

Microwave Digital Archive

IEEE Microwave Theory and Techniques Society

1998

Welcome

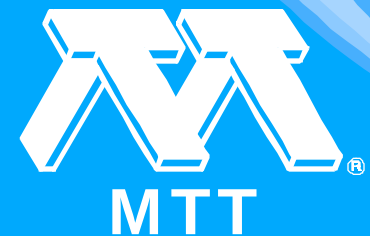
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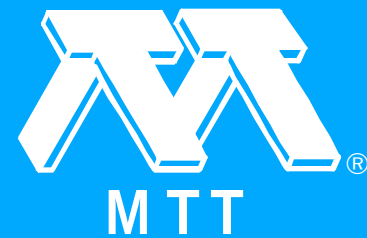
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Thank You and Enjoy!



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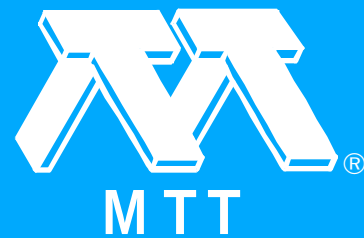
ACKNOWLEDGMENTS

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



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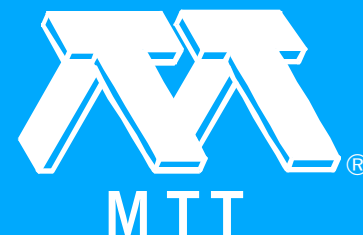
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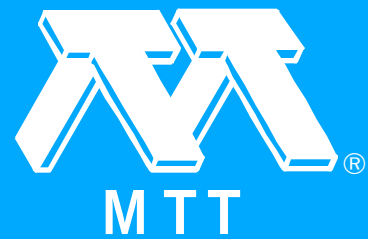
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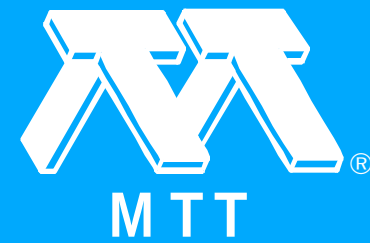
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INTRODUCTION

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.

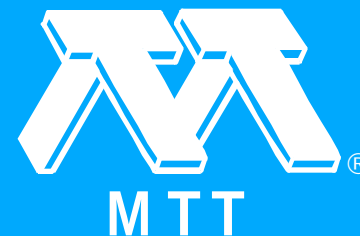


ACROBAT PREFERENCES

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



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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

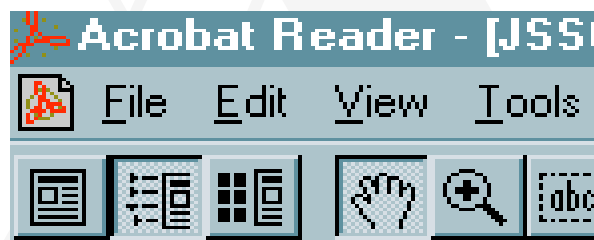
To exit an article after viewing, and return to the electronic guide, select File > Close from the menu bar. To switch between the article and the electronic guide or any other PDF file that is open, select “Window” and pick the open file you wish to return to.



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USING BOOKMARKS

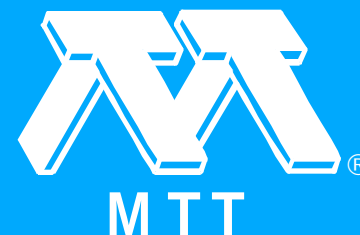
In addition to links, you can navigate through the Electronic Guide using Bookmarks. If they are not already visible, choose View > Bookmarks and Page from the menu bar or press the “Display Page and Bookmarks” button on the tool bar. A panel opens on the left side of the screen displaying Bookmarks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



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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.



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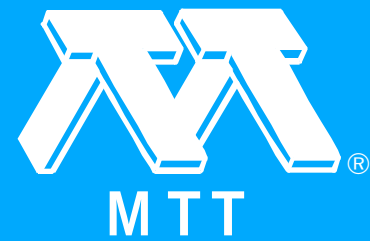
Articles may have text outside normal print-area defaults. We recommend selecting “Shrink to Fit” in the print menu (File > Print) to capture the complete image for your printout. This setting will become your new default.

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.



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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.

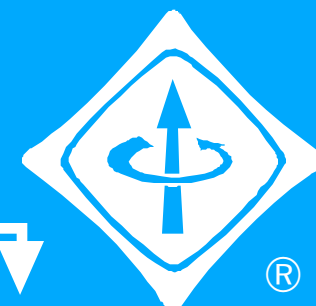
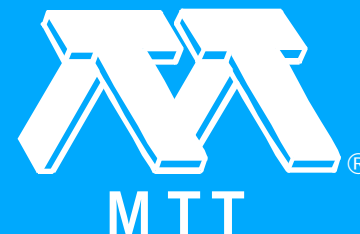
Next Page button

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.



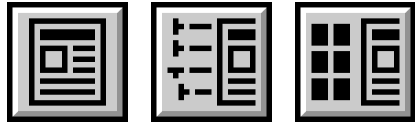
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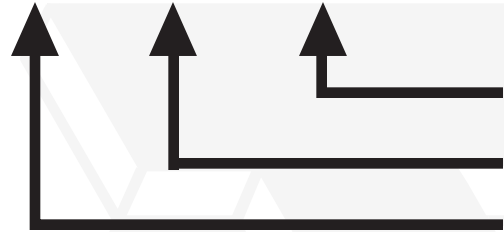


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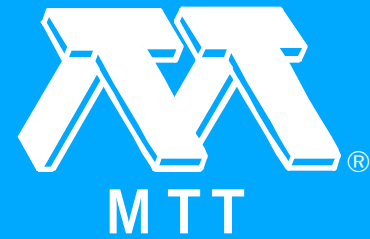
Display Thumbnails and Page
Display Bookmarks and Page
Display Page



Zoom/Selection



Select Text
Zoom In (Magnify)
Move Page Image



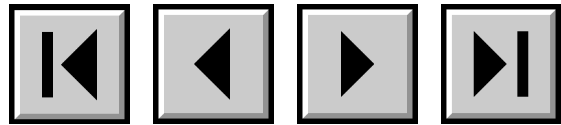
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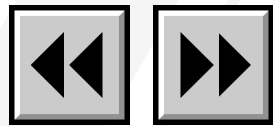
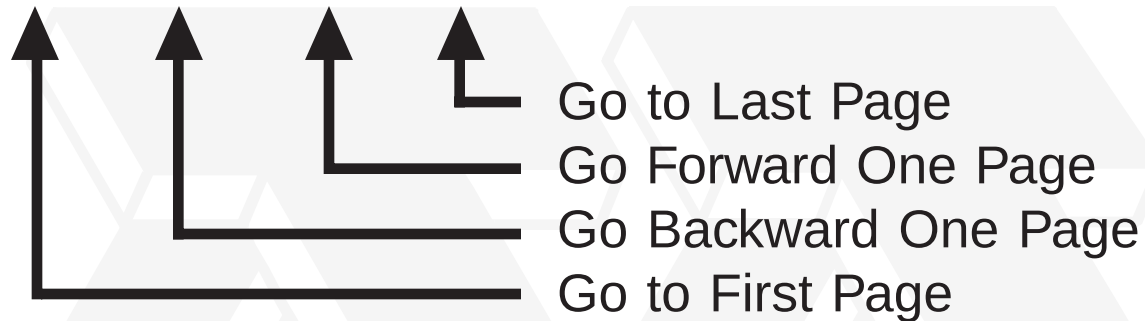


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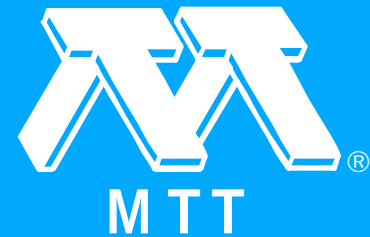
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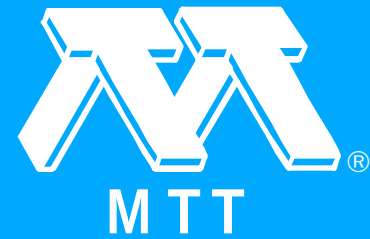
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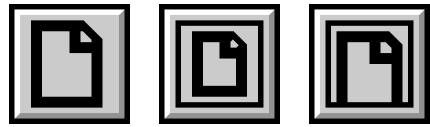
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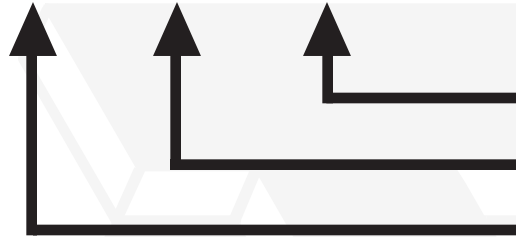
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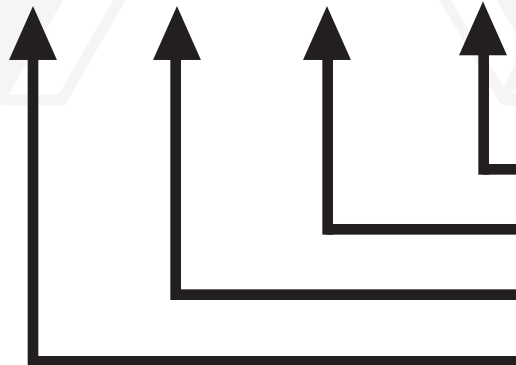
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Fit Page
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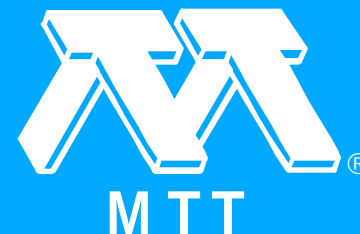
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SEARCHING

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.



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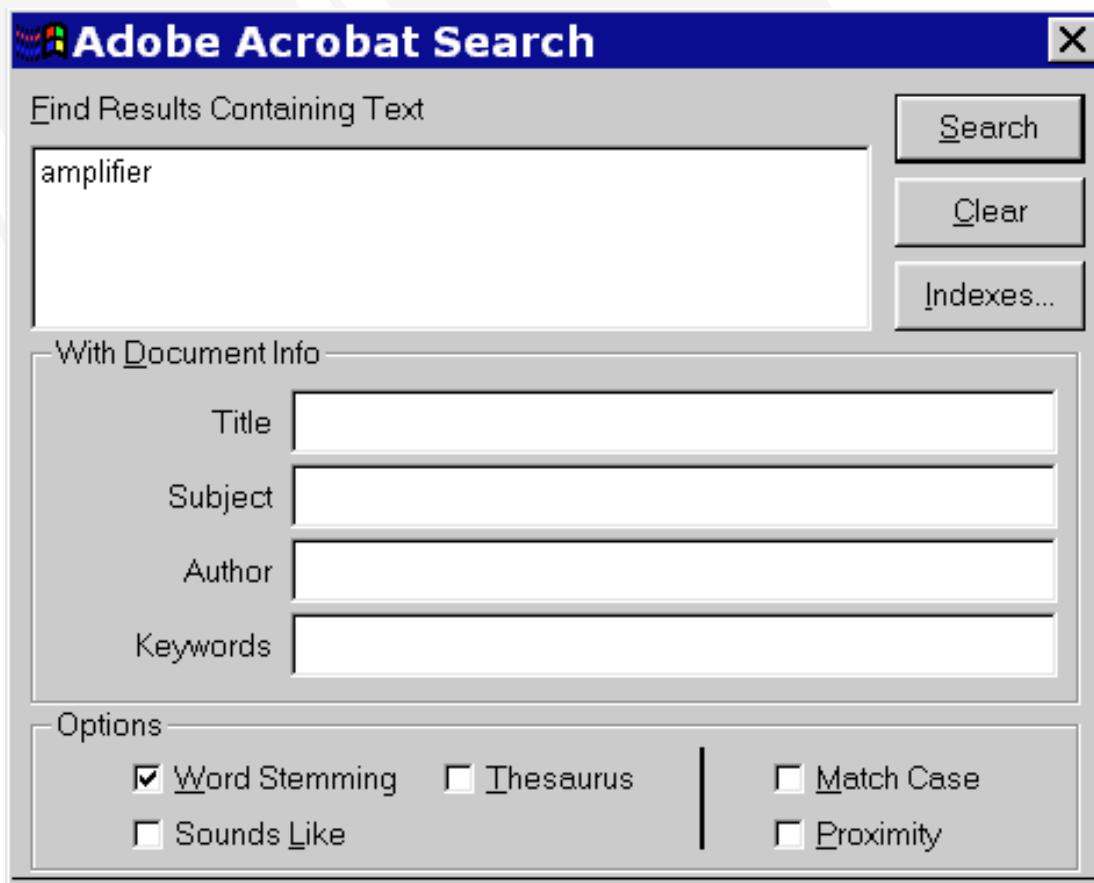
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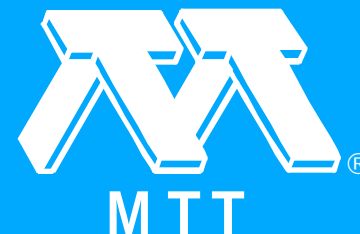
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If you are not finding files you think should show in the results list, Acrobat may not be attached to the correct index file. To check, press the “Indexes...” button for a list of available indexes. If this title is not listed, press the “Add...” 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 the main input field 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 box.



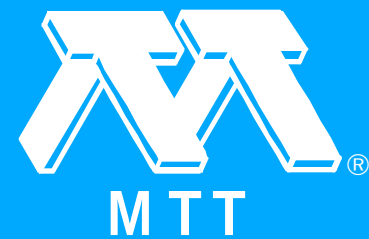
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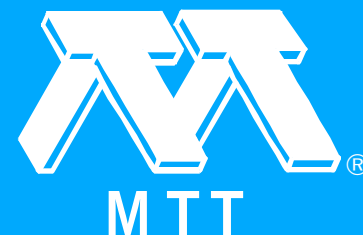
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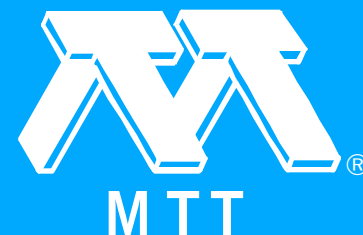
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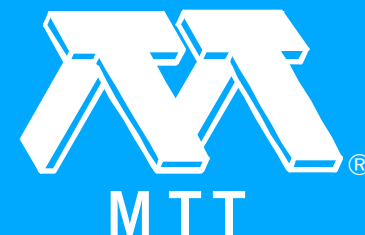


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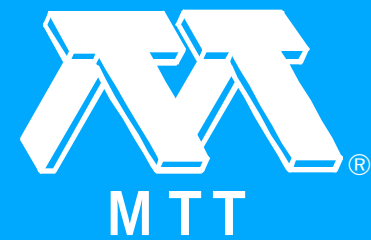


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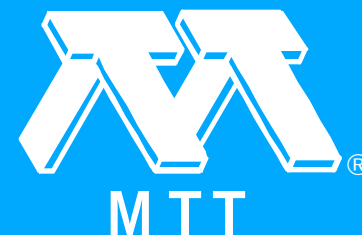
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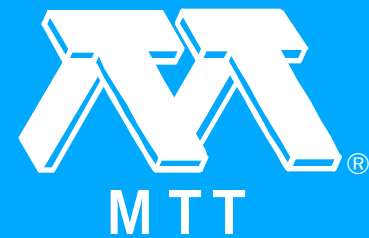
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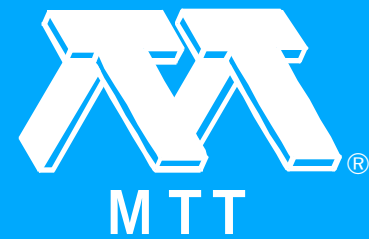
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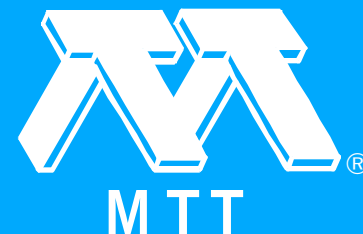
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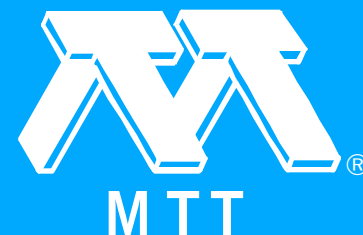
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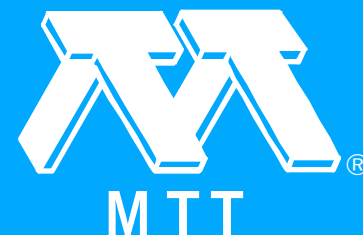
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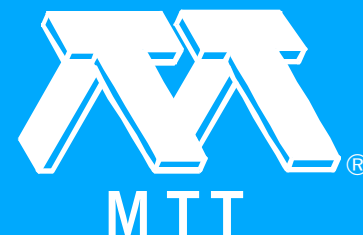
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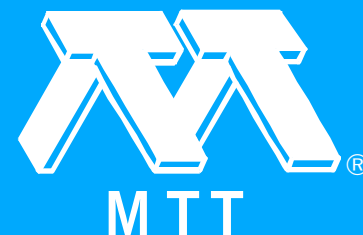
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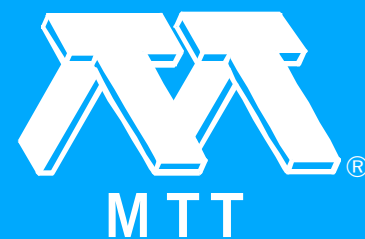
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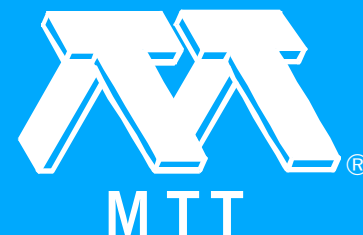
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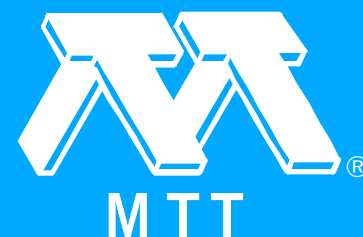
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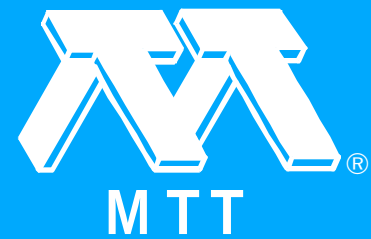
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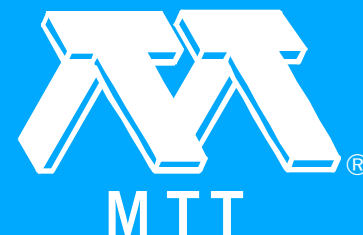
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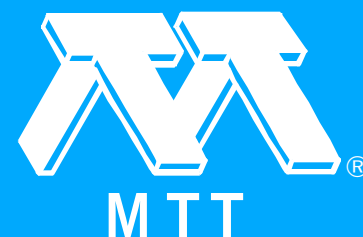
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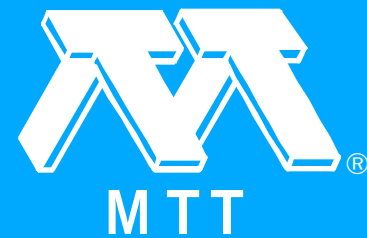
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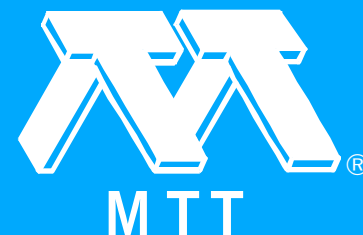
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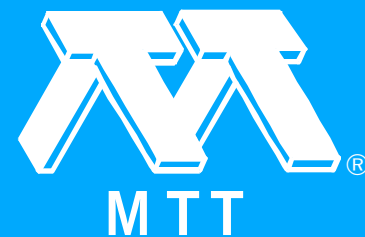
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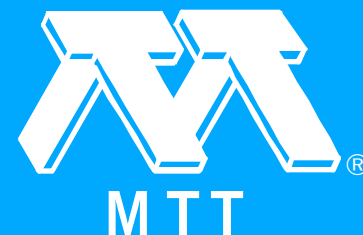
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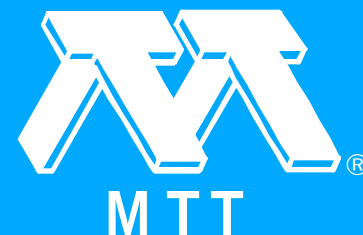
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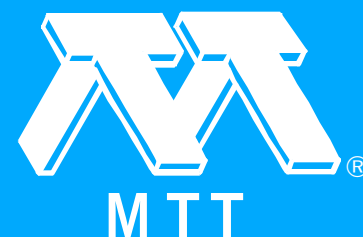
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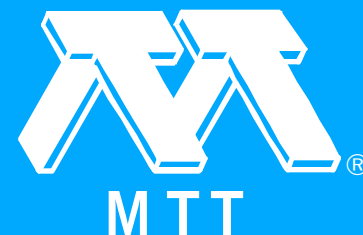
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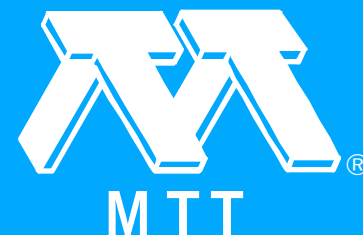
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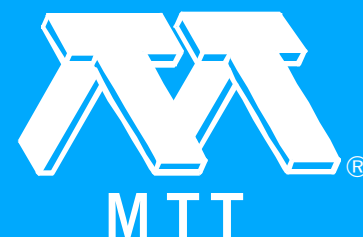
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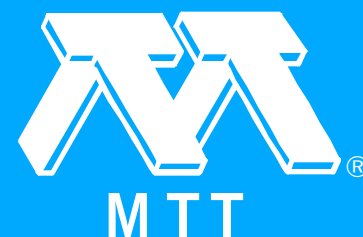
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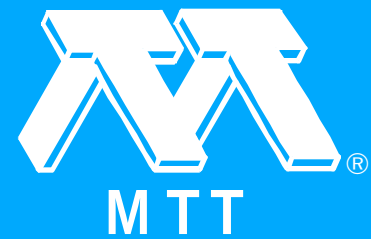
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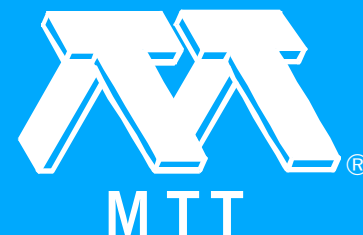
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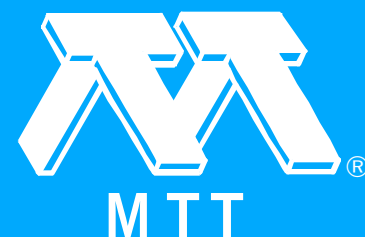
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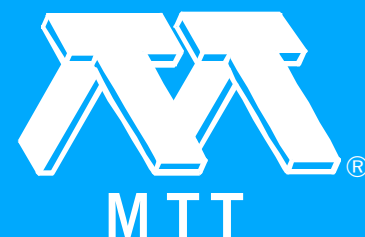
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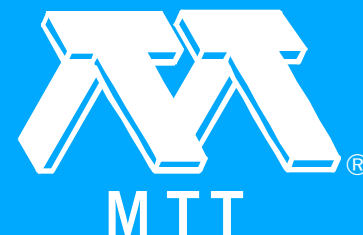
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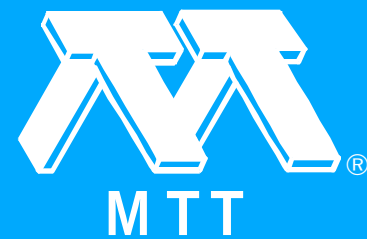
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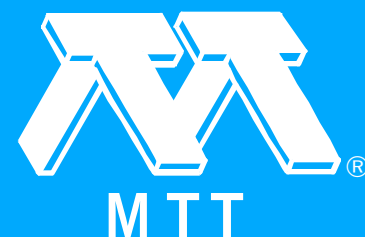
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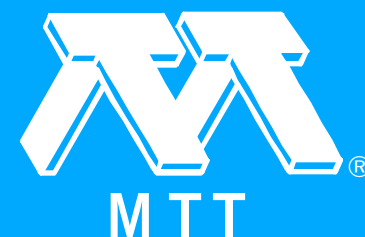
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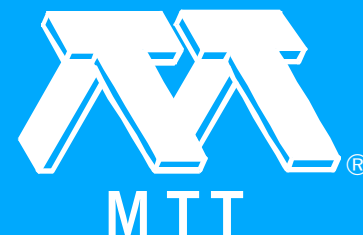
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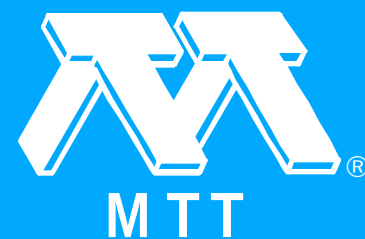
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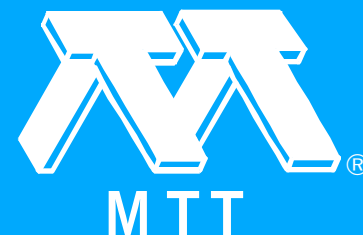
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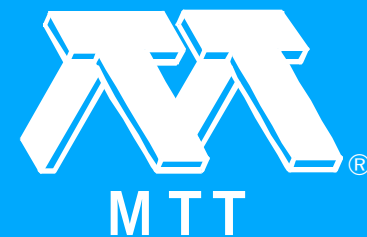
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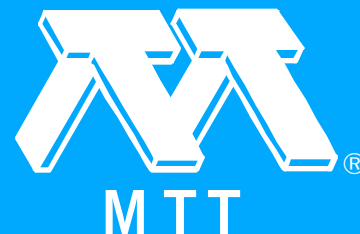


