAs heterojunctions have been fabricated and tested for power at 10 GHz. The multiple heterojunction layer, with a two-dimensional electron gas (2-DEG) sheet carrier density of $3.2 \times 10^{12} \text{ cm}^{-2}$ significantly higher current capability (as required for microwave power devices) than the conventional structure where the 2-DEG density is limited to $\leq 10^{12} \text{ cm}^{-2}$. HEMTs with gate dimensions of $0.5 \mu\text{m} \times 200 \mu\text{m}$ were mounted in X-band FET packages for rf evaluation. The QHJ HEMTs yielded a saturated power of 21 dBm (0.63 W/mm), small signal gain of 14.5 dB, power added efficiency of 39%, and third order IMD product of -19 dBc at saturation. The corresponding figures for the SHJ HEMTs were 18 dBm (0.32 W/mm), 15 dB, 43% and -14 dBc, respectively. These are the highest power densities yet reported for a HEMT.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

X-Band Monolithic Series Feedback LNA (1985 [MCS])

R.E. Lehmann and D.D. Heston. "X-Band Monolithic Series Feedback LNA (1985 [MCS])." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): 54-57.

An X-band monolithic three-stage low noise amplifier (LNA) employing series feedback has demonstrated 1.8 dB noise figure with 30.0 dB gain and an input VSWR less than 1.2:1 at 10 GHz. The key to this design is using monolithic technology to obtain an exactly repeatable series feedback inductance to achieve a simultaneous noise match and input VSWR match.

[Click on title for a complete paper.](#)



0.5-2.6GHz Si-Monolithic Wideband Amplifier IC (1985 [MCS])

T.-a. Nakata, S.-I. Miyazaki and K. Shirotori. "0.5-2.6GHz Si-Monolithic Wideband Amplifier IC (1985 [MCS])." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): 58-62.

Using Si, an excellent performances, 0.5-2.6GHz bandwidth and 23dB gain, monolithic wideband amplifier IC has been developed, of which input and output impedances are matched to 50 Omega. The $f_{sub T}/f_T=10$ GHz DNP-II manufacturing process with optimization for microwave analog ICs has been developed for this IC. And a single-ended three stages amplifier circuit with local feedback loops is adopted for this monolithic circuit.





IEEE

Contents

Publications

Issues

Papers

Authors

A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications (1985 [MCS])

K. Kanazawa, M. Kazumura, S. Nambu, G. Kano and I. Teramoto. "A GaAs Double-Balanced Dual-Gate FET Mixer IC for UHF Receiver Front-End Applications (1985 [MCS])." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): 63-66.

A double-balanced dual-gate FET mixer has been developed aiming at the application to a front-end circuit of the UHF receivers. An experimental IC has exhibited a 6 - 8 dB conversion gain without matching over a wide frequency range from 100 MHz to 800 MHz with the well suppressed RF/LO feedthrough by more than 20 dB and third-order intermodulation product of -60 dB.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Air Bridge Gate FET for GaAs Monolithic Circuits (1985 [MCS])

E.M. Bastida and G.P. Donzelli. "Air Bridge Gate FET for GaAs Monolithic Circuits (1985 [MCS])." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): 66-70.

The paper describes a novel technology for producing micron and submicron gate FET devices, with improved gain and noise performances. The technique is particularly attractive for the production of very low noise devices and is very useful in monolithic circuit fabrication. In the production of high-power devices the technique has the advantage of not requiring complicated interdigitated structures. A noise figure improvement of 0.4 dB at 10 GHz was achieved using this technology. As an example of the developed technique, a two-stage monolithic preamplifier (2.8 dB N.F., 15 dB gain between 11.7 and 12.5 GHz) is described.

[Click on title for a complete paper.](#)



A W-Band Monolithic Balanced Mixer (1985 [MCS])

L.T. Yuan and P.G. Asher. "A W-Band Monolithic Balanced Mixer (1985 [MCS])." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): 71-73.

A fully monolithic balanced mixer fabricated on a GaAs substrate for operation at W-Band (75 to 110 GHz) is described. The overall size of the mixer chip is 0.075" x 0.075" x 0.004". A minimum conversion loss of 4.6 dB has been measured at 91.1 GHz for narrow band operation. For broadband operation, a conversion loss of less than 8 dB has been achieved over an RF range of 73.6 to 83.6 GHz with a corresponding IF range of 8 to 18 GHz.



Abstracts

A 30 GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element (1985 [MCS])

S.J. Nightingale, M.A.G. Upton, U.K. Mishra, S.C. Palmateer and P.M. Smith. "A 30 GHz Monolithic Single Balanced Mixer with Integrated Dipole Receiving Element (1985 [MCS])." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): 74-77.

A 30 GHz monolithic low noise balanced mixer has been developed using an integrated 'bow tie' antenna/WG transition and low parasitic Mott diodes. The diodes and mixer circuit were developed on General Electric grown MBE material and were fabricated using a plated air bridge technology. Measurements on the diode at DC and RF showed that the zero bias junction capacitance was 0.025 pF and the series resistance was 10 ohms. A conversion loss of 6 dB was measured at 30 GHz with a 1 GHz IF.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Dual Function Mixer Circuit for Millimeter Wave Transceiver Applications (1985 [MCS])

A. Chu, W.E. Courtney, L.J. Mahoney, M.J. Manfra and A.R. Calawa. "Dual Function Mixer Circuit for Millimeter Wave Transceiver Applications (1985 [MCS])." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): 78-81.

A monolithic mixer circuit capable of performing either a receiver or transmitter function has been fabricated. The mode of operation is determined by applying either forward bias or reverse bias to a pair of mixer diodes. The circuit integrates Schottky-barrier diodes, bias lines, $Ta_{\text{sub } 2}/O_{\text{sub } 5}$ blocking and by-pass capacitors, a radial line stub filter and a microstrip branch-line coupler. For the receiver function the unit exhibits a conversion loss of 6.5 ± 0.5 dB from 34 to 36 GHz. For the transmitter function the circuit directs the signal from the local oscillator port to the antenna port with an insertion loss of approximately 2 dB at 33.5 GHz over a bandwidth of 1 GHz.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

High Efficiency Millimeter Wave Monolithic IMPATT Oscillators (1985 [MCS])

B. Bayraktaroglu and H.D. Shih. "High Efficiency Millimeter Wave Monolithic IMPATT Oscillators (1985 [MCS])." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): 82-85.

This paper describes methods of integrating GaAs IMPATT diodes and impedance matching circuits on the same chip. Lumped element as well as distributed element matching circuits were used in two separate approaches. The common technology to both approaches is the use of thick layers of polyimide that form the dielectric medium for passive circuit elements. MBE grown double-drift GaAs IMPATT structures with AlGaAs etch stop layers were used to fabricate monolithic oscillators for the 30-90 GHz applications. The best overall performance was achieved at 32.5 GHz with 1.25.W cw output power and 27% efficiency.

[Click on title for a complete paper.](#)



Abstracts

Back Cover (1985 [MCS])

"Back Cover (1985 [MCS])." 1985 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 85.1 (1985 [MCS]): b1-b1.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Front Cover (1986 [MCS])

"Front Cover (1986 [MCS])." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): f1-f1.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

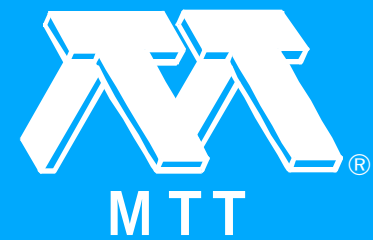
Click on title for a complete paper.



Abstracts

Copyright (1986 [MCS])

"Copyright (1986 [MCS])." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): i-ii.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

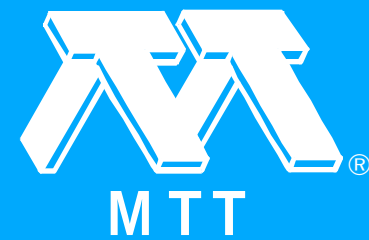
Click on title for a complete paper.



Abstracts

Message from the General Chairman (1986 [MCS])

"Message from the General Chairman (1986 [MCS])." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): iii-iii.



IEEE

Contents

Publications

Issues

Papers

Authors

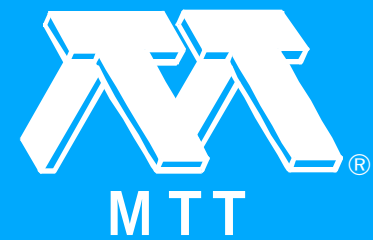
Click on title for a complete paper.