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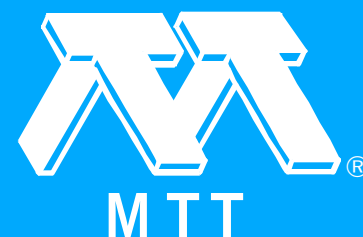
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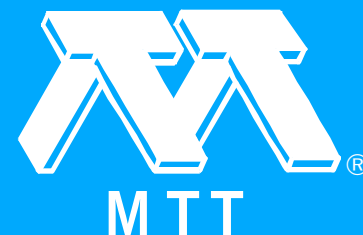
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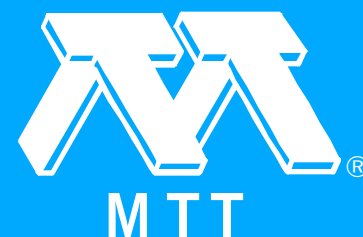
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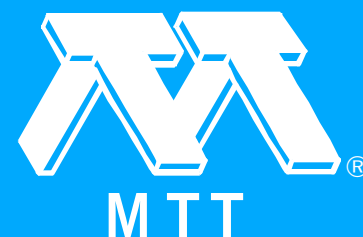
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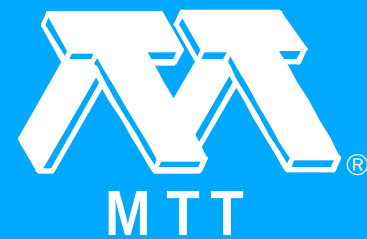
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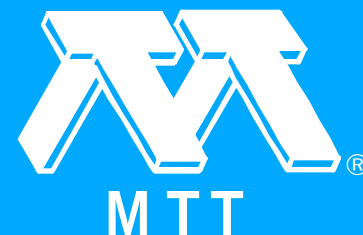
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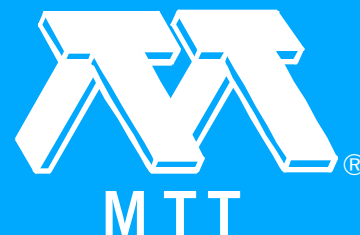
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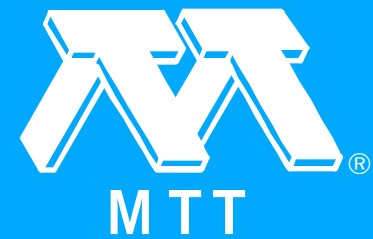
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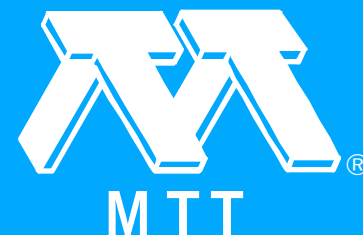
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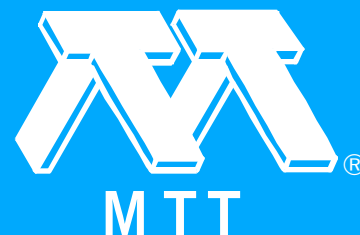
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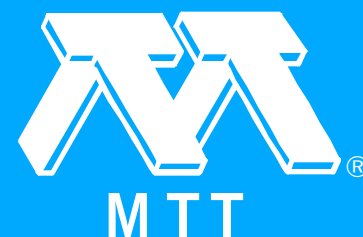
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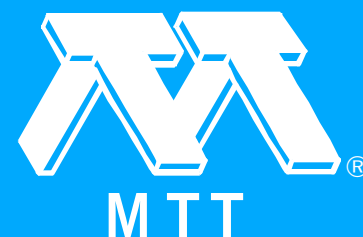
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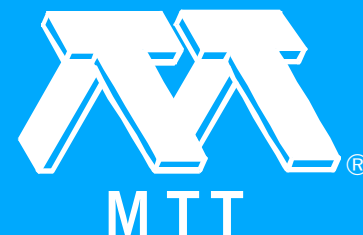
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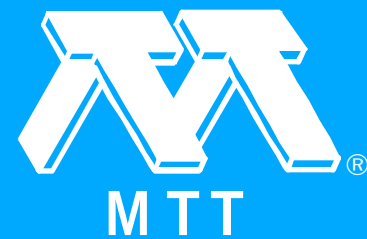
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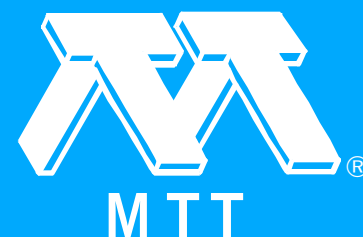
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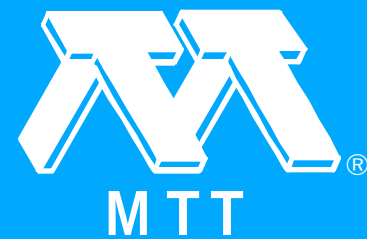
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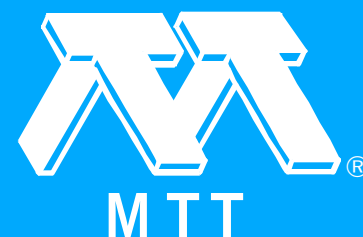
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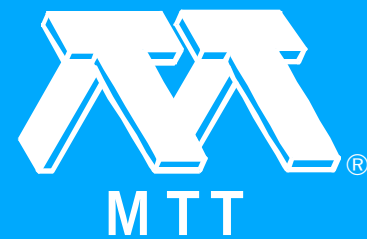
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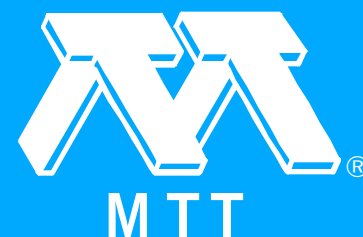
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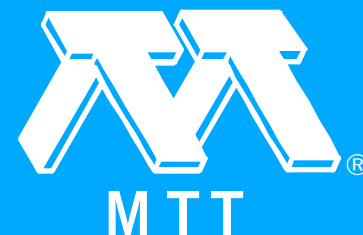
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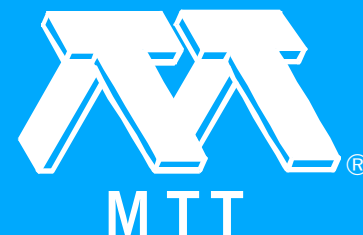
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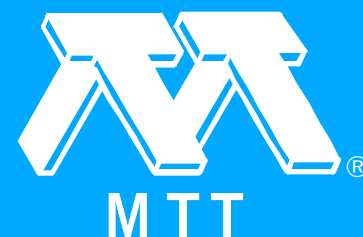
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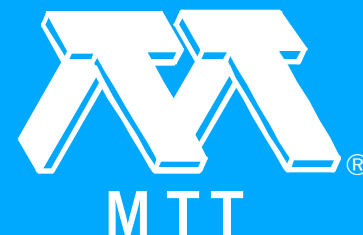
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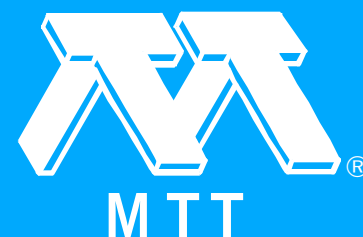
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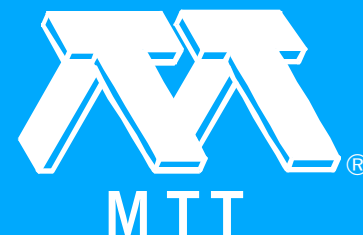
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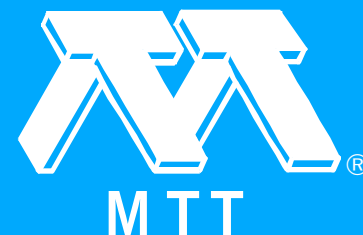
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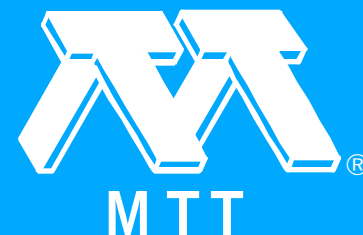
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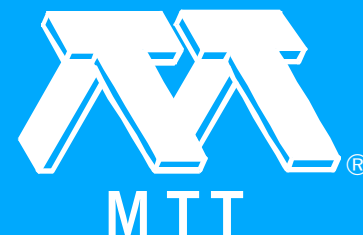
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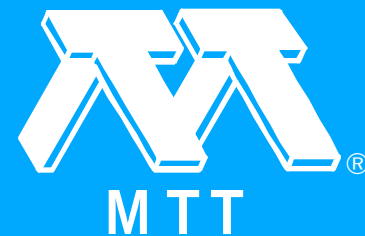
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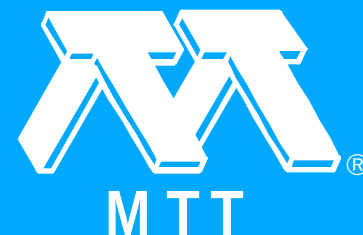


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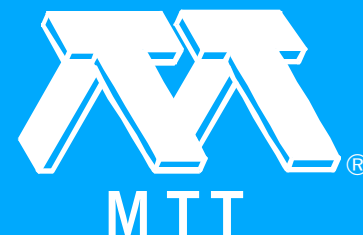
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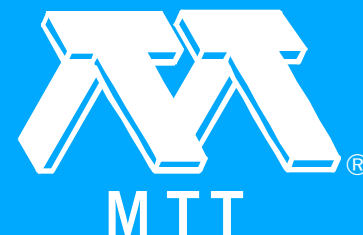
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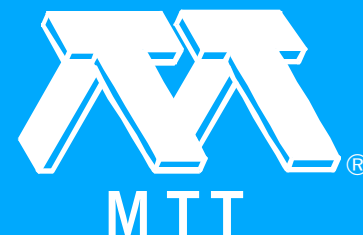
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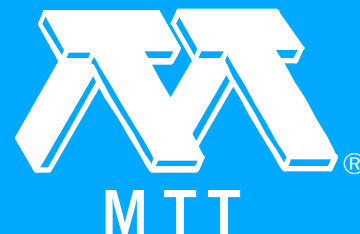


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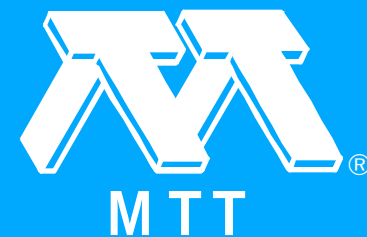
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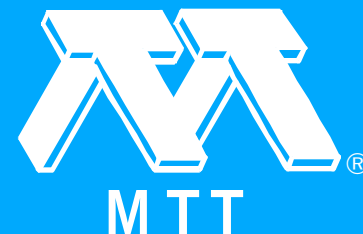
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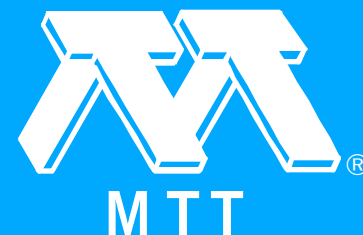
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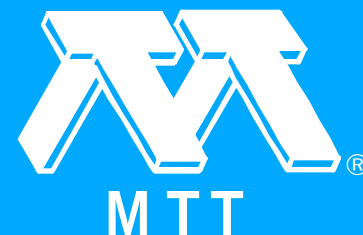
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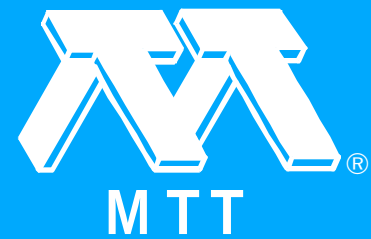
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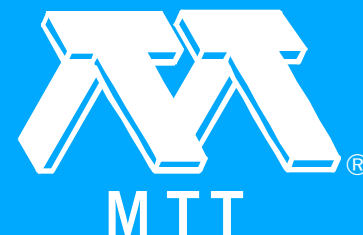
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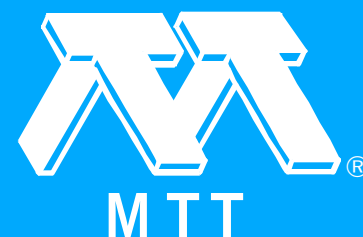
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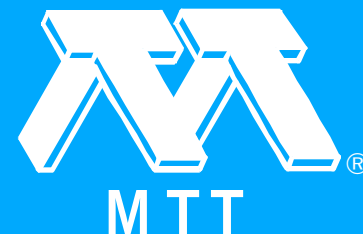
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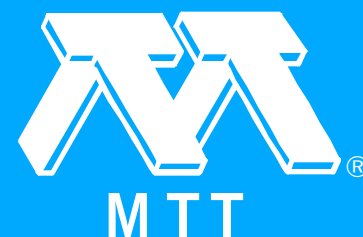
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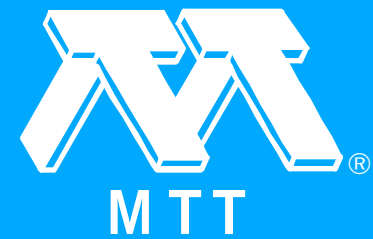
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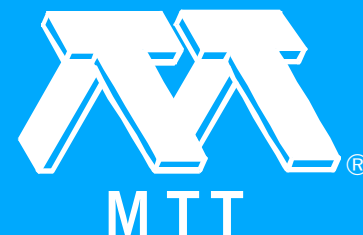
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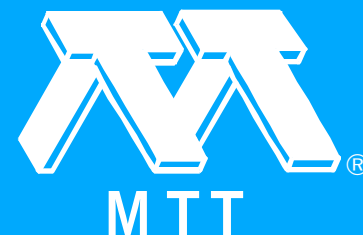
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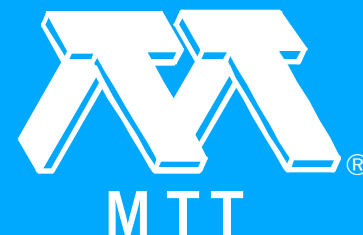
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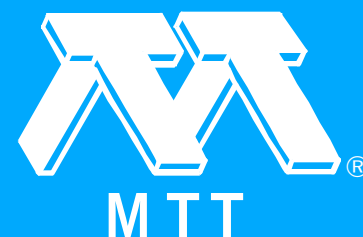
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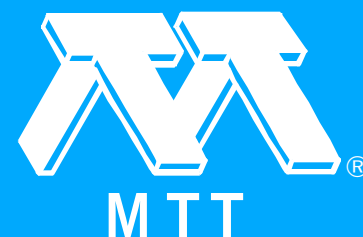
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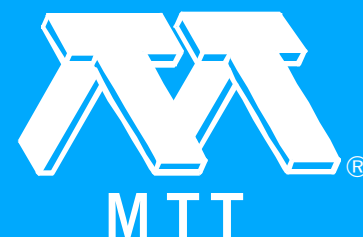
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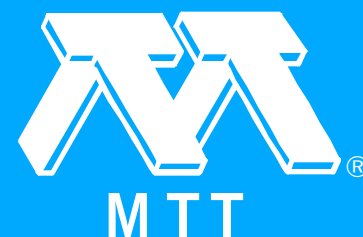
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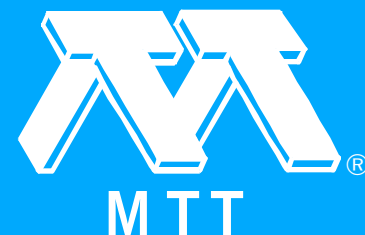
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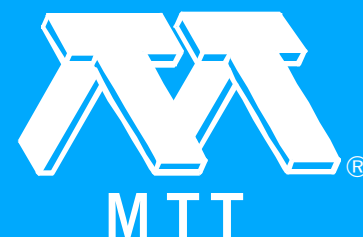
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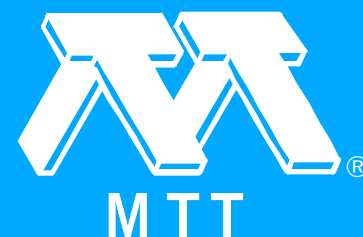
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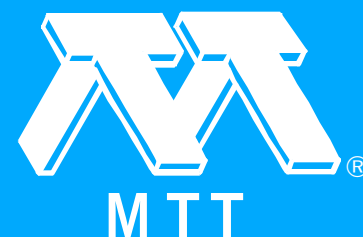
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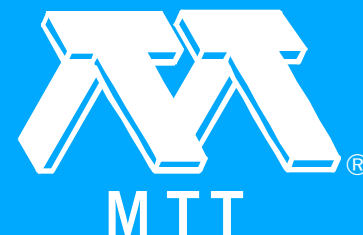
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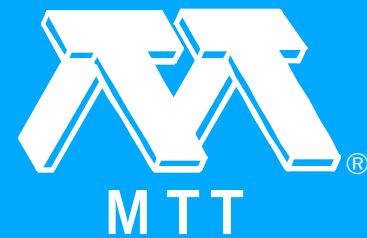
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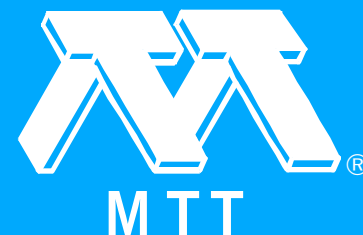
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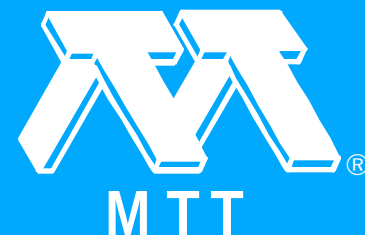
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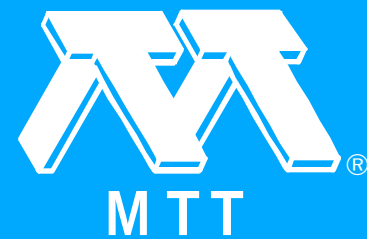
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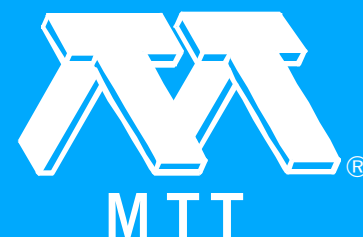
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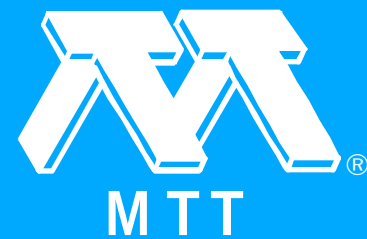
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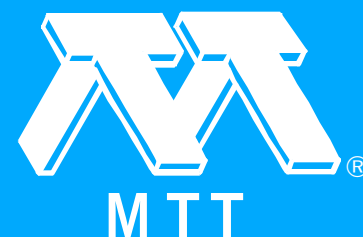
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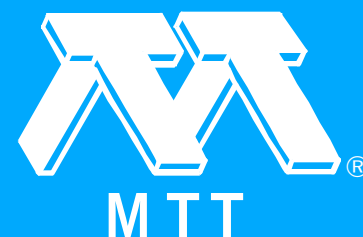
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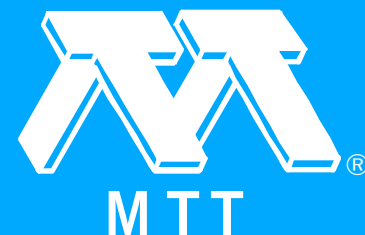
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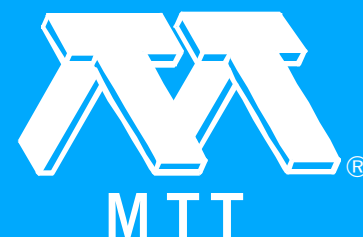
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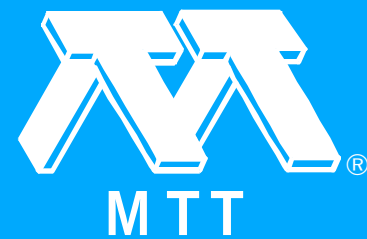
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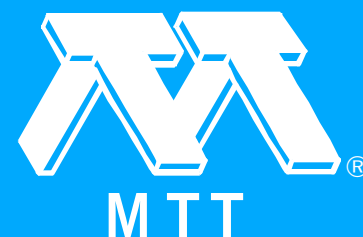
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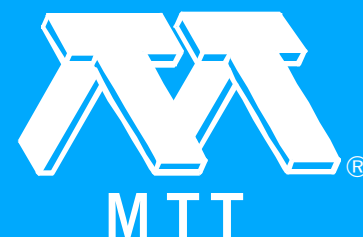
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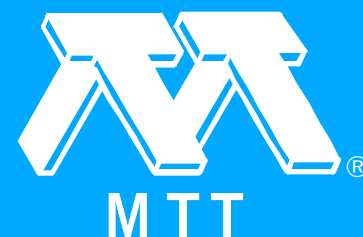
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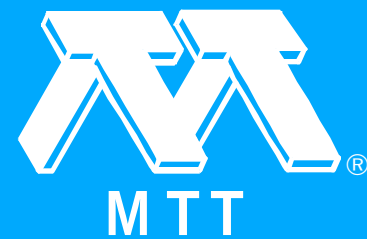
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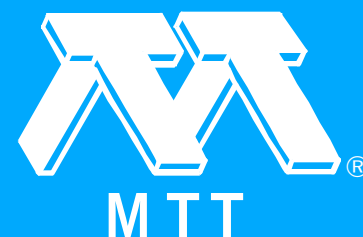
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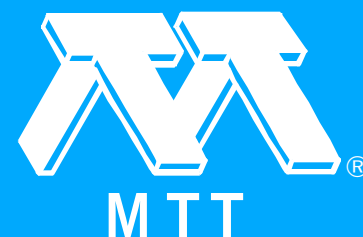
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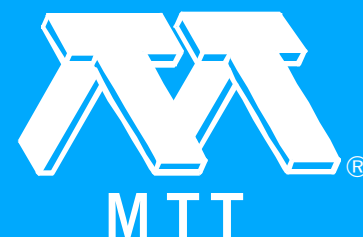
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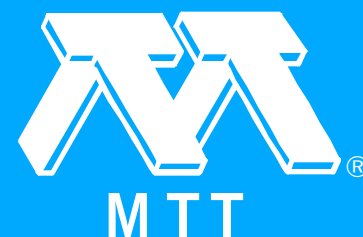
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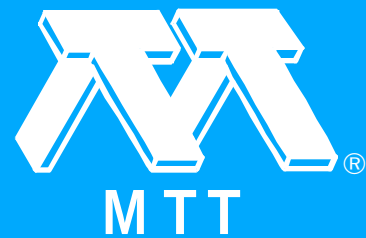
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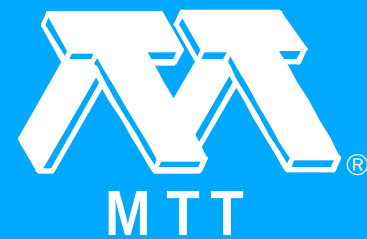
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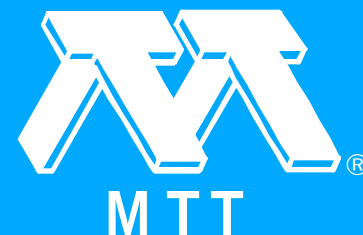
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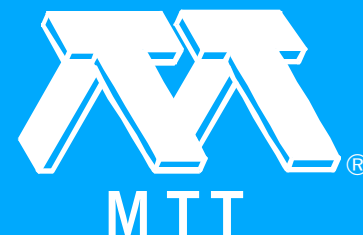
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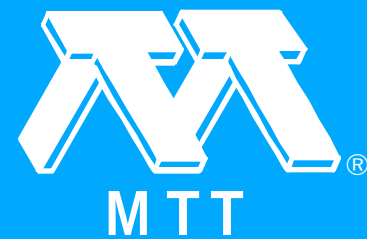
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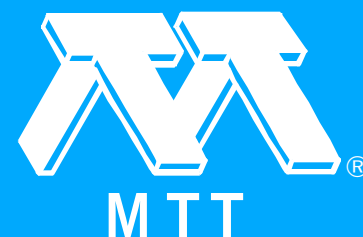
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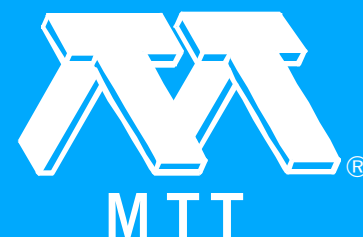
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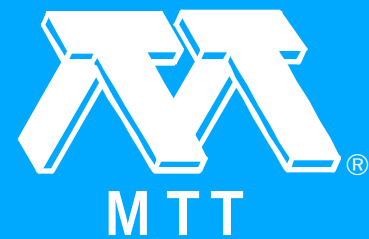
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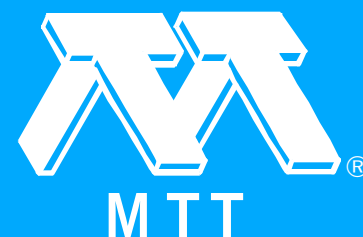
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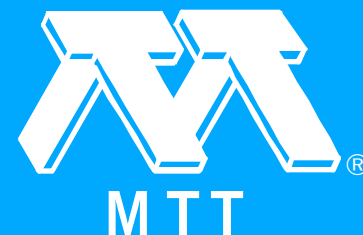
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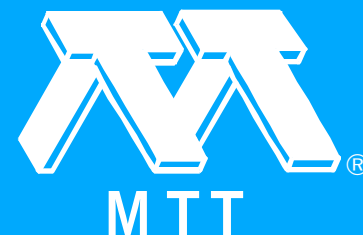
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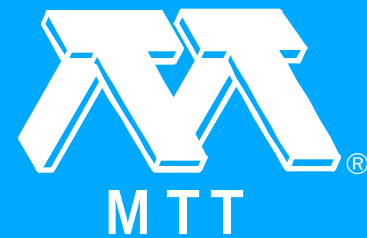
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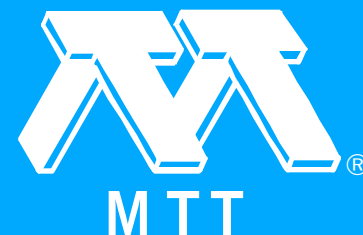
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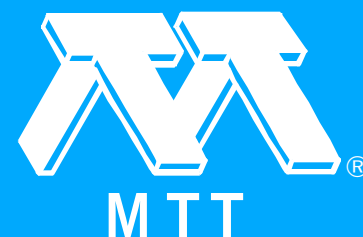
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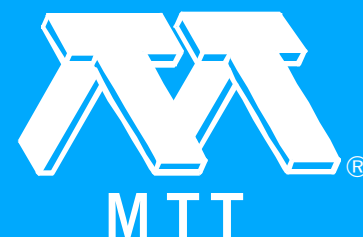
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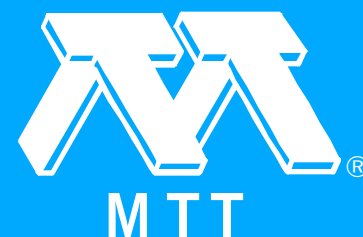
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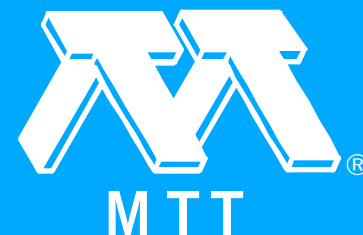
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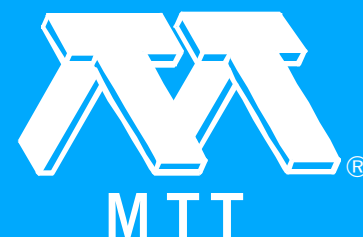
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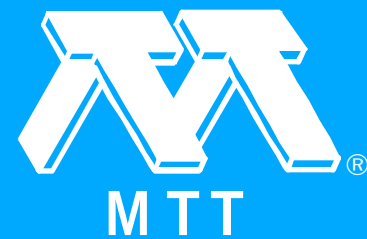
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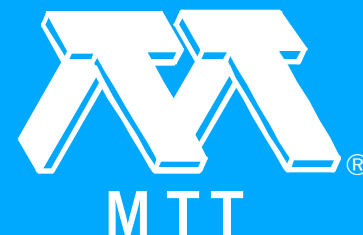
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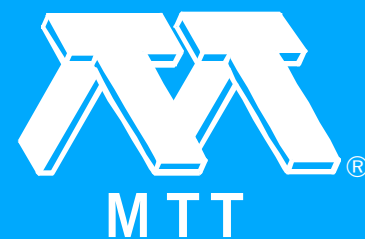
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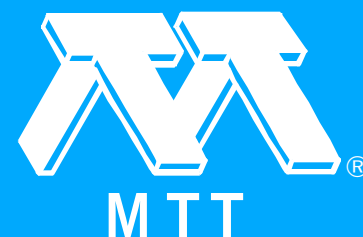
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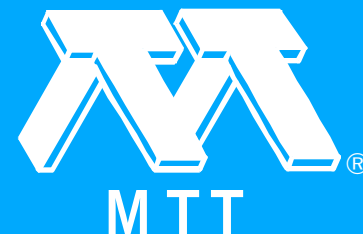