Abstracts

Committees (1986 [MCS])

"Committees (1986 [MCS])." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): iv-iv.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

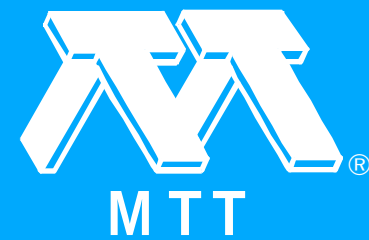
Click on title for a complete paper.



Abstracts

Message from the Technical Program Chairman (1986 [MCS])

"Message from the Technical Program Chairman (1986 [MCS])." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): v-v.



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Committee Photographs (1986 [MCS])

"Committee Photographs (1986 [MCS])." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): vi-viii.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

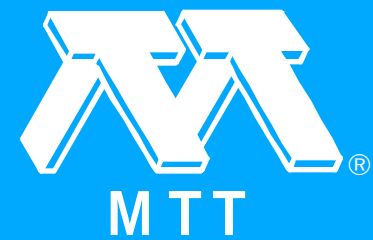
Click on title for a complete paper.



Abstracts

Table of Contents (1986 [MCS])

"Table of Contents (1986 [MCS])." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): ix-xi.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Microwave/Millimeter Wave Monolithic Integrated Circuits (MIMIC) Program (1986 [MCS])

E.D. Maynard, Jr.. "Microwave/Millimeter Wave Monolithic Integrated Circuits (MIMIC) Program (1986 [MCS])." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): 1-4.

The Microwave/Millimeter Wave Monolithic Initiative (M³I) was started by concerns in the smart munitions guidance and control community over the projected costs of millimeter wave seekers. A survey of monolithic analog integrated circuits was made by a DoD Working Group, consisting of personnel from OSD, Army, Navy, Air Force, DARPA and SDIO. The team visited 23 companies and several government facilities engaged in development of the technology.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

High Performance Monolithic Power Amplifier Using a Unique Ion Implantation Process (1986 [MCS])

S.K. Wang, K.G. Wang and C.D. Chang. "High Performance Monolithic Power Amplifier Using a Unique Ion Implantation Process (1986 [MCS])." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): 5-7.

State-of-the-art X-band power FETs and monolithic amplifiers have been fabricated by a high yield planar process using a unique double-peaked implant profile. A 1-mm FET has achieved 40 percent power added efficiency with 720 mW output power and 6.3 dB gain at 10 GHz. A two-stage monolithic amplifier has delivered 2.2 W output power at 9.5 GHz for a record 0.6 W/mm power density. The monolithic amplifier chips have also achieved 20 percent dc-yield and 5 percent uniformity in I_{DSS} and V_{PO} .



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A Low Cost, 3-7 GHz, 1/2 Watt MMIC GaAs Amplifier

S.B. Moghe and R. Genin. "A Low Cost, 3-7 GHz, 1/2 Watt MMIC GaAs Amplifier." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): 9-12.

A low cost, 3-7 GHz, 1/2 Watt MMIC GaAs amplifier has been successfully designed and tested. The amplifier features small chip size (1.2 mm sq.), high gain (12 ± 1.5 dB), high power added efficiency (20%), good RF yield (57%) and high tolerance to process variations. Packaged amplifiers were built with this chip for both the 2-6 GHz and the 5.9-6.4 GHz bands. Saturated output power of 25 dBm was achieved in the 2-6 GHz band, and 27 dBm in the 5.9-6.4 GHz band.



[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

A Power Distributed Amplifier Using Constant-R Networks

E.M. Chase and W. Kennan. "A Power Distributed Amplifier Using Constant-R Networks." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): 13-17.

This paper describes the design, implementation and performance of a power distributed amplifier with a minimum gain of 5dB, input and output VSWR less than 1.5:1, and greater than 22dBm of 1dB compressed power over the 2 to 18GHz band. This amplifier makes use of several circuit design advances to improve both bandwidth and power capability and measures 1.0mm by 1.4mm (1.4 sq. mm).



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A Stable 2-26.5 GHz Two-Stage Dual-Gate Distributed MMIC Amplifier

J. Orr. "A Stable 2-26.5 GHz Two-Stage Dual-Gate Distributed MMIC Amplifier." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): 19-22.

A 2 to 26.5 GHz monolithic distributed amplifier with 18.75 ± 1.25 dB of gain, better than 12 dB return losses at input and output, and greater than 40 dB of isolation has been realized on a single 3.02mm x 1.62mm chip.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A High Gain, Monolithic Distributed Amplifier Using Cascode Active Elements (1986 [MCS])

R. LaRue, S. Bandy and G. Zdasiuk. "A High Gain, Monolithic Distributed Amplifier Using Cascode Active Elements (1986 [MCS])." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): 23-26.