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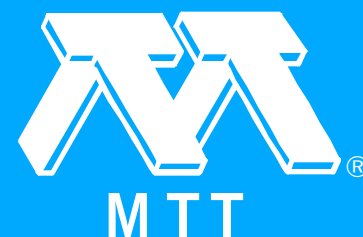
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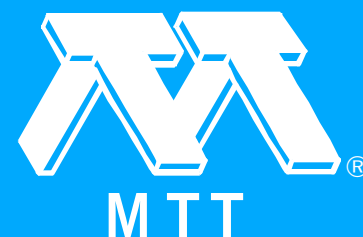
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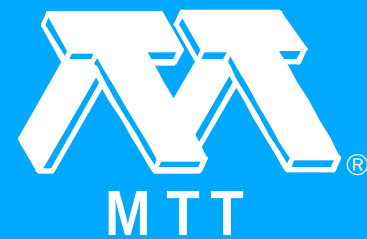
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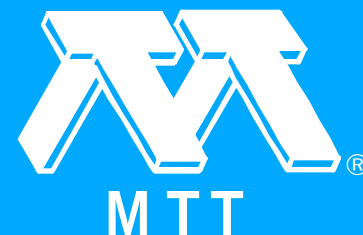
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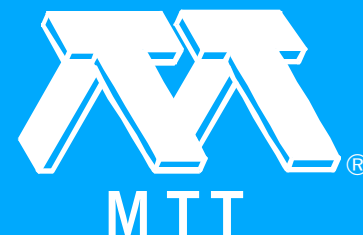
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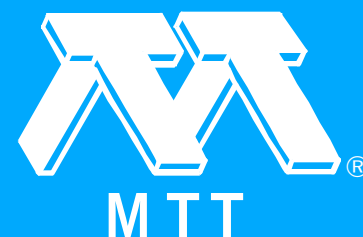
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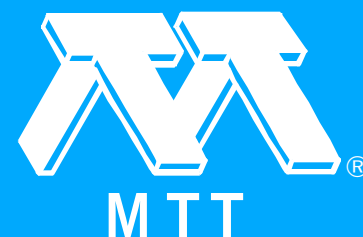
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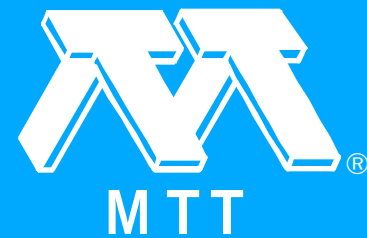
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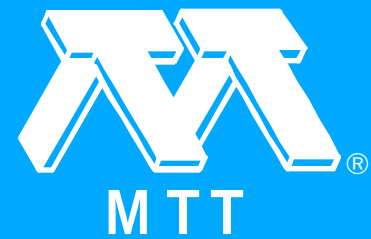
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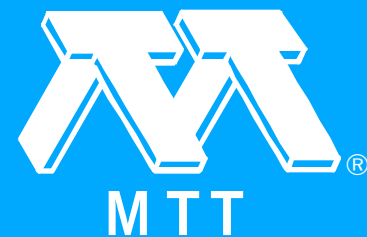
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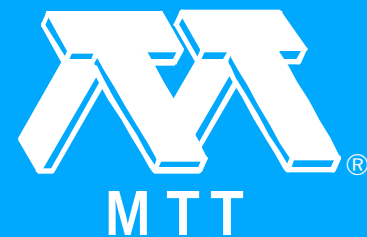
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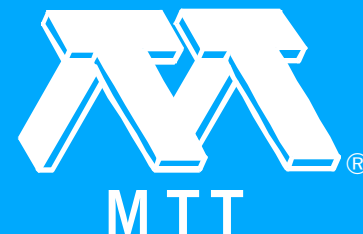
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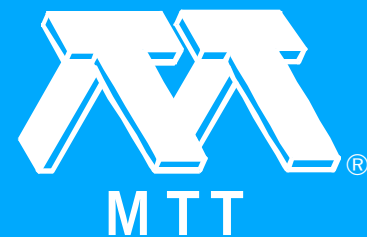
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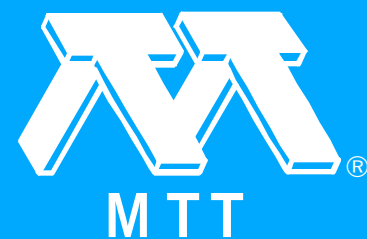
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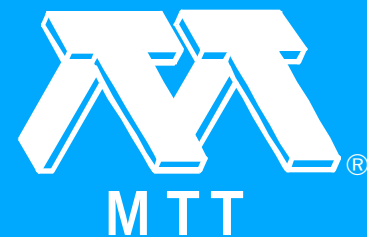
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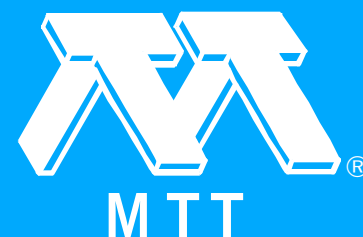
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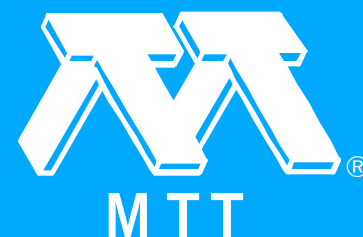
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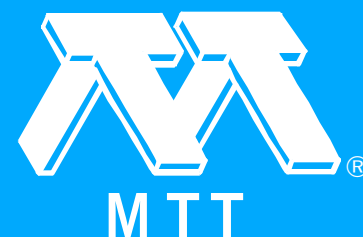
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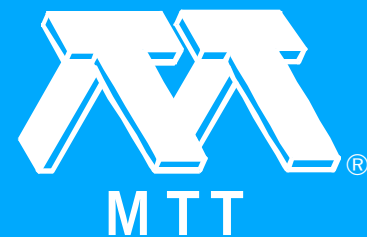
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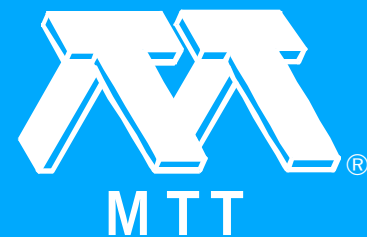
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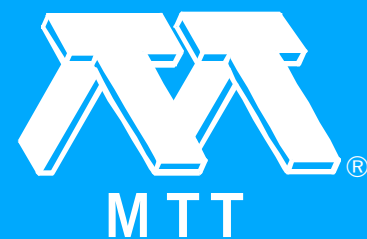
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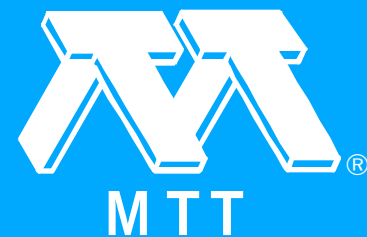
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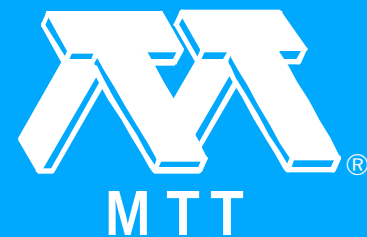
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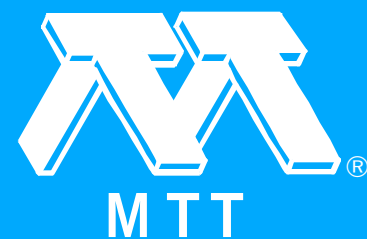
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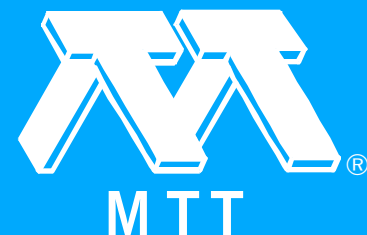
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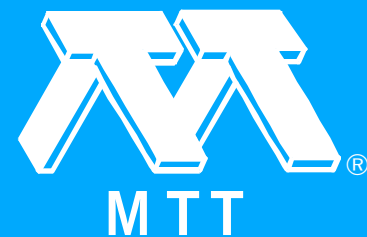
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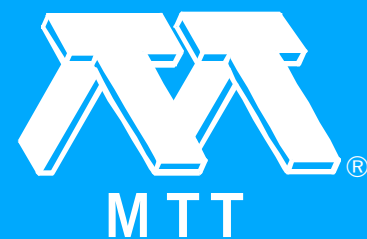
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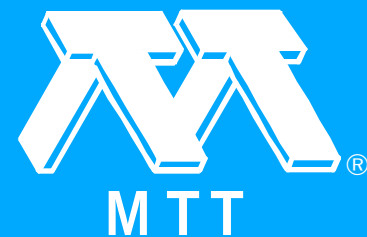
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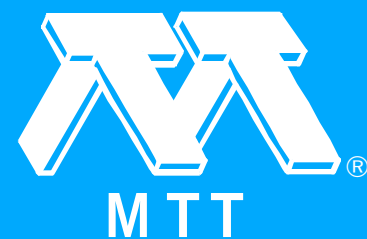
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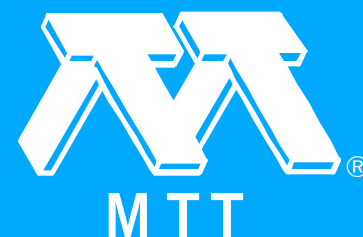
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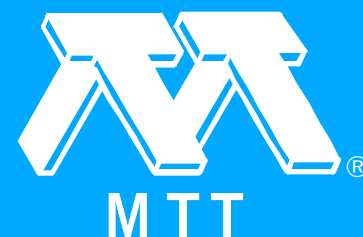
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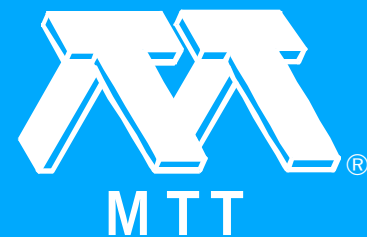
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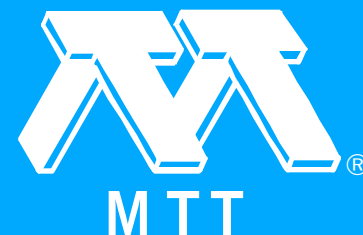
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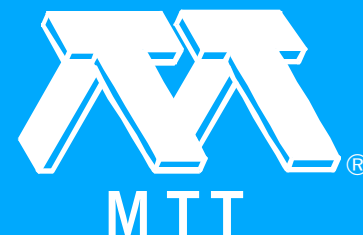
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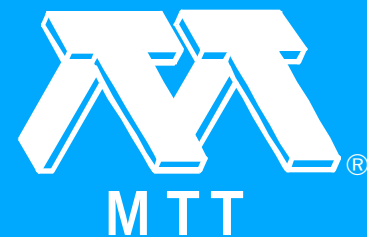
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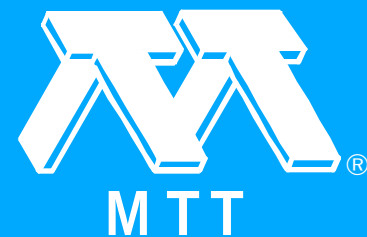
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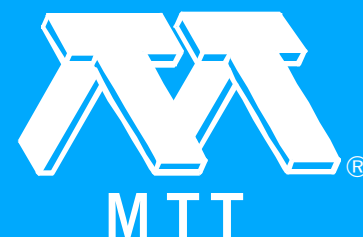
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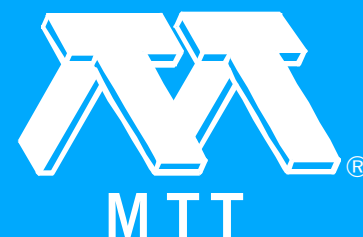
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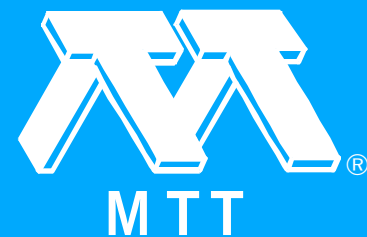
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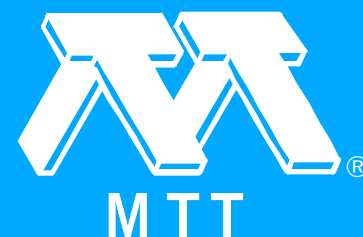
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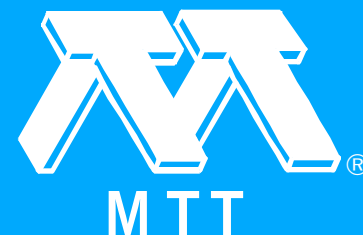


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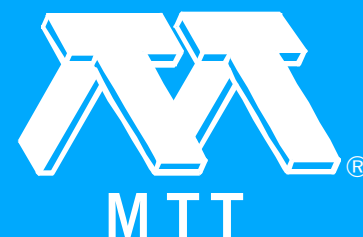
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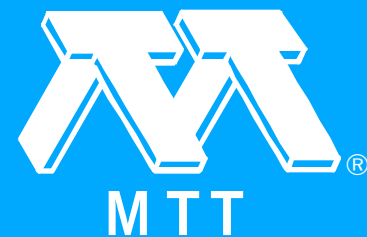
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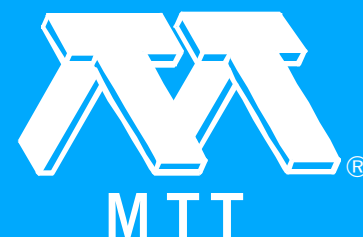
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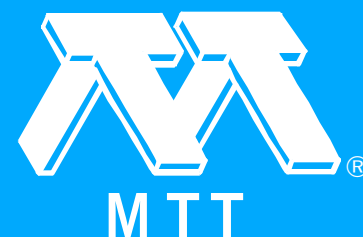
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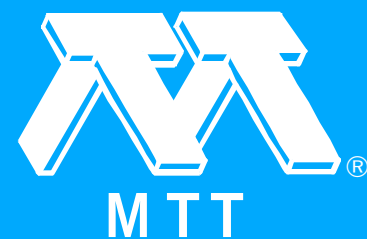
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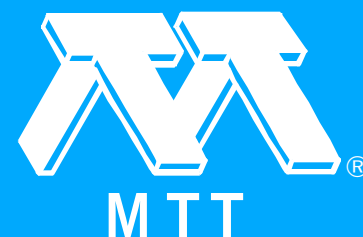
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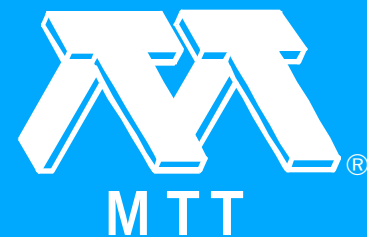
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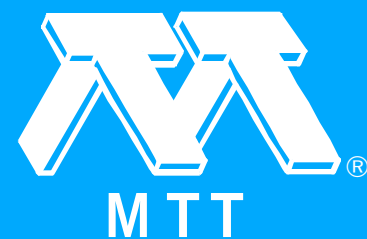
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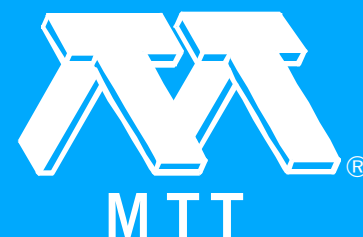
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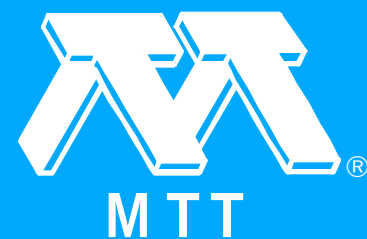
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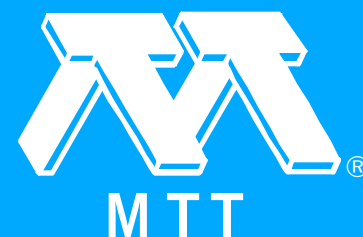
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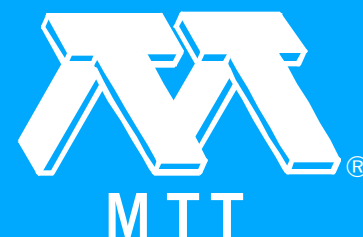


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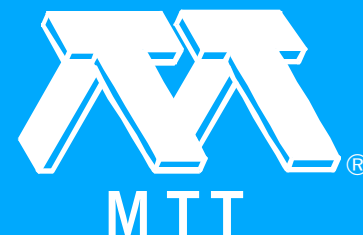
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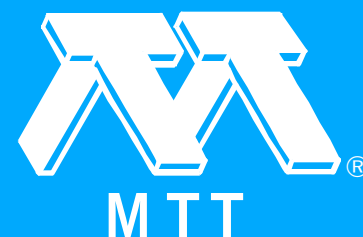
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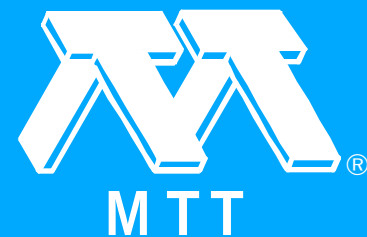
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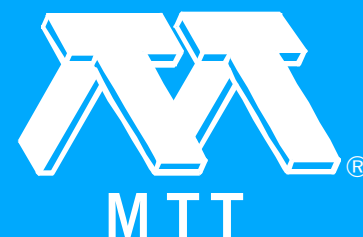
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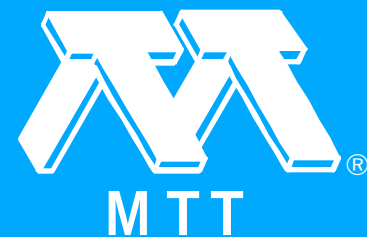
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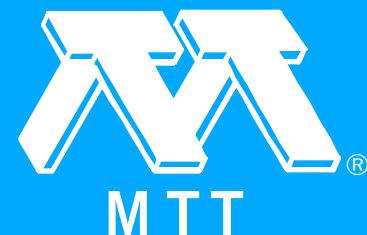
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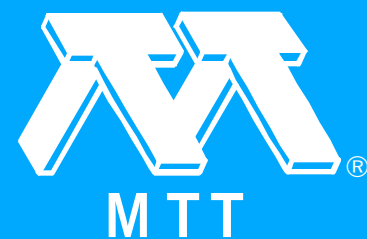
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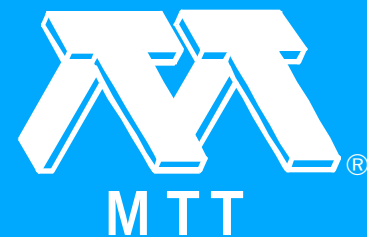
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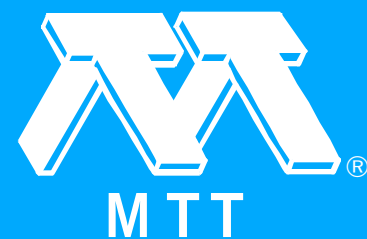
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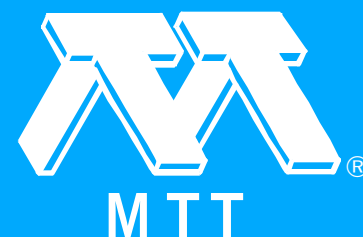
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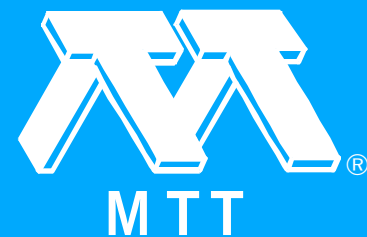
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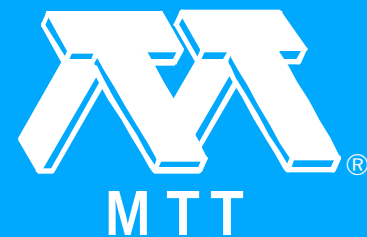
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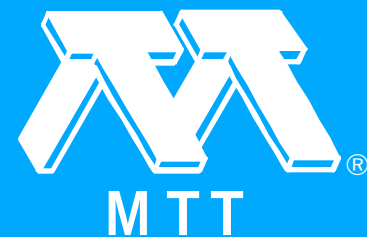
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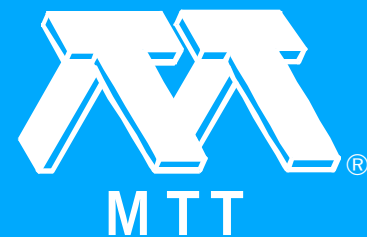
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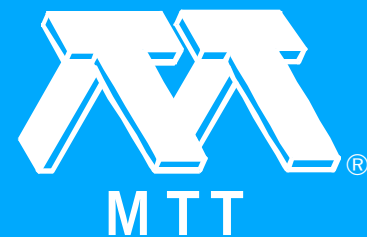
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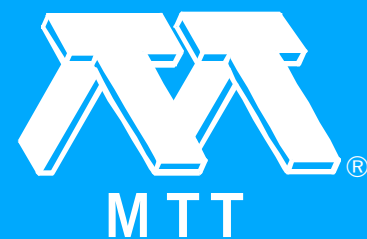
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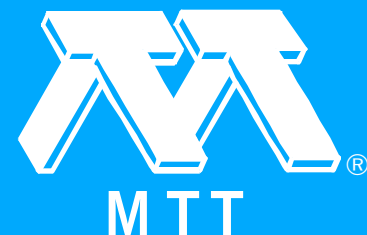
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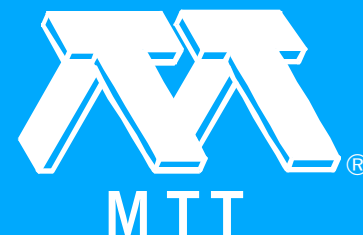
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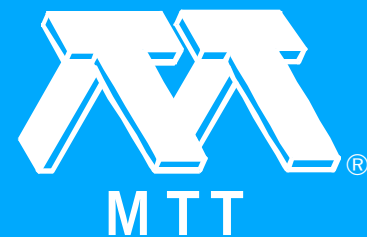
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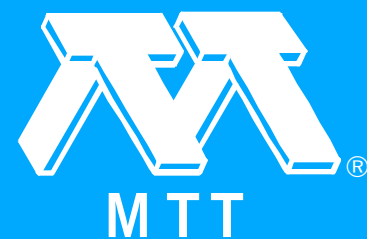
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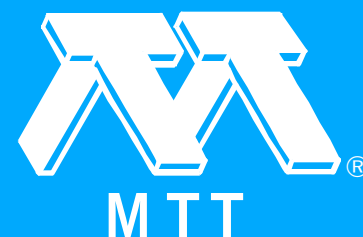
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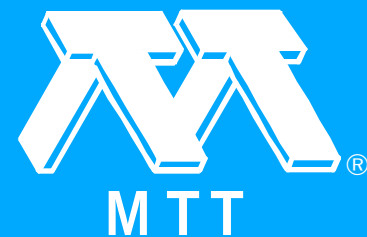
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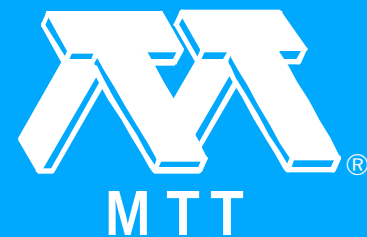
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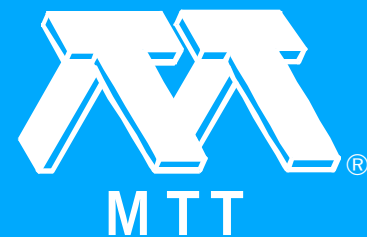
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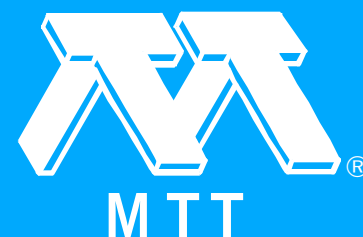
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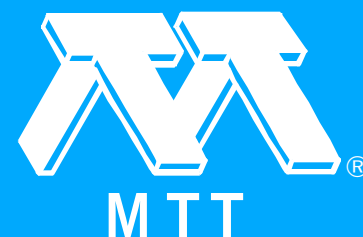
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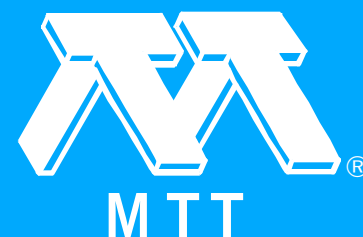
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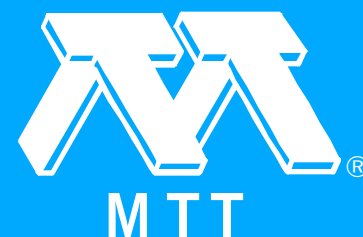
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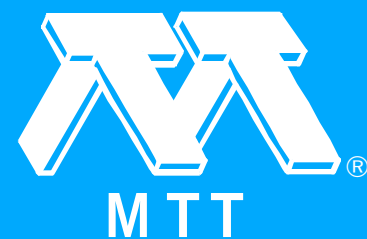
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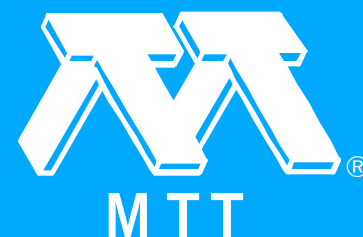
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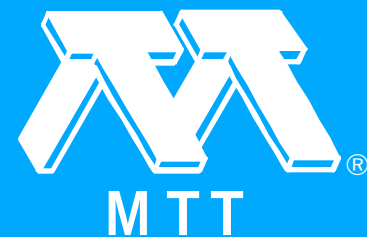
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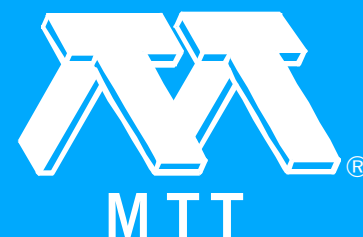
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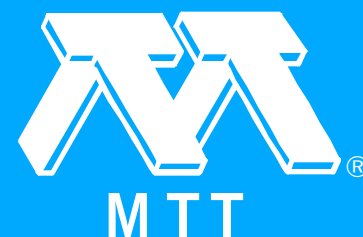
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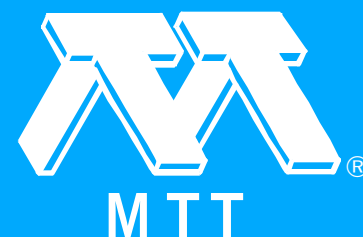
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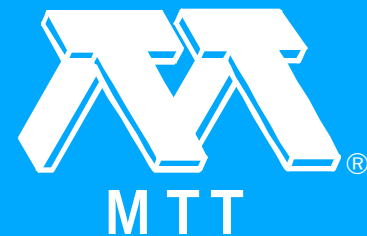
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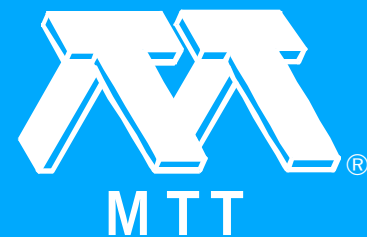
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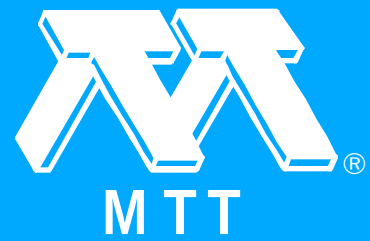
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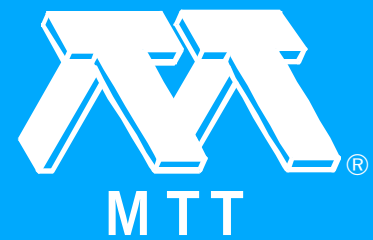
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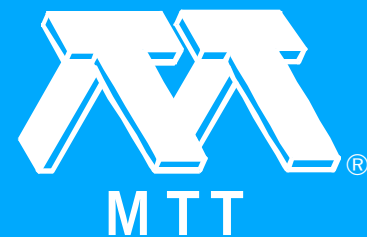
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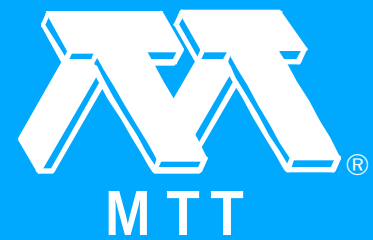
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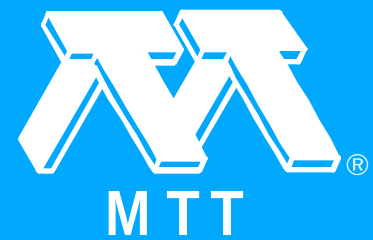
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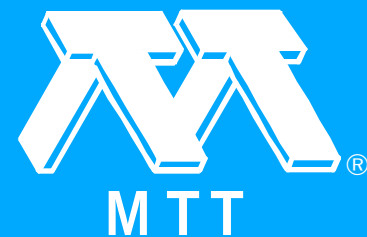
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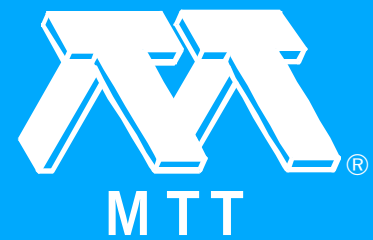
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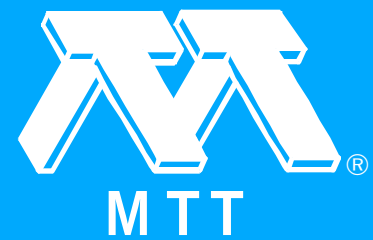
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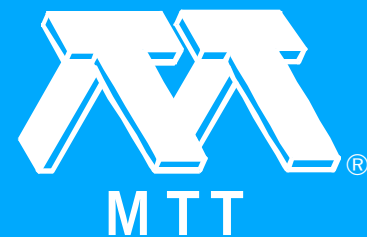
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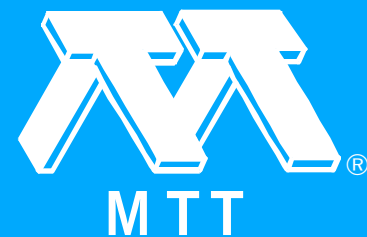
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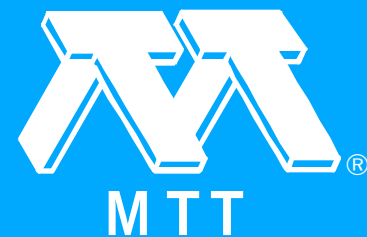
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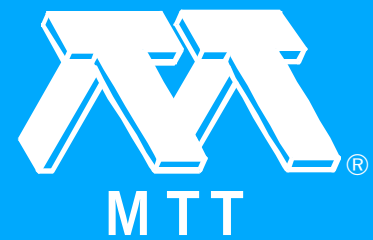
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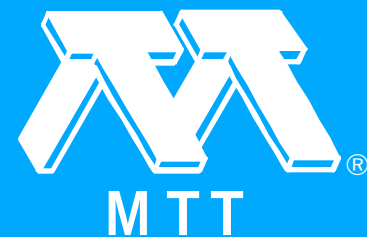
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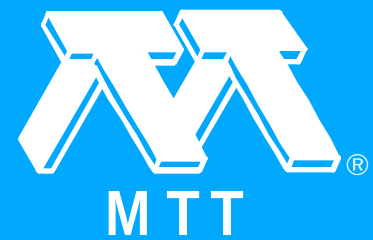
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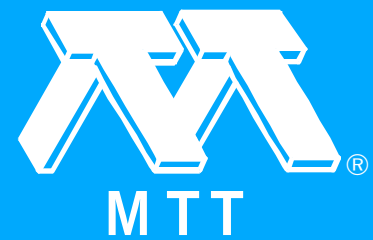
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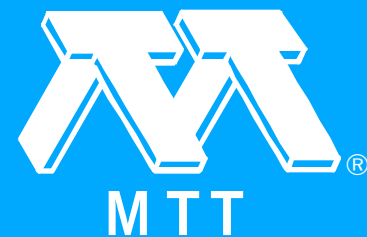
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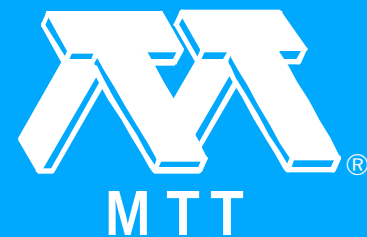
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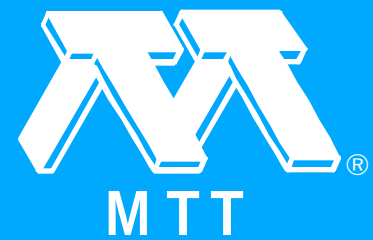
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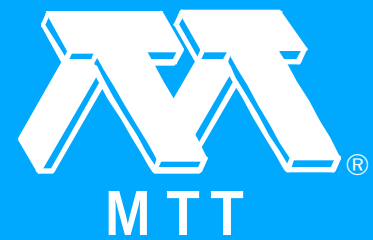
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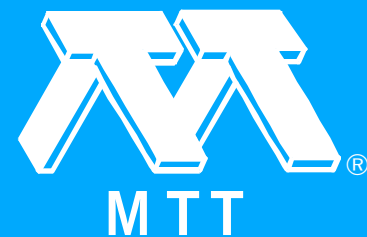
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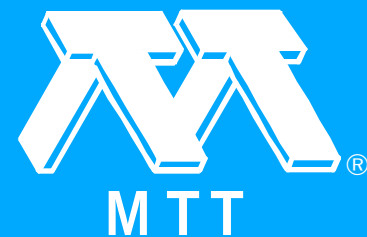
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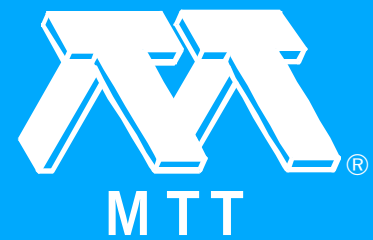
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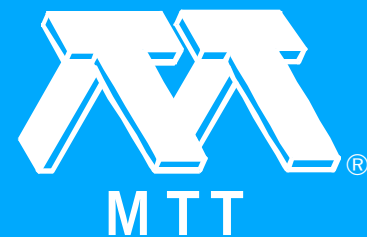
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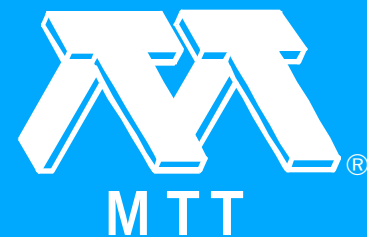
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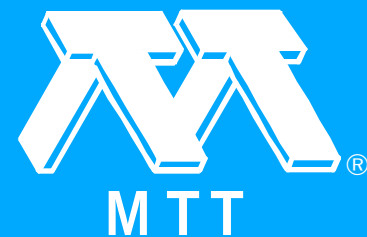
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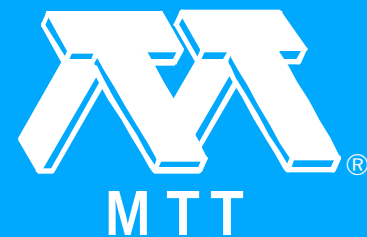
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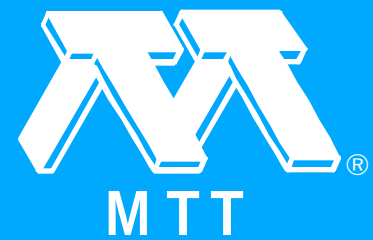
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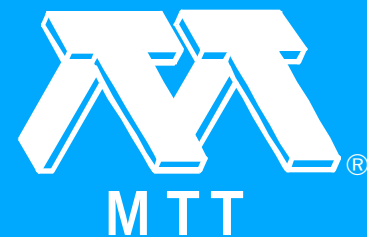
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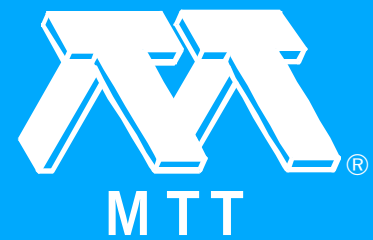
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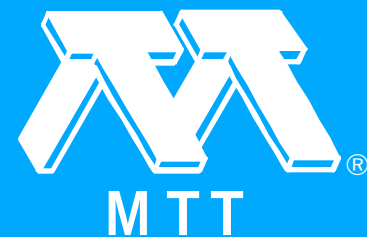
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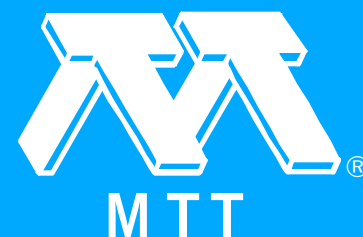
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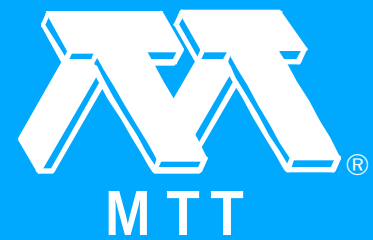
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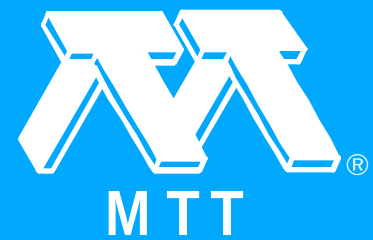
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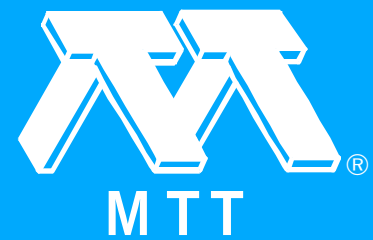
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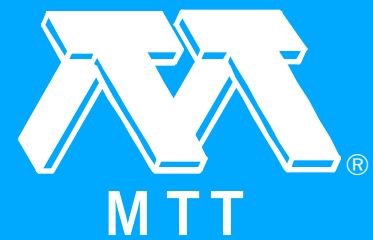
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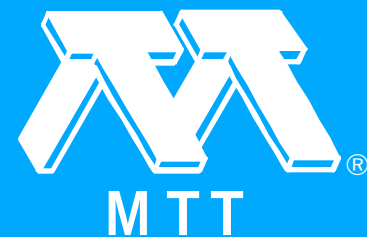
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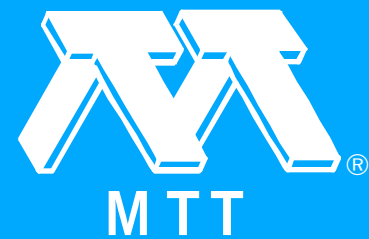
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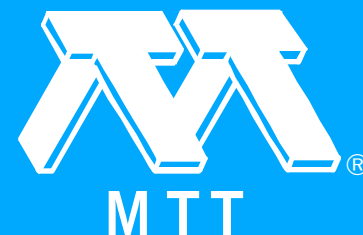
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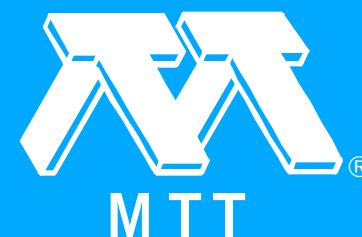
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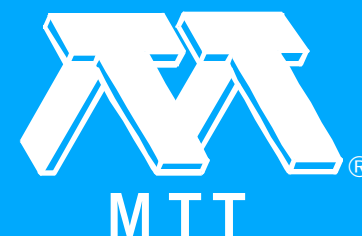
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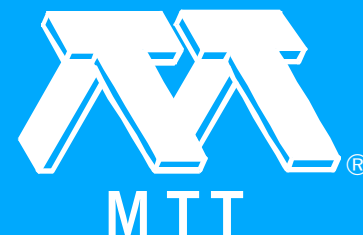
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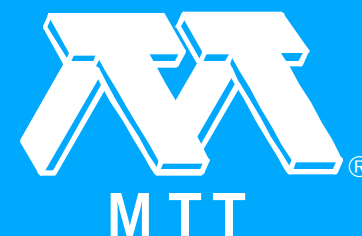
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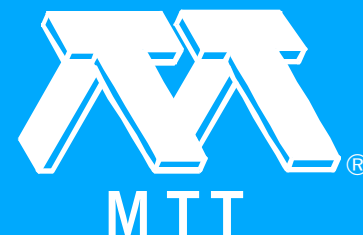
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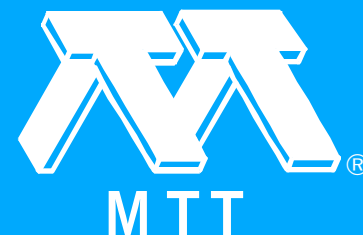
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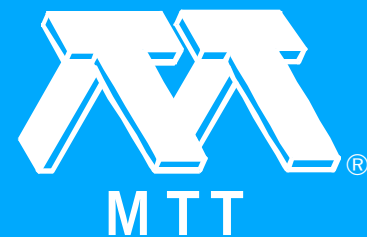
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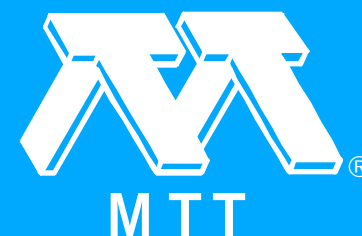
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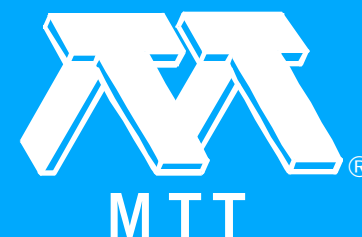
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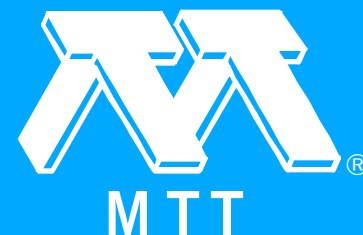
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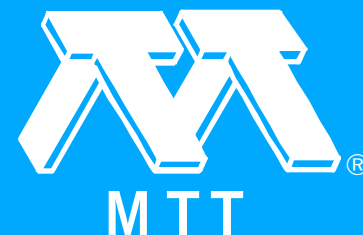
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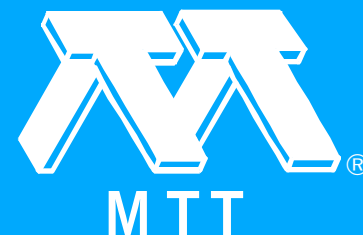
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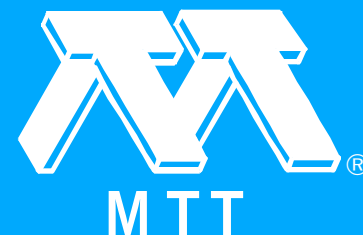
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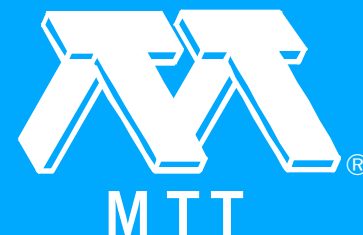
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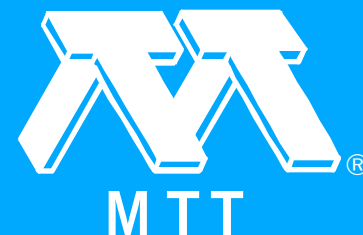
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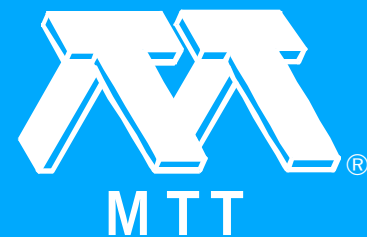
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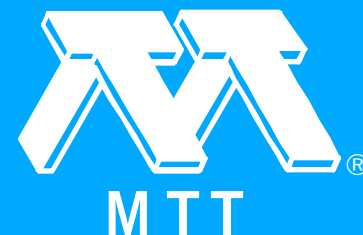
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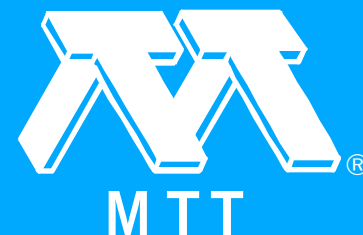
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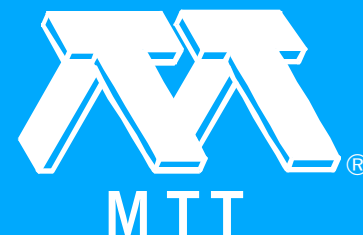
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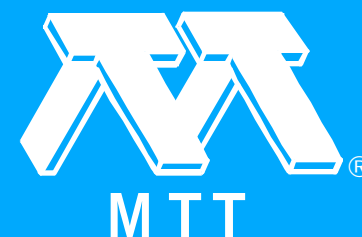
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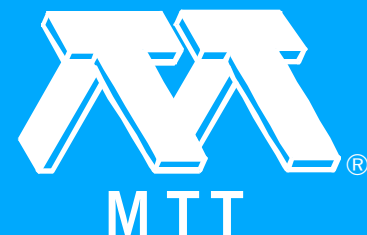
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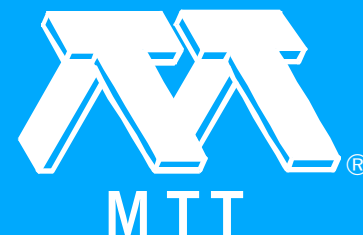
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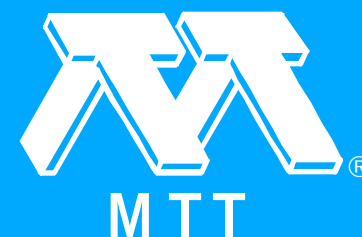
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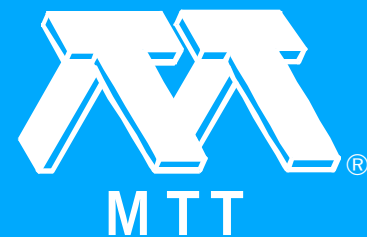
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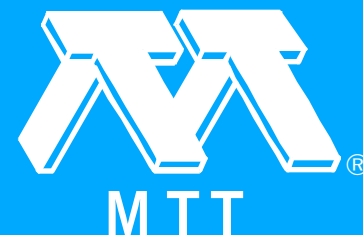
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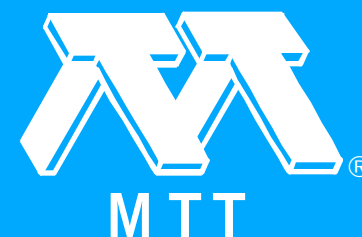
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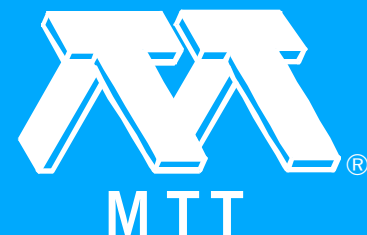
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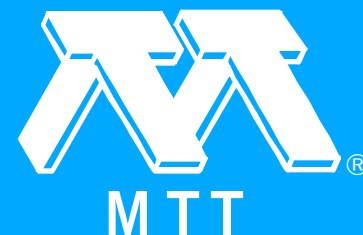
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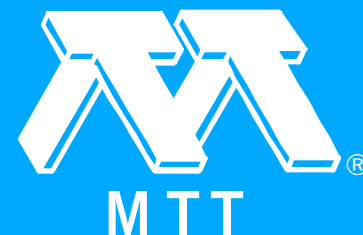
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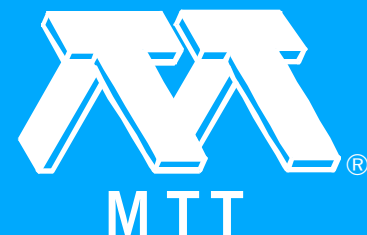
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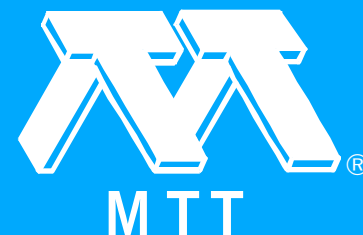
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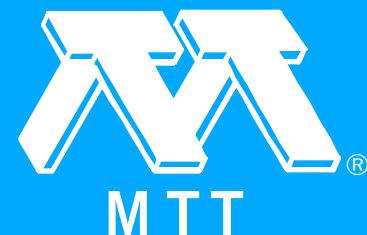
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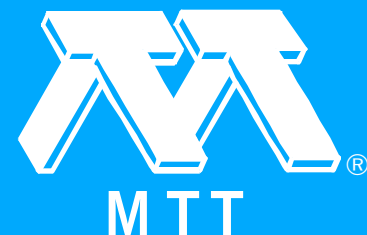
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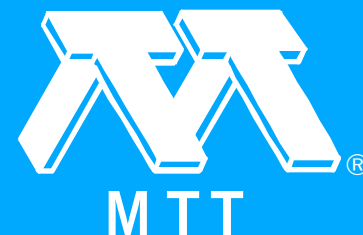
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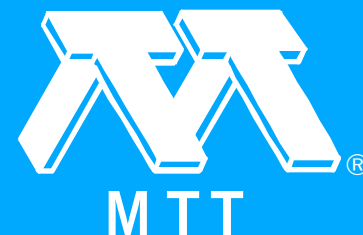
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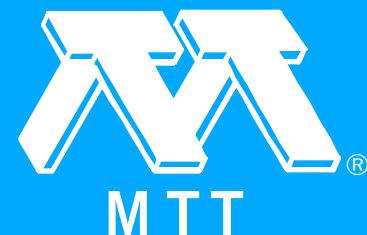
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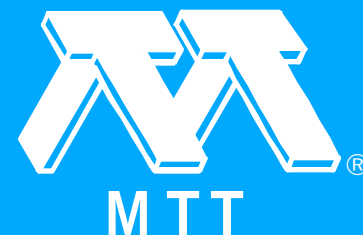
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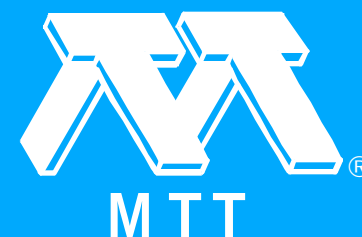
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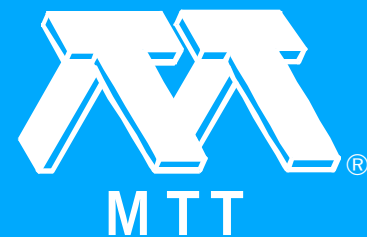
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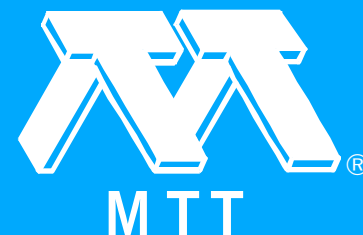
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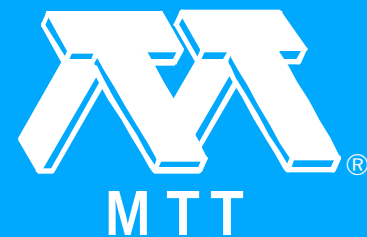
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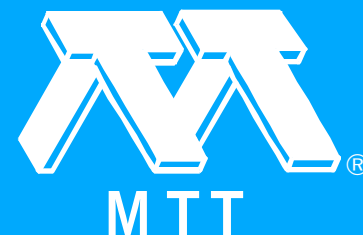
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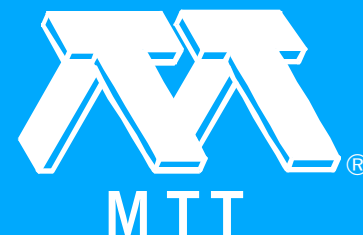
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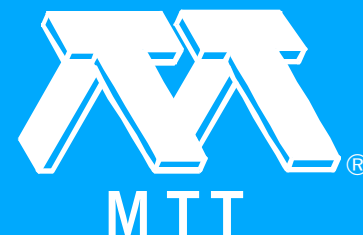
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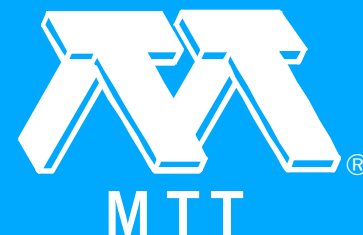
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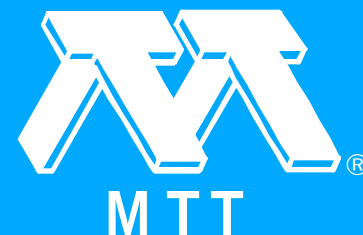
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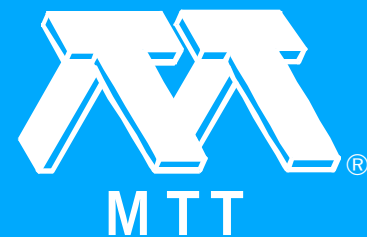
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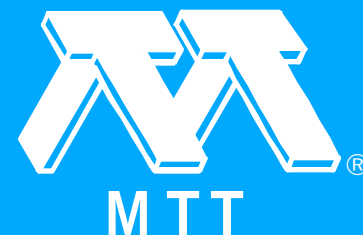
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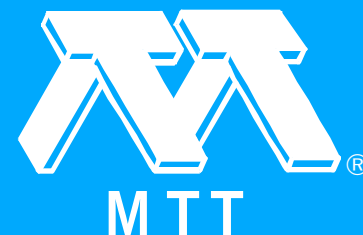
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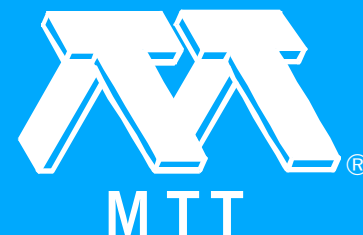