A novel, monolithic, distributed amplifier has achieved a record gain of over 10 dB from 2-18 GHz. The design utilizes five quarter-micron gate length, cascode connected, FETs on epitaxial material . Circuit simulations predict over 10 dB gain from 2-30 GHz for an amplifier with seven active elements. Novel features of the design, fabrication and testing are discussed.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

A High Performance 2-18.5 GHz Distributed Amplifier, Theory and Experiment (1986 [MCS])

T. McKay and R. Williams. "A High Performance 2-18.5 GHz Distributed Amplifier, Theory and Experiment (1986 [MCS])." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): 27-31.

A high performance 2-18.5 GHz monolithic GaAs MESFET distributed amplifier has been designed and fabricated. The m-derived drain line design is analyzed theoretically and a closed form gain equation is presented. Theoretical predictions are compared to measured results and more complicated CAD models. The measured small signal gain is typically $8.0 \pm 0.25\text{dB}$ from 2-18.5 GHz at standard bias. Typical input return loss is greater than 12dB and the output return loss is greater than 15dB. The saturated output power is in excess of 23dBm over most of the band and the noise figure is less than 7.5dB.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Optical Technology for Microwave Applications

H.-w. Yen. "Optical Technology for Microwave Applications." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): 33-34.

Phased array radar, communication, telemetry, and electronic warfare systems frequently require the transmission and processing of gigahertz bandwidth signals. In airborne and space applications, where low weight and immunity from electromagnetic interference are desirable, low loss optical fibers with band-width distance products as great as 100 GHz · km are an ideal vehicle for the transmission of these broadband microwave signals.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

A High Speed GaAs Monolithic Transimpedance Amplifier

I. Bahl, E. Griffin, W. Powell and C. Ring. "A High Speed GaAs Monolithic Transimpedance Amplifier." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): 35-38.

This paper describes the design method and test results for a novel transimpedance amplifier suitable for very high speed optical communications systems. The amplifier chip is developed for four different bit rates: 188, 565, 1130, and 1500 Mb/s with optical sensitivities -38.5, -33, -30, and -28 dBm, respectively. The amplifier provides 2 V peak to peak output and 30 dB dynamic range.

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Monolithic Optoelectronic Receiver for Gbit Operation

S. Ray and M.P. Walton. "Monolithic Optoelectronic Receiver for Gbit Operation." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): 39-40.

A monolithic optoelectronic receiver chip was designed and fabricated for operation at 1.0 Gbit/sec data transmission rate. The major components of the receiver chip are a fast photodiode, a preamplifier, and a 1:4 demultiplexer circuit fabricated on semi-insulating GaAs substrate. Optical/electrical functionality has been demonstrated at wafer level.

Click on title for a complete paper.

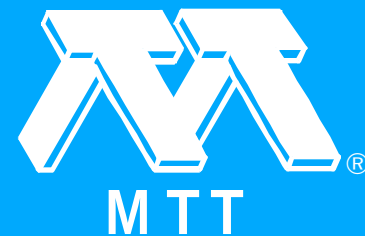


Abstracts

A 30 GHz Monolithic Receiver

L.C.T. Liu, C.S. Liu, J.R. Kessler and S.K. Wang. "A 30 GHz Monolithic Receiver." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): 41-44.

Several monolithic integrated circuits have been developed to make a 30 GHz receiver. The LNA chip has 7 dB noise figure with 14 dB gain. The IF amplifier has 13 dB gain with 30 dB control range. The mixer and phase shifter have conversion loss and insertion loss of 10.5 dB and 1.6 dB, respectively.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

30 GHz Monolithic Balanced Mixers Using an Ion-Implanted FET-Compatible 3-Inch GaAs Wafer Process Technology

P. Bauhahn, A. Contolatis, V. Sokolov and C. Chao. "30 GHz Monolithic Balanced Mixers Using an Ion-Implanted FET-Compatible 3-Inch GaAs Wafer Process Technology." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): 45-49.

An all ion-implanted Schottky barrier mixer diode which has a cutoff frequency greater than 1000 GHz has been developed. This new device is planar and FET-compatible and employs a projection lithography 3-inch wafer process. A Ka-band monolithic balanced mixer based on this device has been designed, fabricated and tested. A conversion loss of 8 dB has been measured with a LO drive of 10 dBm at 30 GHz.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

A W-Band Monolithic GaAs PIN Diode Switch

G.H. Nesbit, D.W. Wong, Da. Li and J.C. Chen. "A W-Band Monolithic GaAs PIN Diode Switch." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): 51-55.