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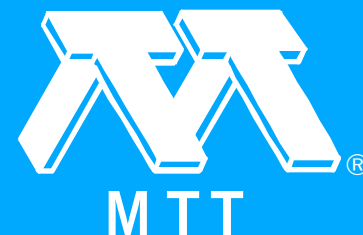
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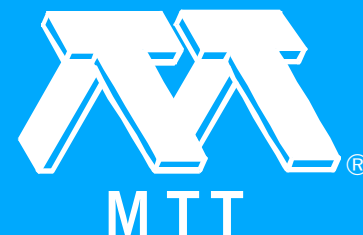
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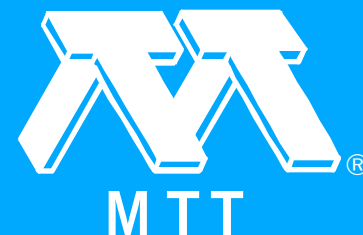
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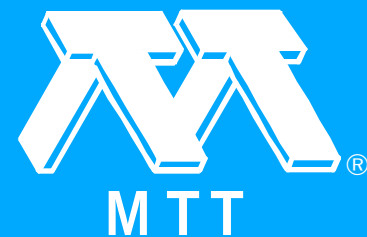
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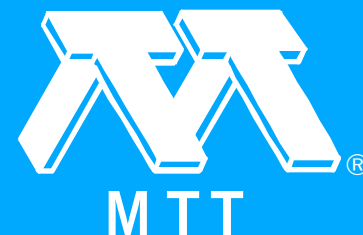
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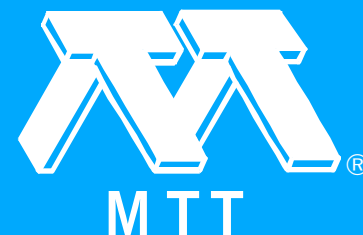
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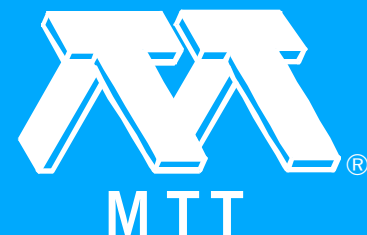
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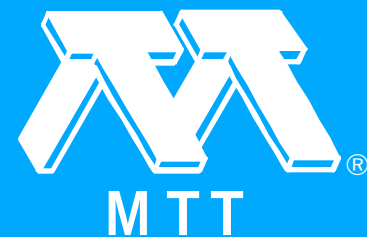
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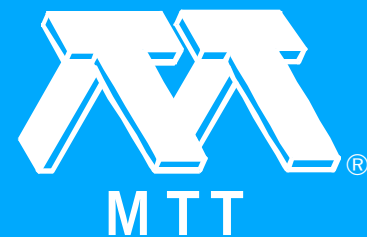
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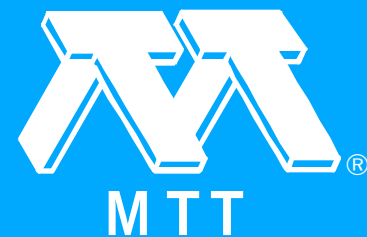
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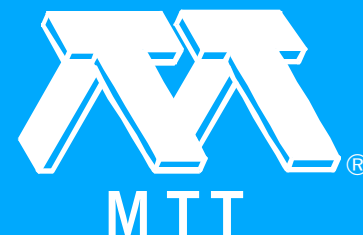
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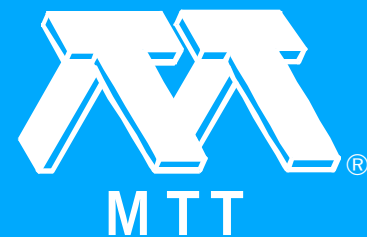
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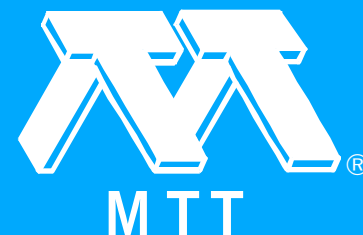
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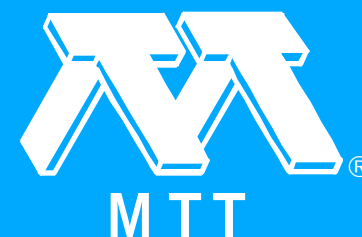
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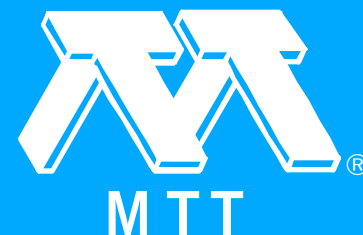
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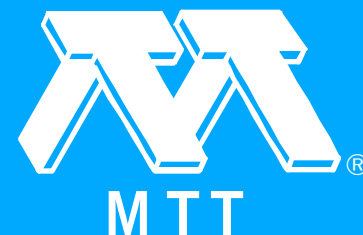


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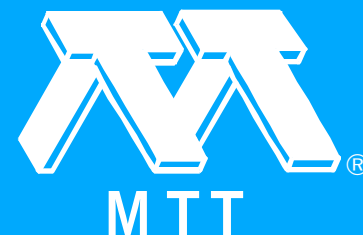
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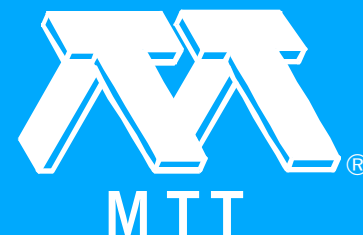
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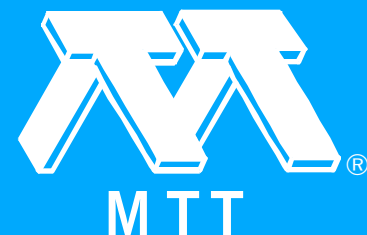
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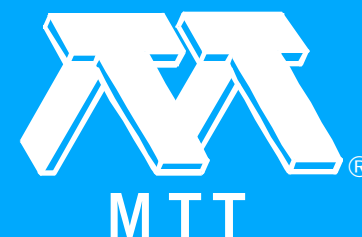
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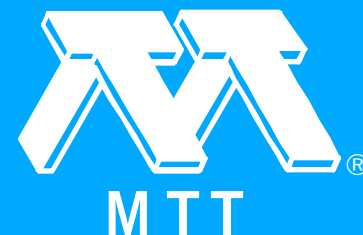
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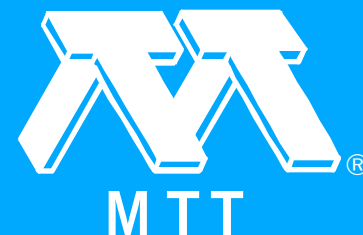
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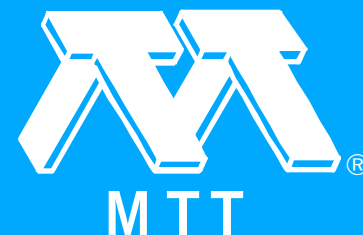
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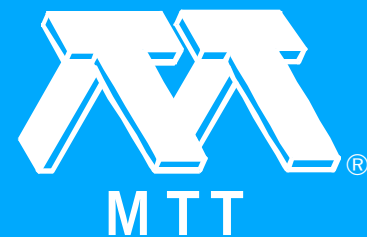
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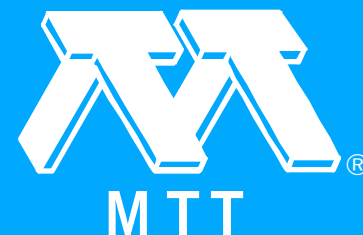
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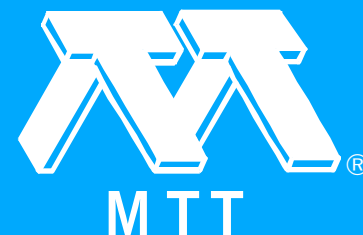
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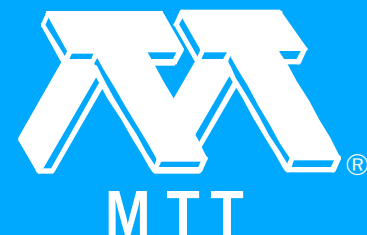
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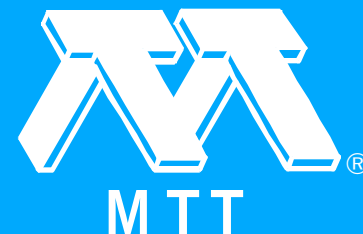
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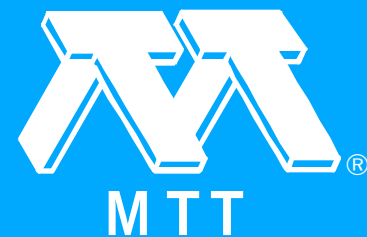
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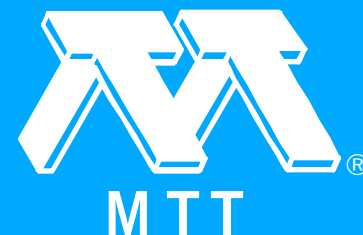
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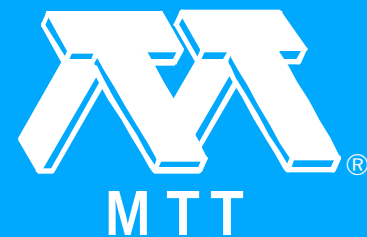
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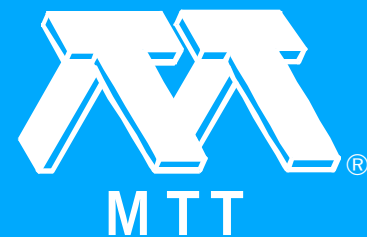
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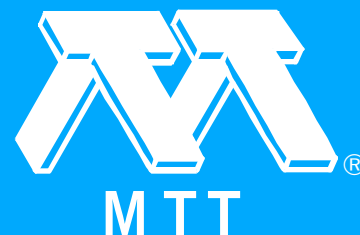
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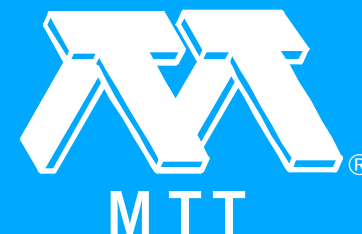
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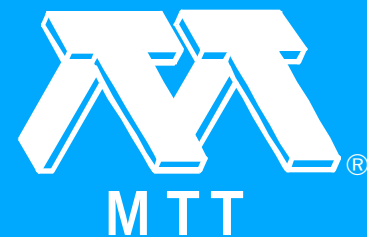
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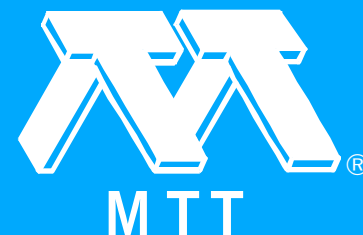
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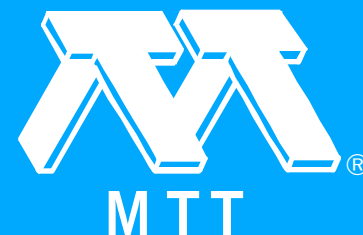
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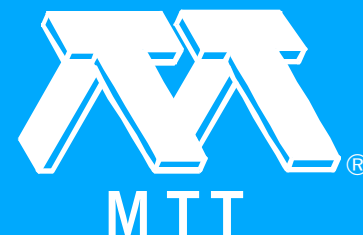
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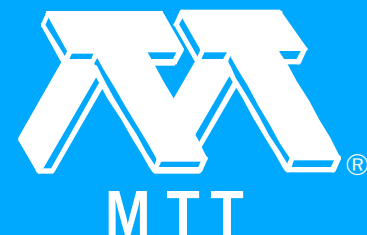
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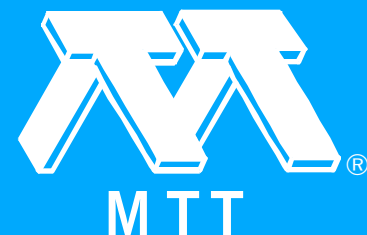
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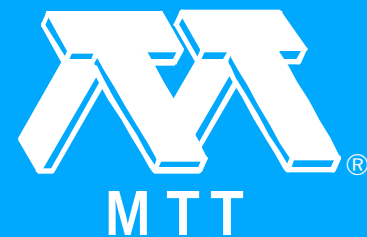
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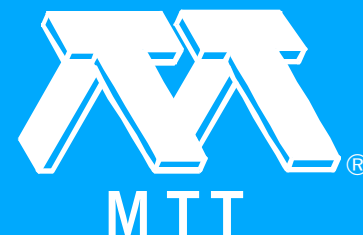
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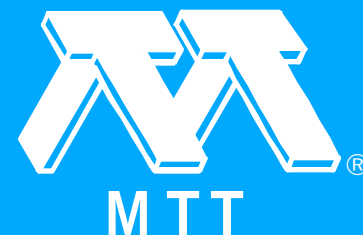
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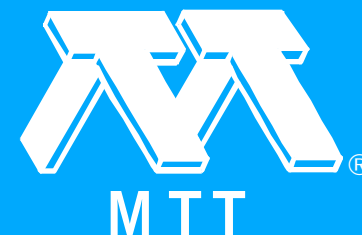
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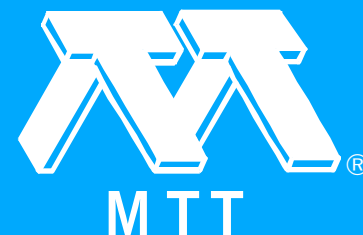
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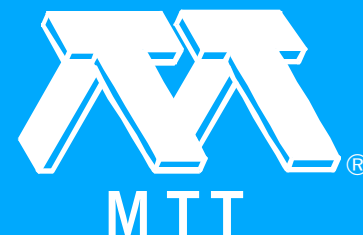
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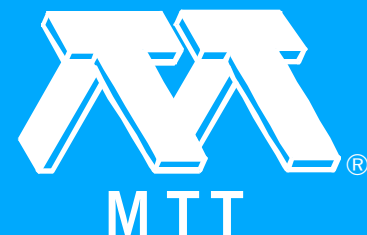
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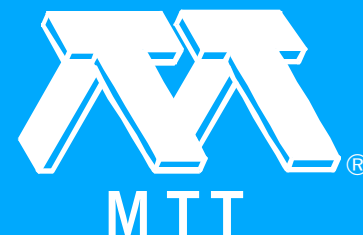
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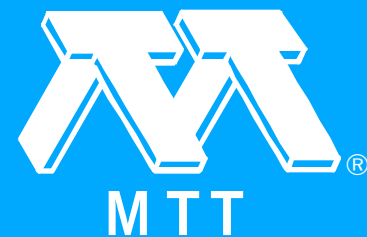
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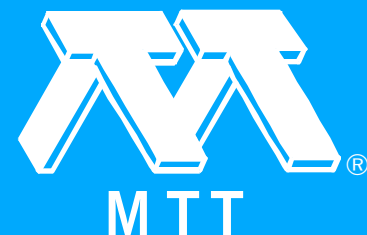
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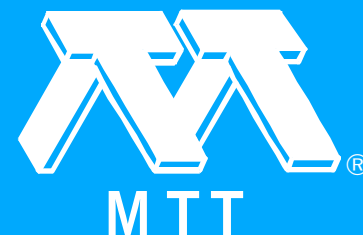
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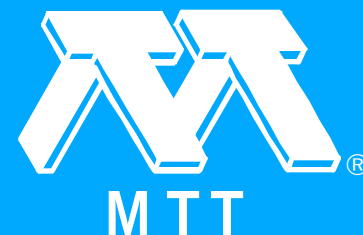
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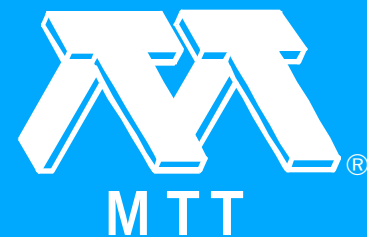
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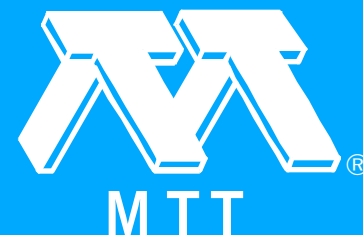
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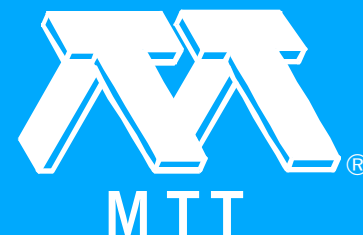
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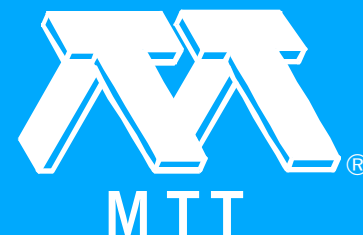
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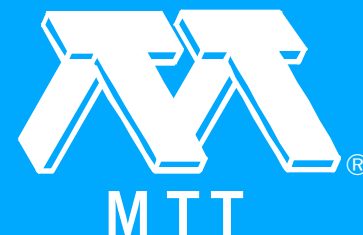
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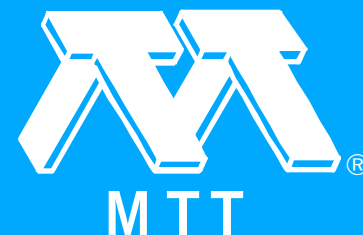
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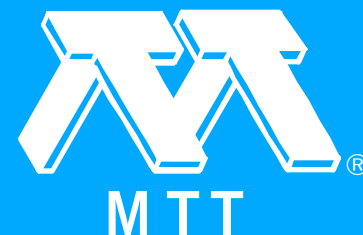
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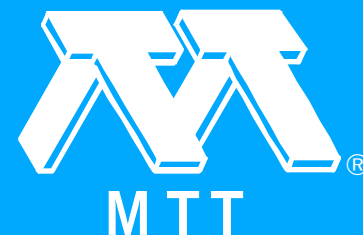
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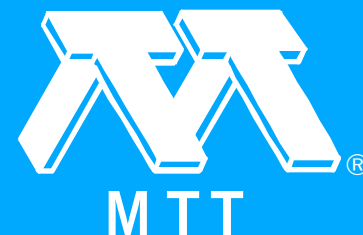
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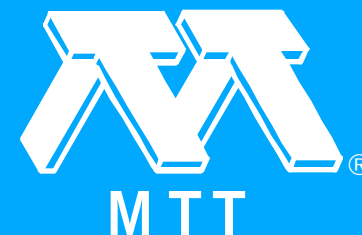
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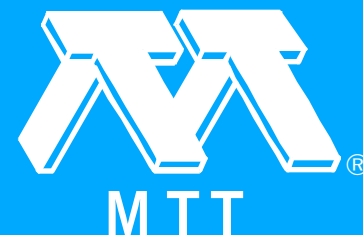
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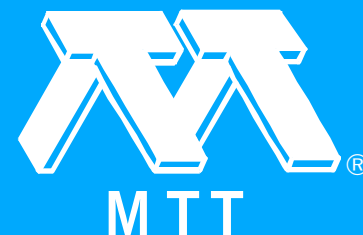
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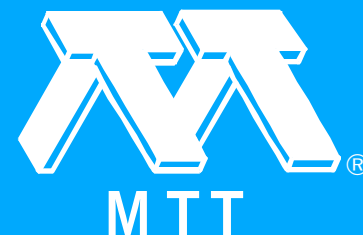
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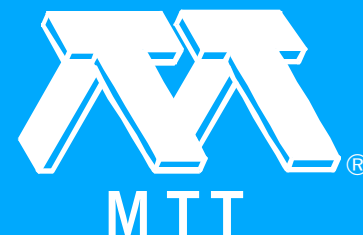
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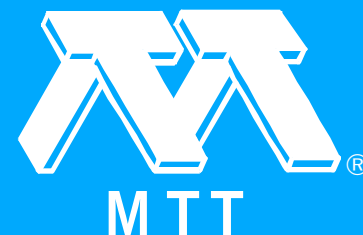
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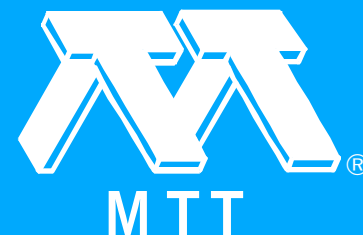
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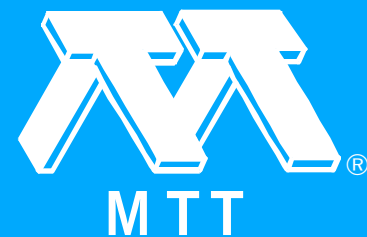
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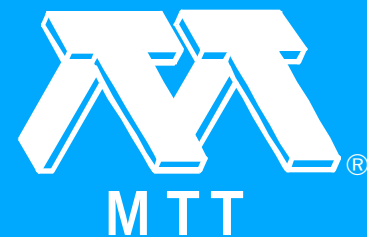
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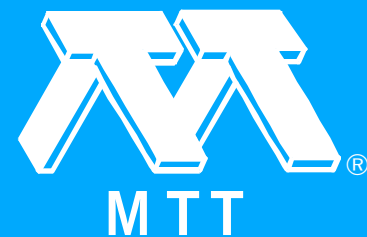
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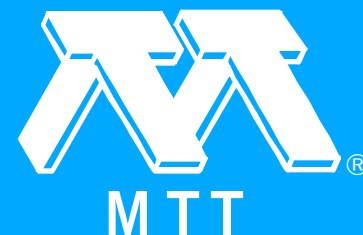
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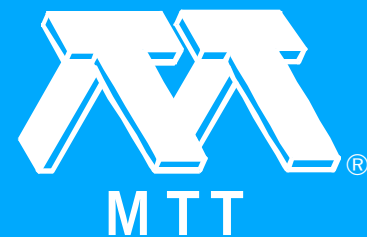
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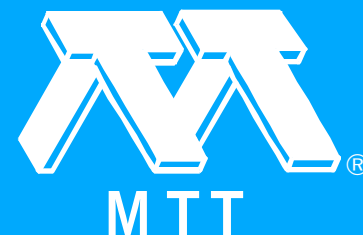
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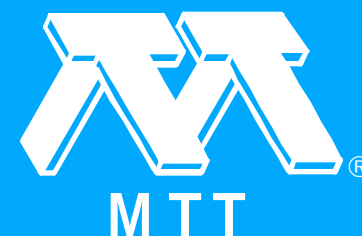
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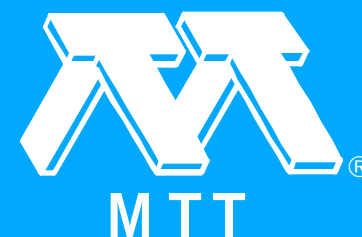
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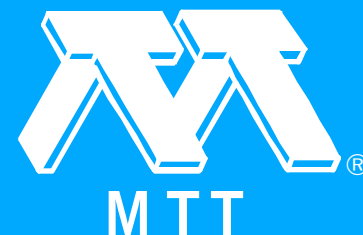
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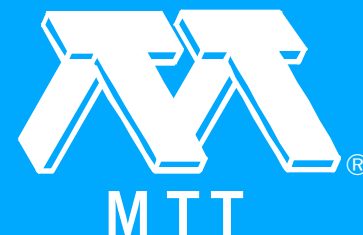
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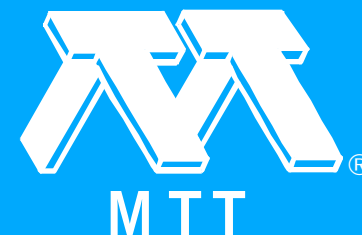
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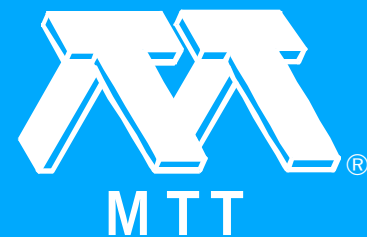
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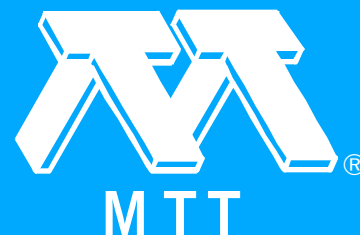
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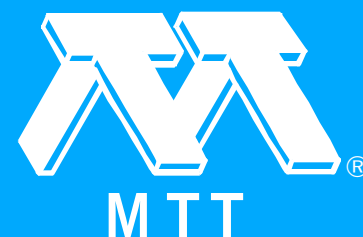
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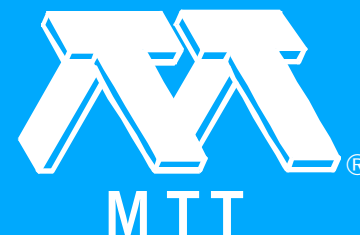
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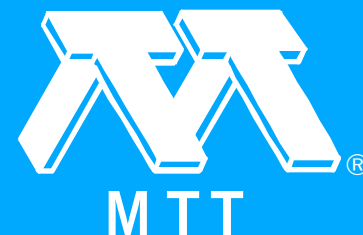
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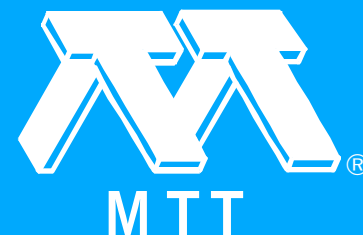
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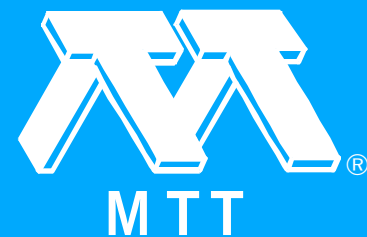
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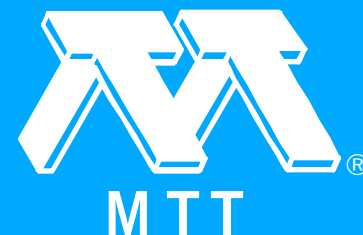
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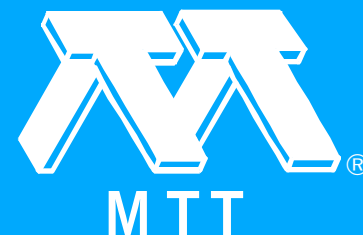
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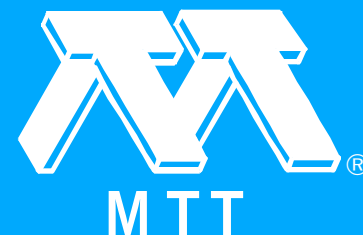
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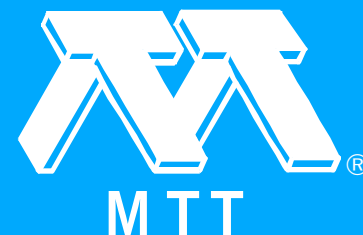


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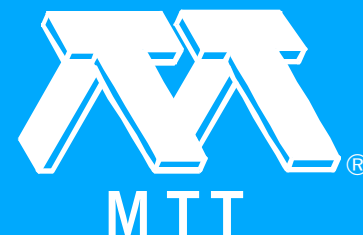
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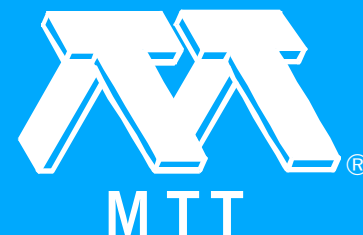
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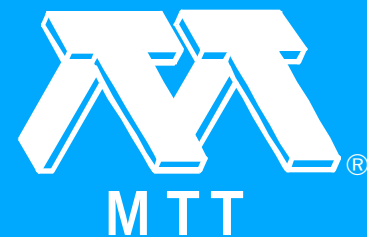
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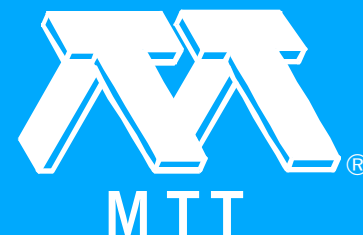
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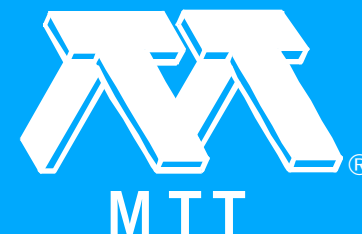
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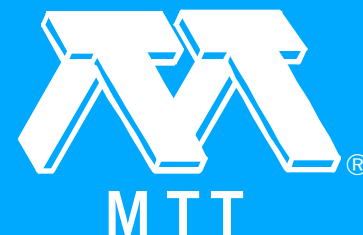
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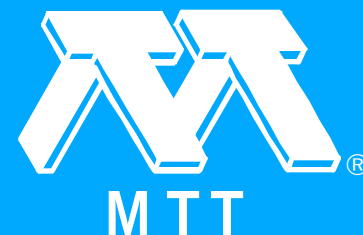
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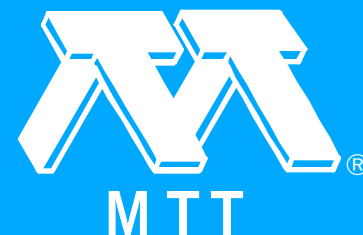
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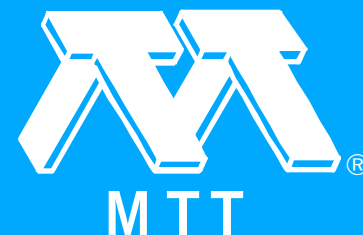
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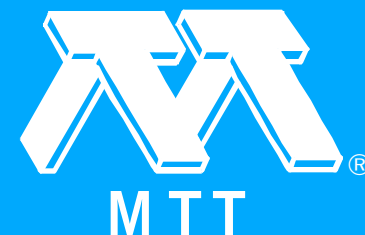
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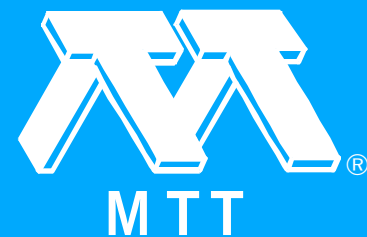
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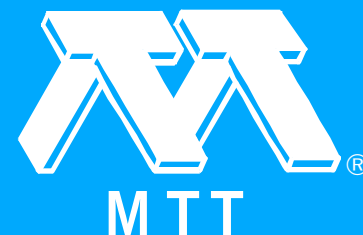


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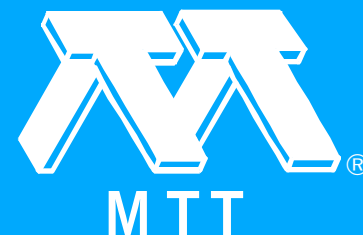
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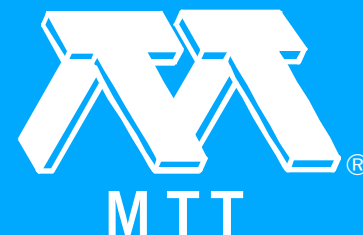
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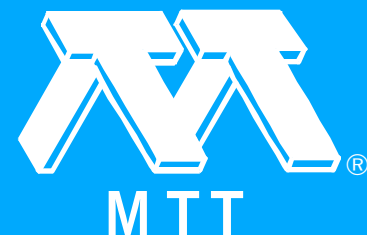
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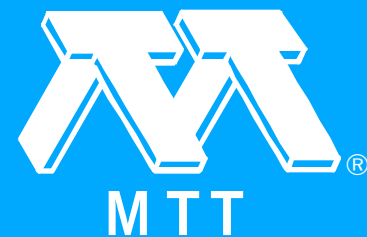
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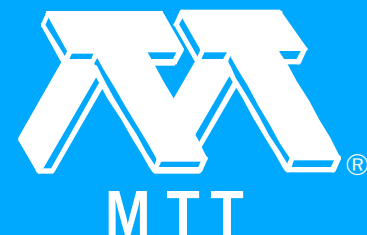
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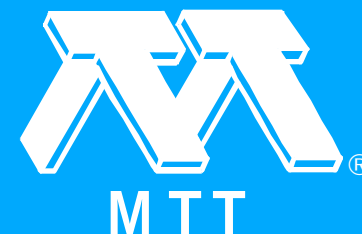
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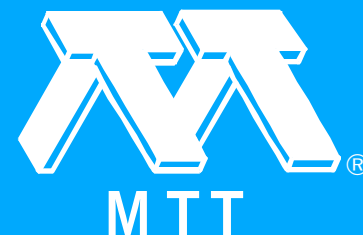
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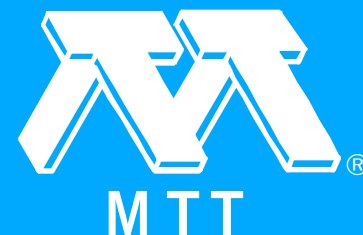
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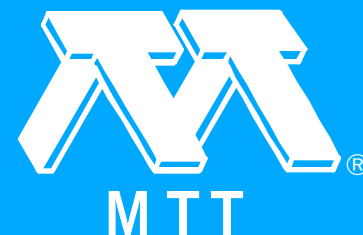
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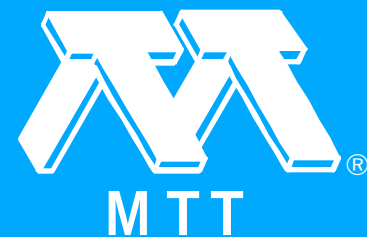
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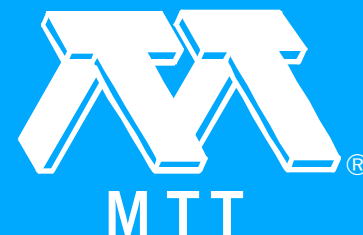