A state-of-the-art performance has been achieved for a W-band monolithic single-pole-single-throw PIN diode switch. An insertion loss of less than 0.5 dB with return loss greater than 15 dB (transmission mode) and an isolation greater than 11 dB (isolation mode) have been measured over a 6 GHz bandwidth (80 to 86 GHz).

[Click on title for a complete paper.](#)



Abstracts

High Volume, Low Cost, MMIC Receiver Front End

A.F. Podell and W.W. Nelson. "High Volume, Low Cost, MMIC Receiver Front End." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): 57-59.

Producing inexpensive MMIC receiver front ends in large quantities has focused attention on details of MMIC design and fabrication that are different from laboratory, or small volume production. This paper discusses design and testing tradeoffs and the performance of the resulting packaged MMIC.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.



Abstracts

Cost-Effective High Performance Monolithic X-Band Low Noise Amplifiers (1986 [MCS])

D.C. Wang, R.G. Pauley, S.K. Wang and L.C.T. Liu. "Cost-Effective High Performance Monolithic X-Band Low Noise Amplifiers (1986 [MCS])." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): 61-63.

A low cost and high performance X-band low-noise amplifier with ion-implanted MESFET technology has been demonstrated. Various design, material, and processing approaches have been evaluated in terms of yield, cost, and device performance. An average noise figure of 2.2 dB and standard deviation of 0.1 dB with an associated gain of 22.5 dB and standard deviation of 0.8 dB at center frequency band of 9.5 GHz has been measured.



IEEE

Contents

Publications

Issues

Papers

Authors

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

Fabrication of Low Power, High-Speed GaAs LSI On-Board Baseband Switching Matrix

R. Yamamoto, K. Ueda, H. Nagao, T. Morimura, I. Eguchi, M. Kudoh, K. Kinuhata and P. Nuspl. "Fabrication of Low Power, High-Speed GaAs LSI On-Board Baseband Switching Matrix." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): 65-69.

A GaAs LSI On-Board Baseband Switching Matrix (BSM) for use in satellite communications for time-division multiple access (TDMA) system, has been designed and fabricated by using low dissipated Buffered-FET-Logic (BFL) with one level- shifting diode with the FET threshold voltage of about -0.5 V. For a 120 Mbit/s rate traffic signal to be used for TDMA , complete connectivity was confirmed for any possible switching pattern with a fast rise/fall time of about 1 ns at a power dissipation of 160 mW. The switch size is 16x4, expandable up to 16x16 by interbonding.

Click on title for a complete paper.

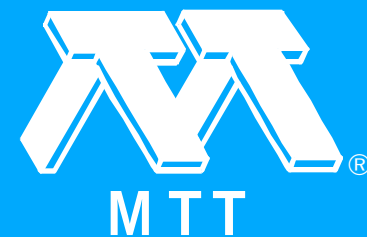


Abstracts

GaAs Phase-Coherent Microwave Multiple-Signal Generation Using All-Pass Networks

S.K. Altes, T.-H. Chen and L.J. Ragonese. "GaAs Phase-Coherent Microwave Multiple-Signal Generation Using All-Pass Networks." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): 71-74.

All-pass network techniques have made it possible to realize very small monolithic lumped active phase shifters with decade bandwidth, high yield, and relative phase stability, even when the device parameters vary $\pm 20\%$. We have successfully demonstrated fully monolithic first-order networks (at 250 MHz) and second-order networks (at 4 GHz).



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.





IEEE

Contents

Publications

Issues

Papers

Authors

A 2 to 8 GHz Leveling Loop Using a GaAs MMIC Active Splitter and Attenuator

G.S. Barta, K.E. Jones, G.C. Herrick and E.W. Strid. "A 2 to 8 GHz Leveling Loop Using a GaAs MMIC Active Splitter and Attenuator." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): 75-79.

A wide-band monolithic GaAs bridged-T variable attenuator has been used with a monolithic GaAs active power splitter to form a compact, 2 to 8 GHz leveling loop for RF sources having a minimum 12dB leveling range with buffered output. The attenuator internally optimizes input and output return loss over a 1 to 10 GHz bandwidth by the use of an on-chip GaAs op-amp. The active power splitter provides unity gain to each port over a 1 to 10 GHz bandwidth by the use of distributed amplification. The entire 4.5 cm by 42 cm subsystem was realized with surface mount packages on RT-Duroid®.