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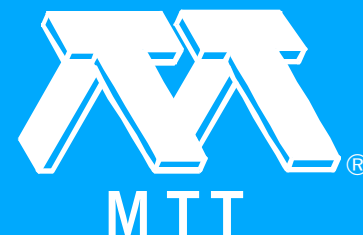
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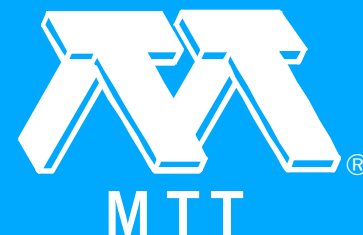
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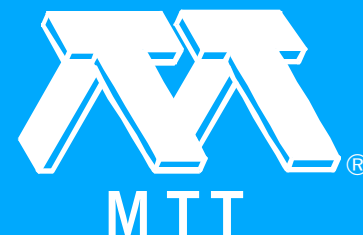
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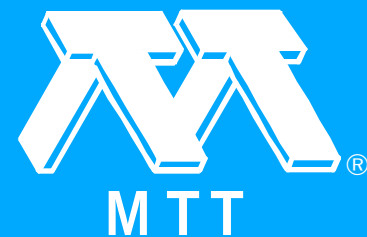
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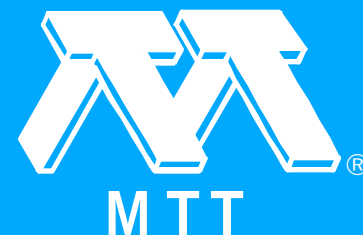
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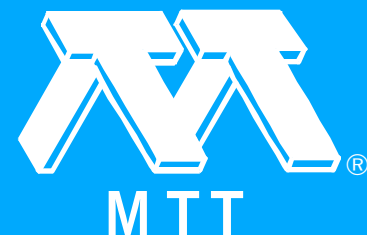
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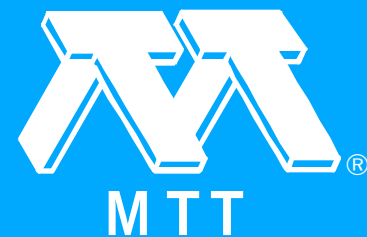
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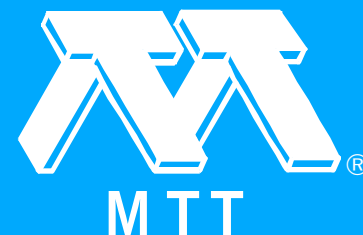
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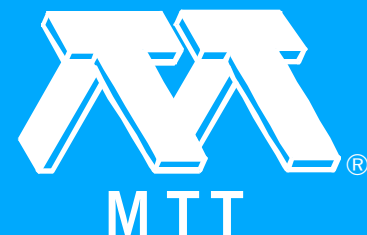
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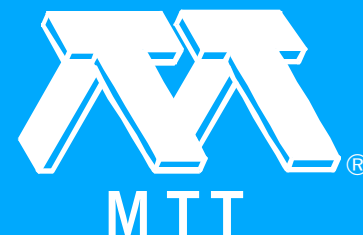
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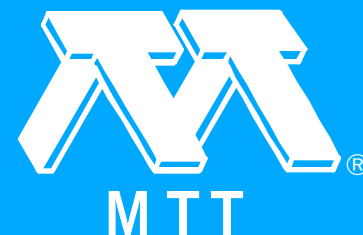
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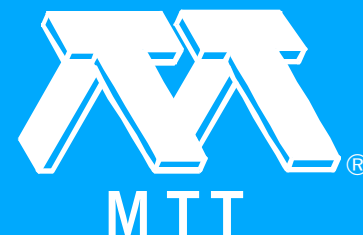
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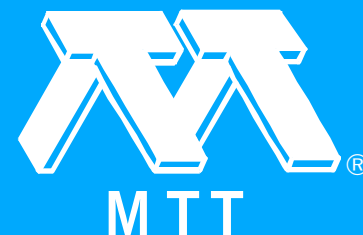
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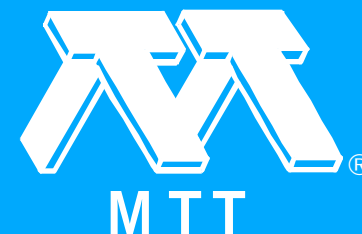
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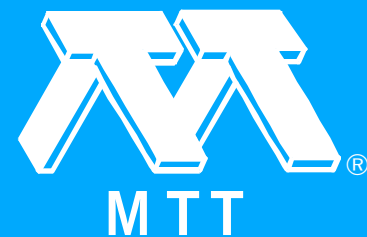
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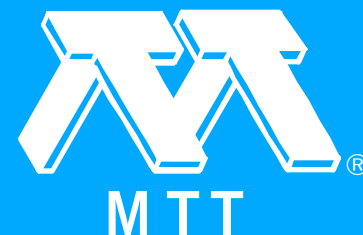
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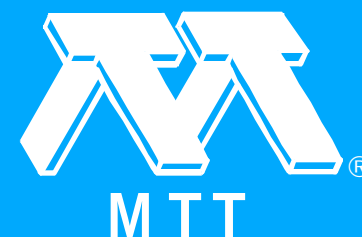
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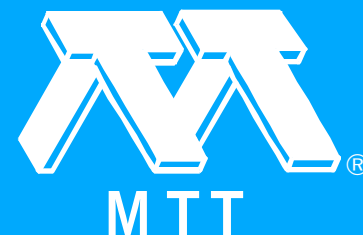
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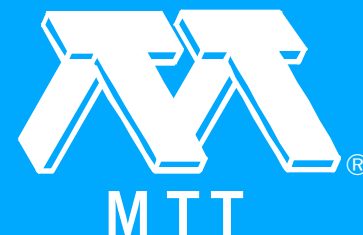
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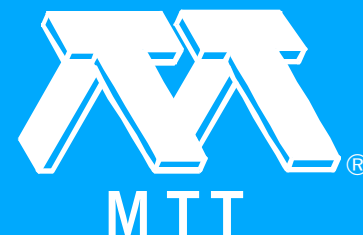
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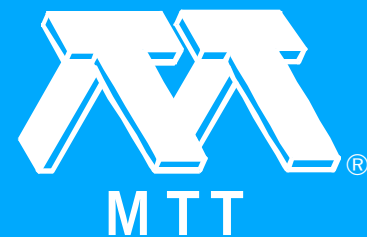
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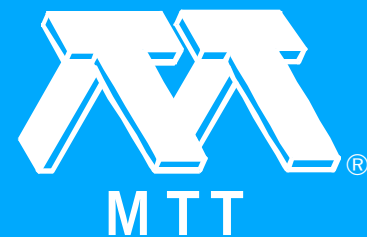
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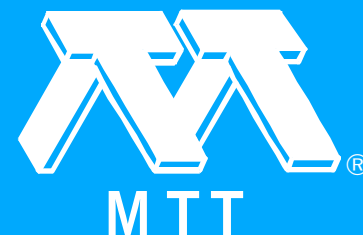
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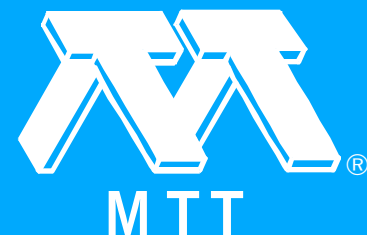
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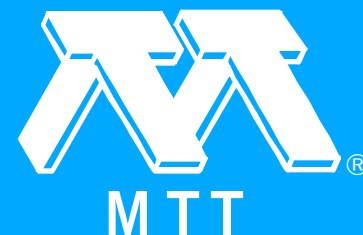
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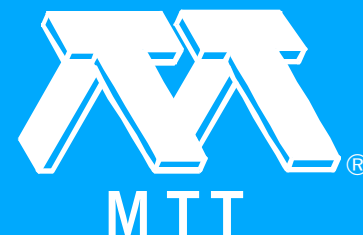
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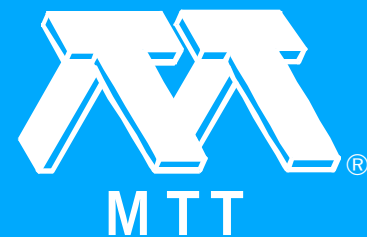
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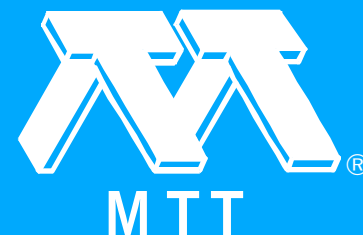
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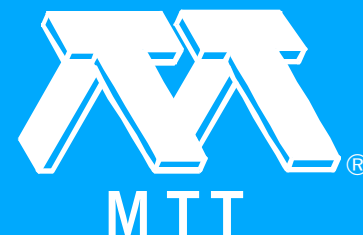
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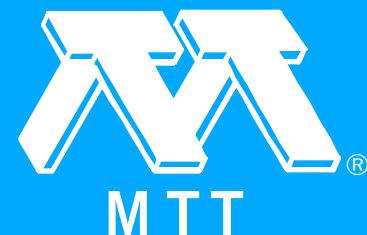
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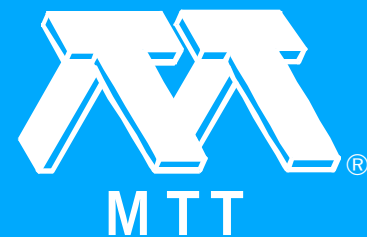
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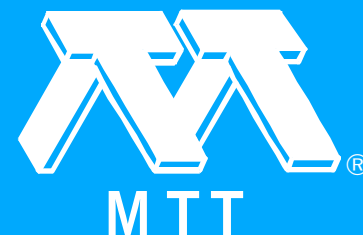
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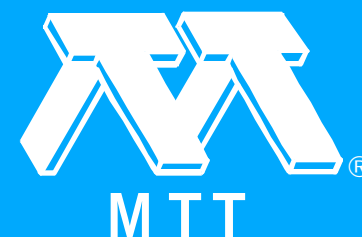
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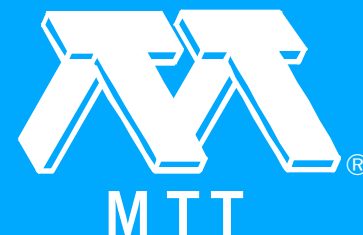
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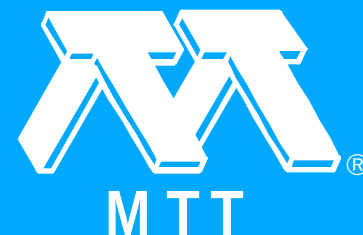


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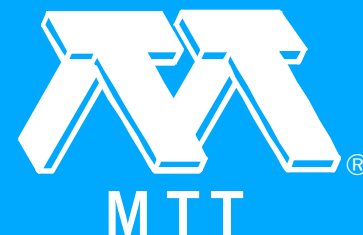
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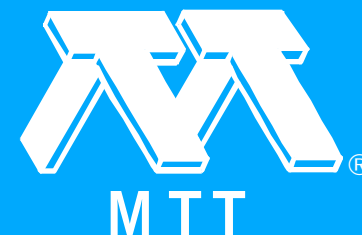
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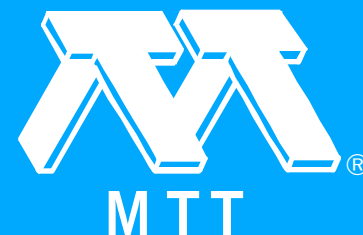
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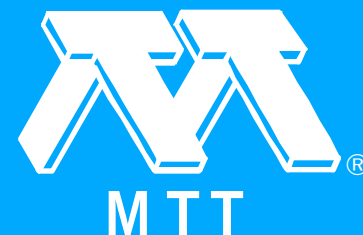
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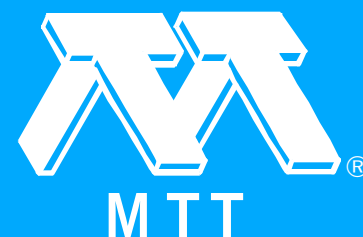
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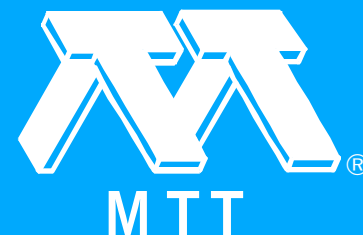


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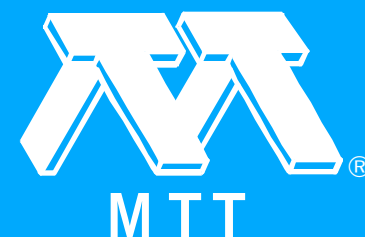
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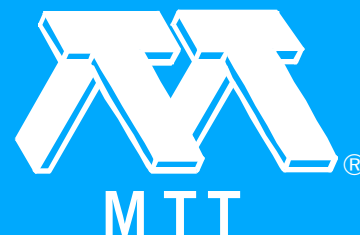
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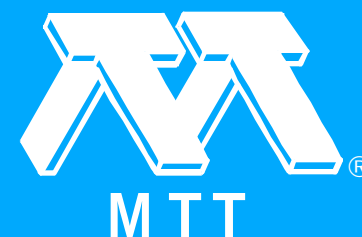
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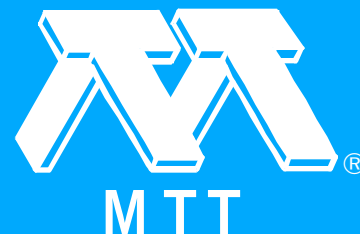
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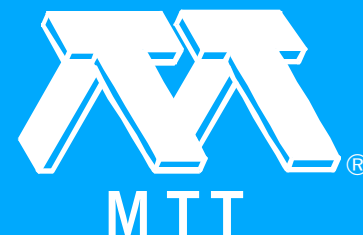
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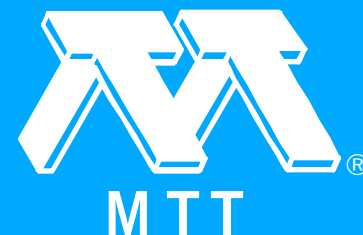
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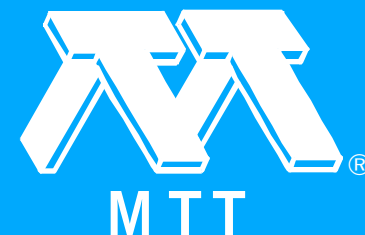
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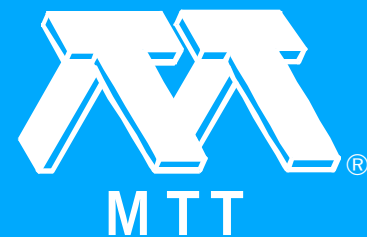
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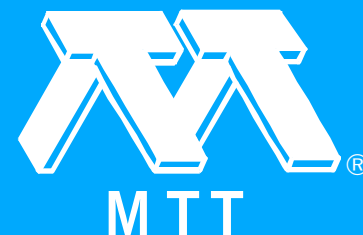
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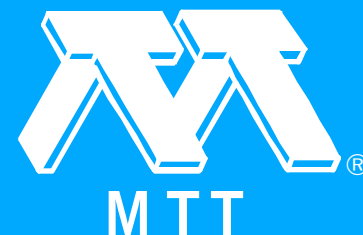
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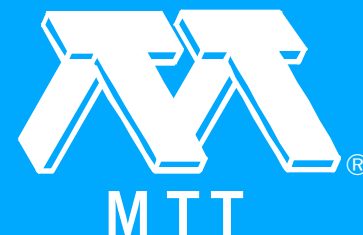
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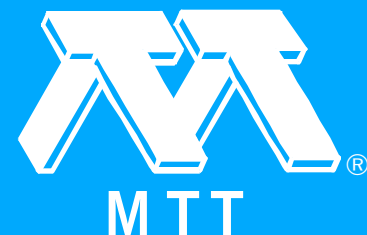
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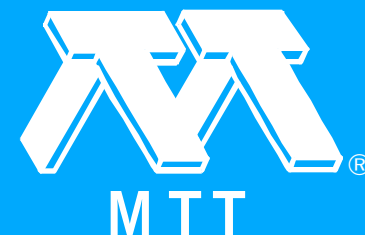
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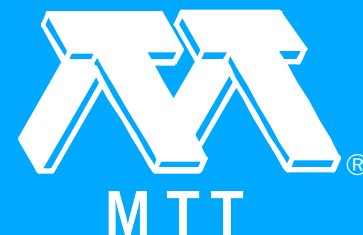
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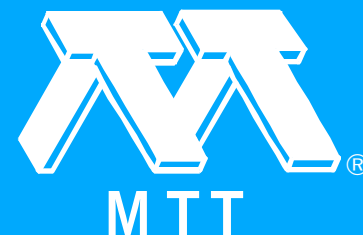
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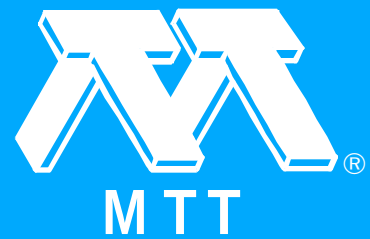
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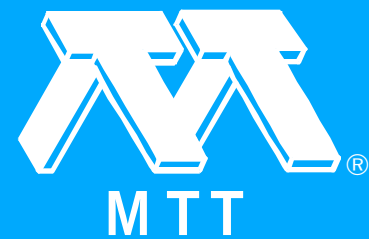
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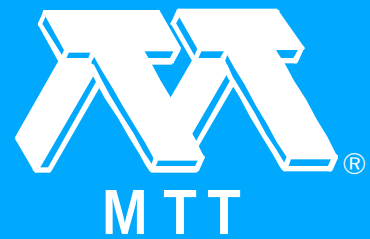


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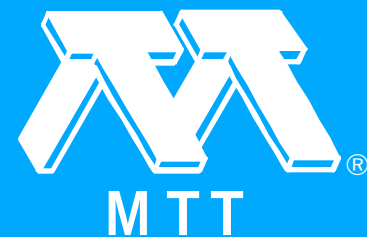
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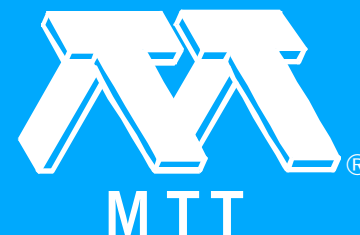
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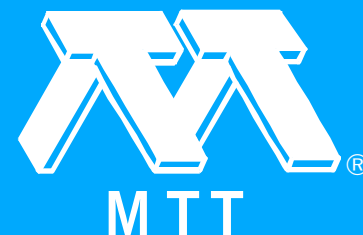
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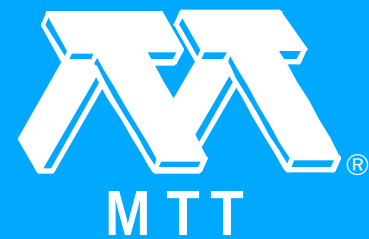
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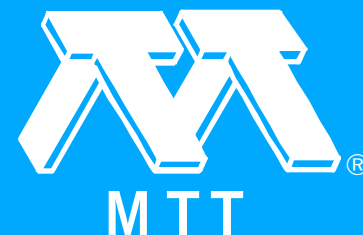
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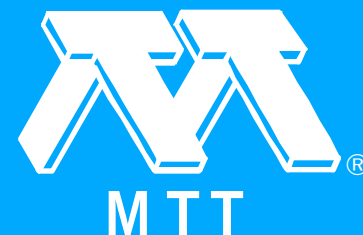
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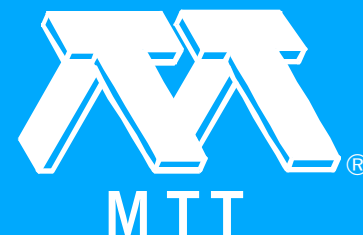
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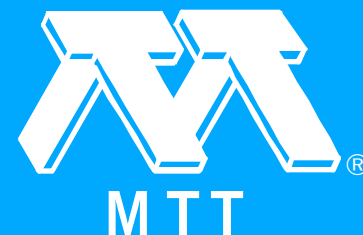
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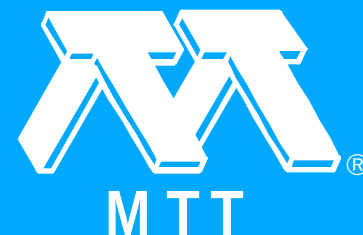