Click on title for a complete paper.





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

GaAs Ultra High Frequency Dividers with Advanced SAINT FETs (1986 [MCS])

K. Osafune, T. Enoki, K. Yamasaki and K. Ohwada. "GaAs Ultra High Frequency Dividers with Advanced SAINT FETs (1986 [MCS])." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): 81-85.

Circuit design, fabrication and performance of ultra high frequency dividers with GaAs BFL circuits are described. 10.6 GHz operation at 258 mW is achieved using a new self-aligned gate, GaAs FET process, called Advanced SAINT, which avoids excess gate metal overlap on the dielectric film and air-bridge technology, due to a reduction of gate and interconnection parasitic capacitance. Furthermore, the possibility of above 20 GHz high frequency operation for GaAs MESFET frequency dividers is predicted by circuit optimization and FET improvements including parasitic capacitance reduction and transconductance enhancement.

[Click on title for a complete paper.](#)



Abstracts

A Closed-Form Expression for Representing the Distributed Nature of the Spiral Inductor

D.M. Krafcsik and D.E. Dawson. "A Closed-Form Expression for Representing the Distributed Nature of the Spiral Inductor." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): 87-92.

A closed form expression for the modeling of rectangular spiral inductors to twice the self-resonant frequency is derived and compared to experimental results. The mutual inductance effects of the ground plane, and phase shift effects are considered in this analysis.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Silicon High Resistivity Substrate Millimeter-Wave Technology (1986 [MCS])

K.M. Strohm, J. Buechler, P. Russer and E. Kasper. "Silicon High Resistivity Substrate Millimeter-Wave Technology (1986 [MCS])." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): 93-97.

The application of the VLSI-techniques molecular beam epitaxy (MBE) and X-ray lithography for the fabrication of monolithic integrated millimeter-wave devices on high resistivity silicon has been investigated. Process compatibility and the retention of high resistivity characteristics were measured using the spreading resistance method and Hall measurements after various process steps. Ring- and linear microstrip resonators were fabricated on 10 000 Ohm cm silicon. For linear microstrip resonators, the attenuation was found to be less than 0.6 dB/cm at 90 GHz. A 95 GHz impatt oscillator has been integrated on a highly insulating silicon substrate in a combined monolithic-hybrid technique. The oscillator needs no tuning elements. From preliminary experimental results 8 mW output power with 0.2 % efficiency at 95 GHz oscillating frequency has been obtained.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Low Noise Microwave HIFET Using MOCVD

H. Takakuwa, K. Tanaka, K. Togashi, H. Ohke, M. Kanazawa and Y. Kato. "Low Noise Microwave HIFET Using MOCVD." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): 99-102.

Low noise HIFET (Hetero Interface Field Effect Transistor, also known as TEGFET or HEMT) AlGaAs/GaAs heterostructure devices have been developed using Metal Organic Chemical Vapor Deposition (MOCVD). The HIFET's with 0.5-micron long and 200-micron wide gates have shown a minimum noise figure of 0.87 dB with an associated gain of 12.5 dB at 12 GHz at room temperature. A substantial improvement in noise figure was obtained at lower temperatures (-10°C), especially when compared to GaAs MESFET devices.

[Click on title for a complete paper.](#)





IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Planar MMIC Hybrid Circuit and Frequency Converter

T. Hirota, H. Ogawa, Y. Tarusawa and K. Owada. "Planar MMIC Hybrid Circuit and Frequency Converter." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): 103-105.

A "planar" circuit configuration for MMIC (Monolithic Microwave Integrated Circuit) has been proposed. It uses coplanar waveguides and slotlines on the upper side of the substrate. Novel hybrid circuits have been fabricated. It has also been shown that small sized, balanced FET circuits can be achieved.

[Click on title for a complete paper.](#)



Abstracts

Index of Authors (1986 [MCS])

"Index of Authors (1986 [MCS])." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): 107-107.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.



Abstracts

Back Cover (1986 [MCS])

"Back Cover (1986 [MCS])." 1986 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 86.1 (1986 [MCS]): b1-b1.



MTT



IEEE

[Contents](#)

[Publications](#)

[Issues](#)

[Papers](#)

[Authors](#)

Click on title for a complete paper.