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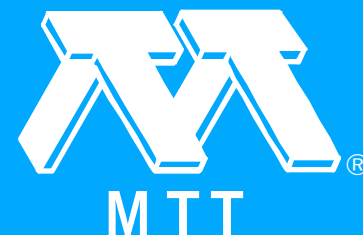
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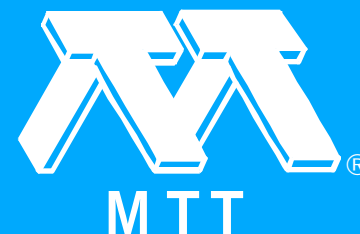
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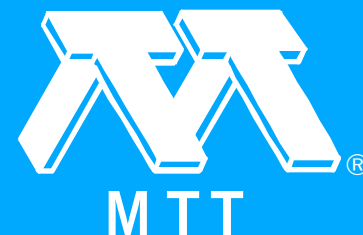
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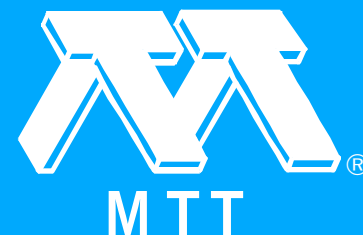
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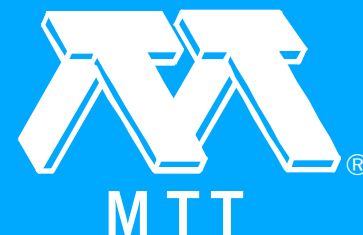
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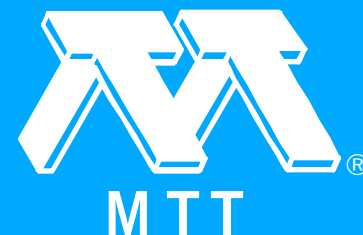
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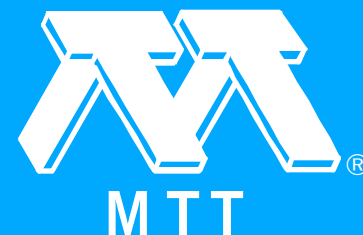
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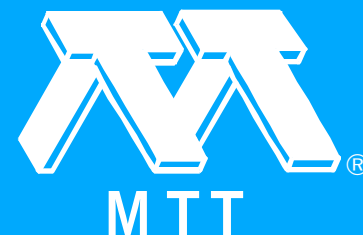
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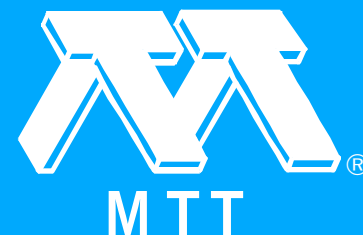
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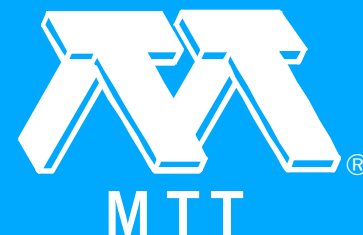
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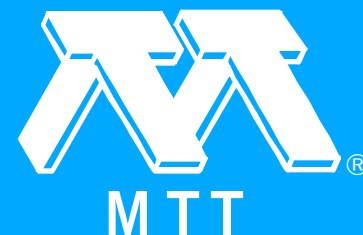
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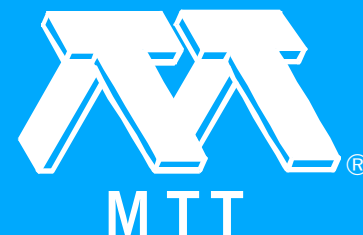
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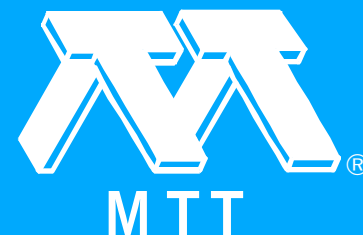
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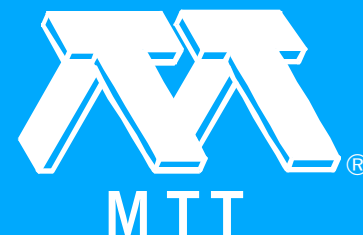
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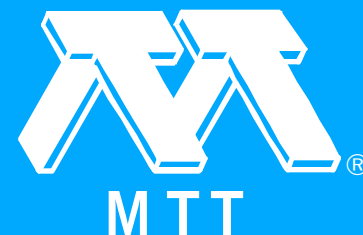
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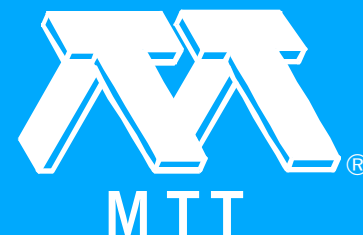
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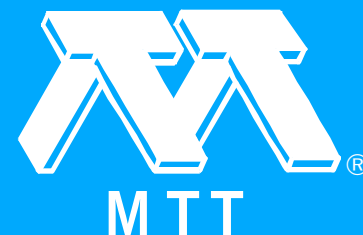
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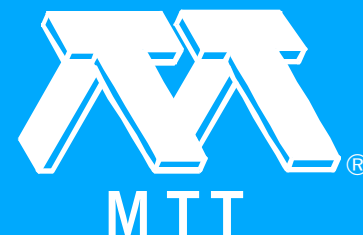
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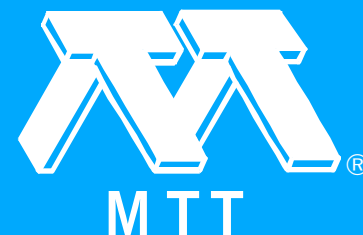
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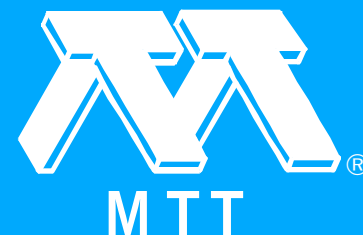


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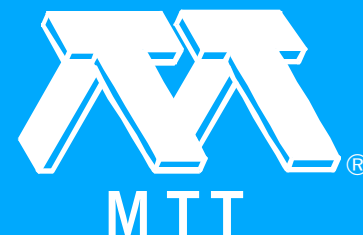
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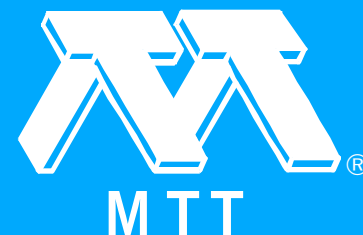


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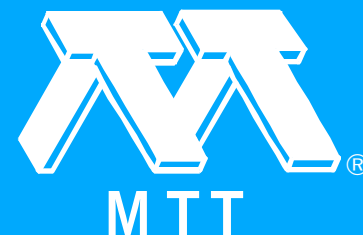
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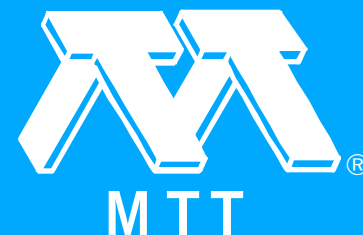
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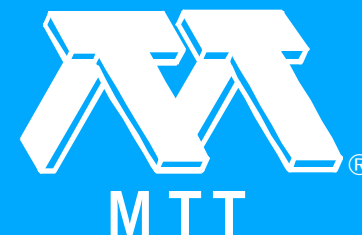
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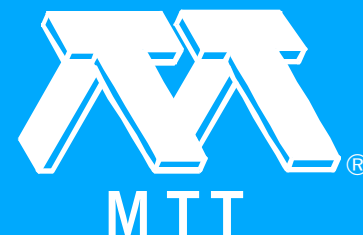
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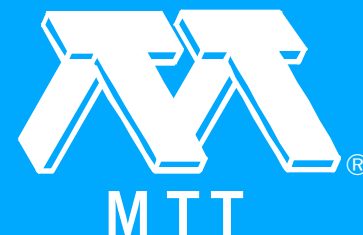
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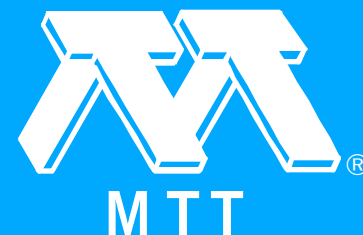
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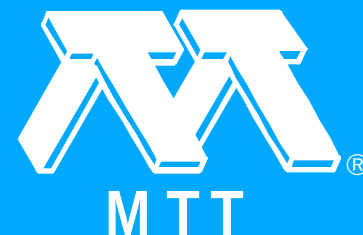


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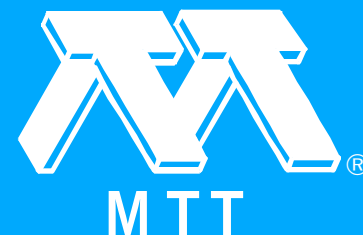
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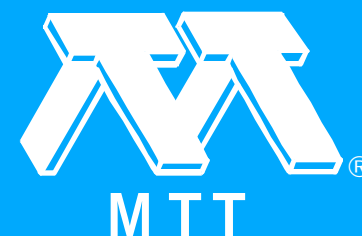
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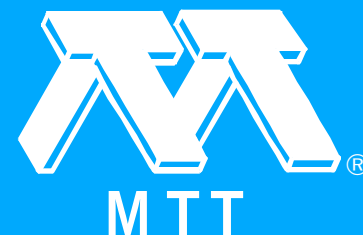
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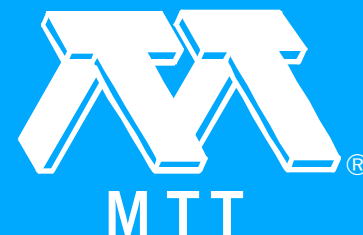


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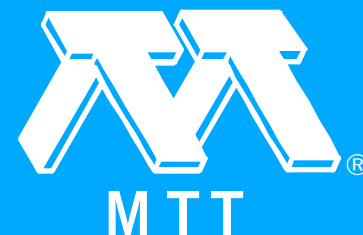
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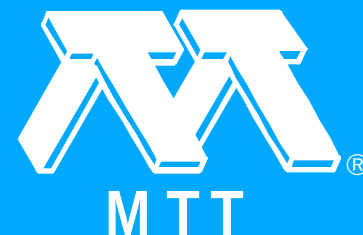


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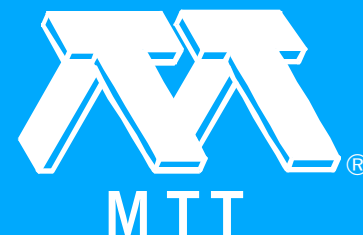
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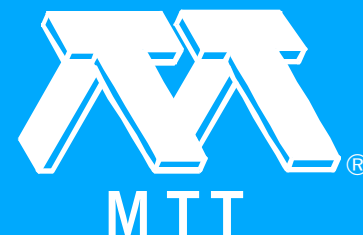
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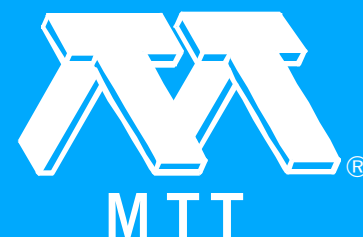
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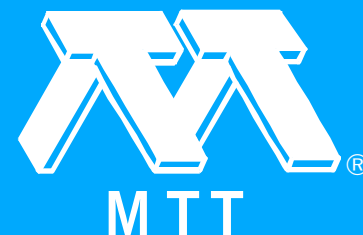
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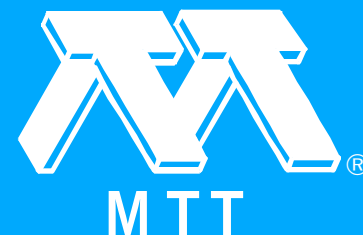
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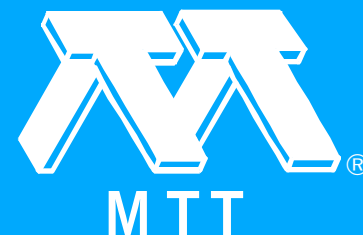
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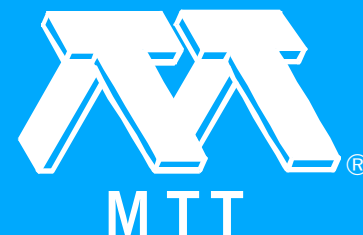


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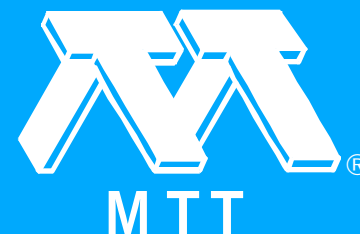
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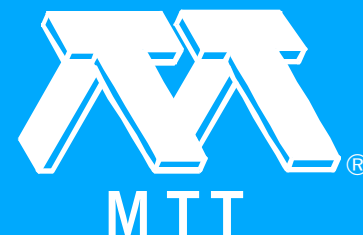
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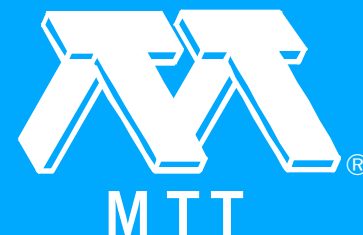
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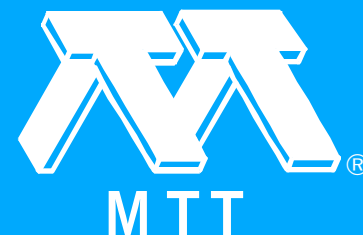
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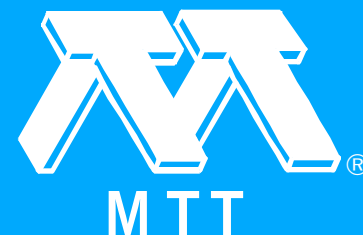


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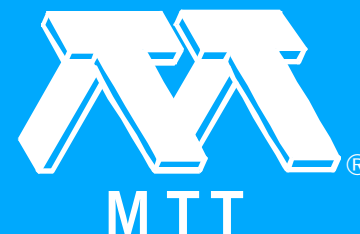
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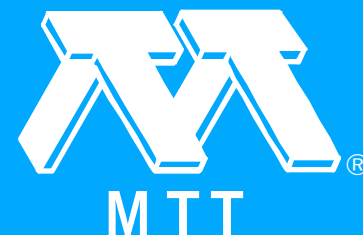
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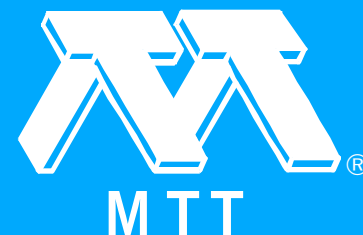


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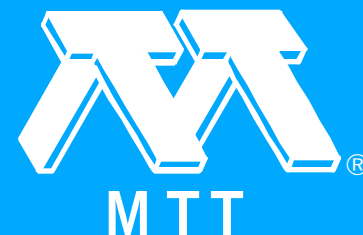
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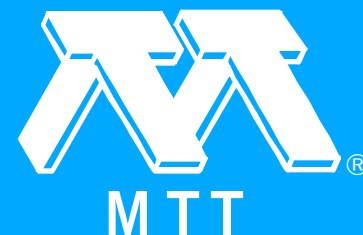
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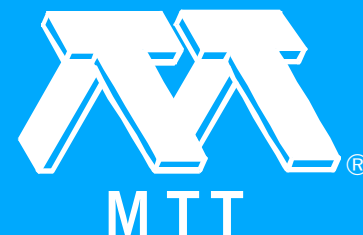
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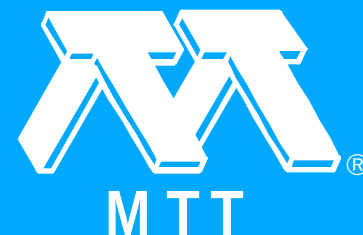


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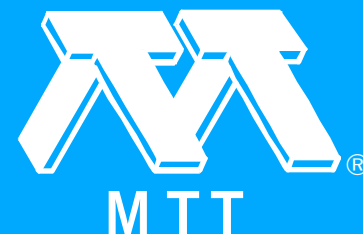


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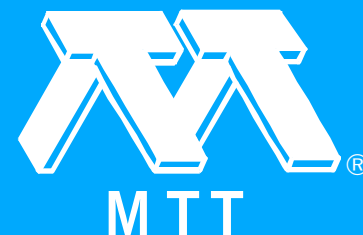
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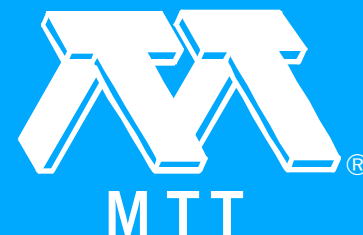


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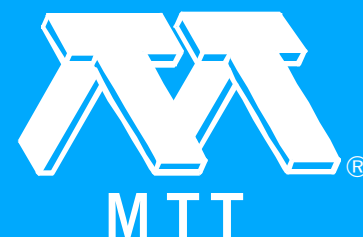
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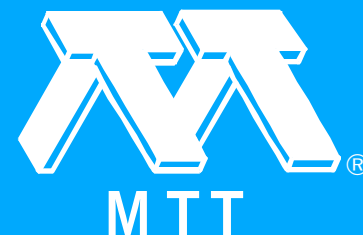
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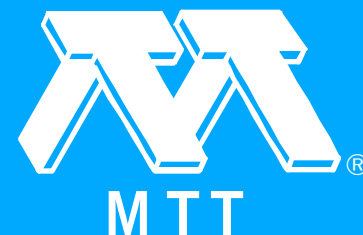


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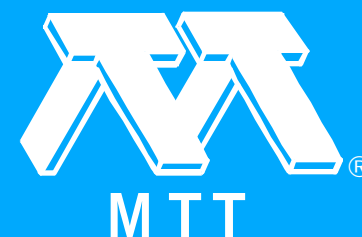
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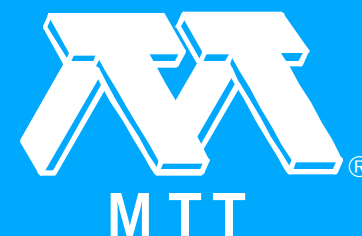
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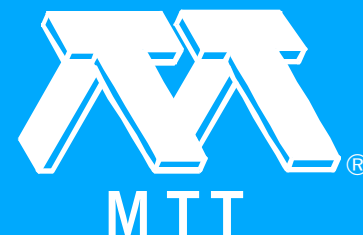
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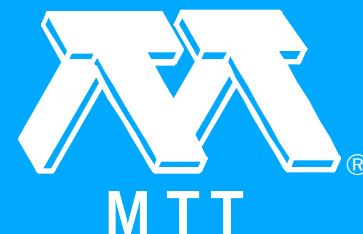
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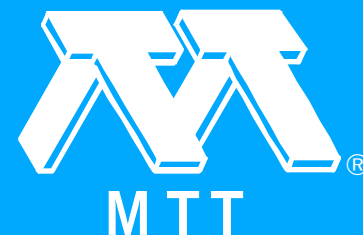
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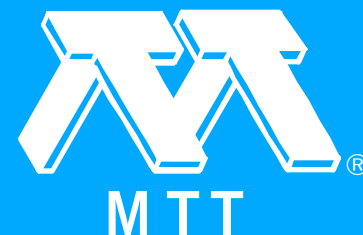
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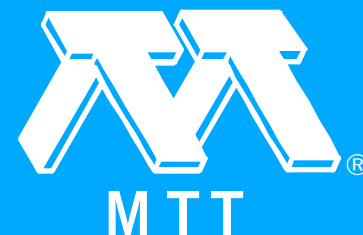
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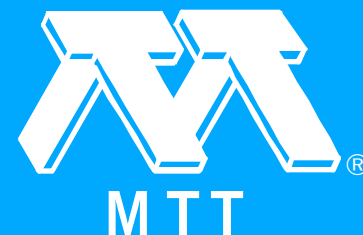
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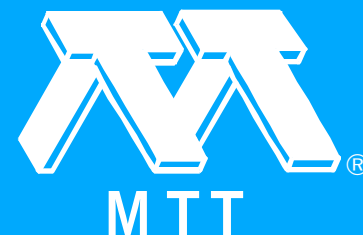
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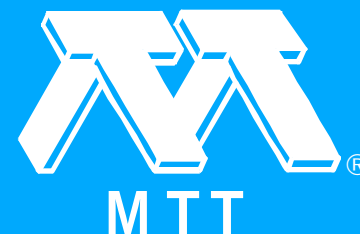
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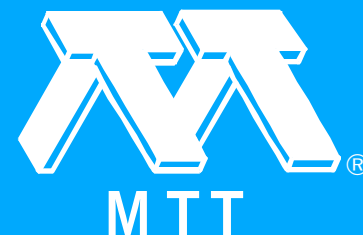
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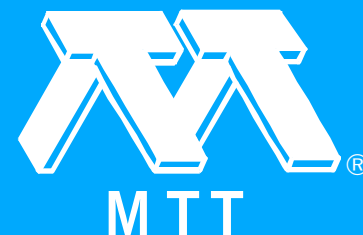
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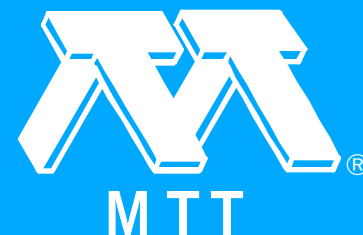
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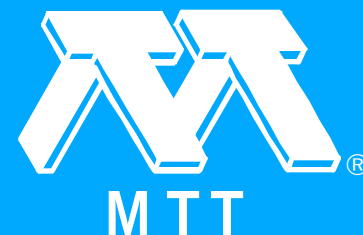
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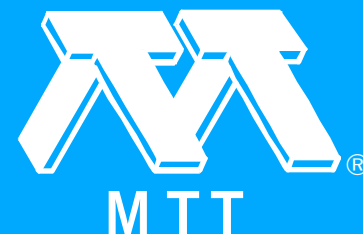


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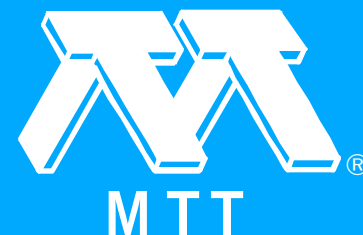
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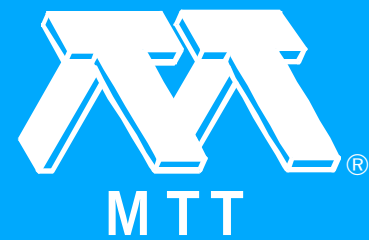
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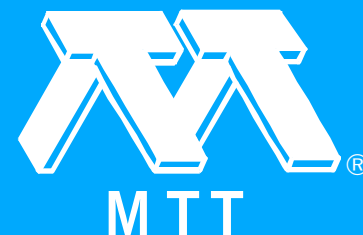
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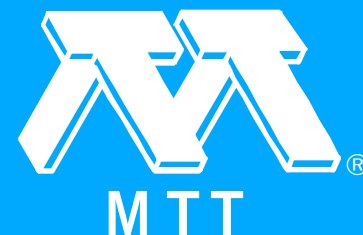
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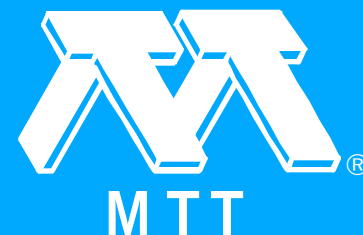
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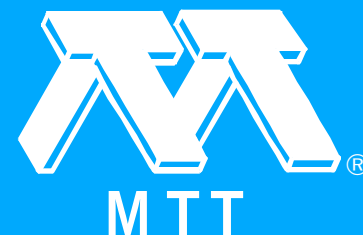
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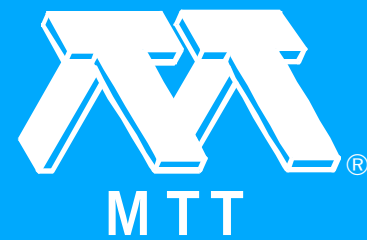
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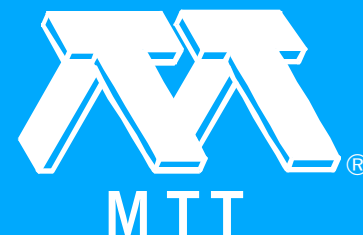
- ❑ Propagation and radiation characteristics of gyrotropic open structures in the presence of sources
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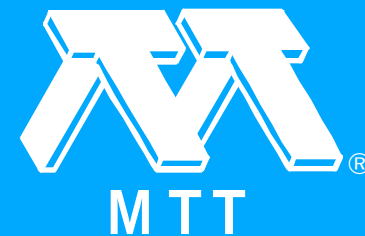
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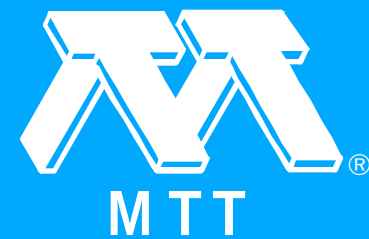
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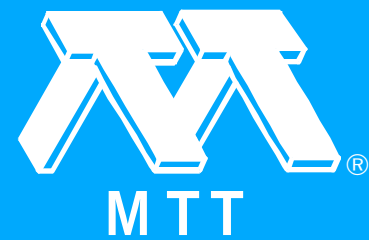


Abstracts

An original approach to mode converter optimum design

E. Luneville, J.-M. Krieg and E. Giguët. "An original approach to mode converter optimum design." 1998 Transactions on Microwave Theory and Techniques 46.1 (Jan. 1998 [T-MTT]): 1-9.

An original method of shape optimization has been developed to improve high-power high-frequency transmission lines' performances. This method is based on the coupling coefficients equations, for which general expressions are given. It makes use of numerical methods such as steepest descent associated to adjoint state technique. The results obtained on several types of components demonstrate the pertinence of this method.



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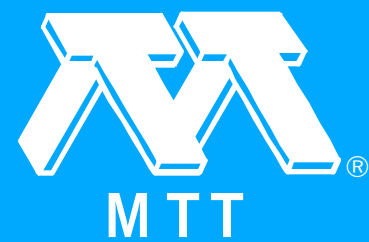
CAD applying the finite-element method for dielectric-resonator filters

D. Baillargeat, S. Verdeyme, M. Aubourg and P. Guillon. "CAD applying the finite-element method for dielectric-resonator filters." 1998 Transactions on Microwave Theory and Techniques 46.1 (Jan. 1998 [T-MTT]): 10-17.

The progress of numerical techniques now permit us to analyze rigorously complex devices such as dual-mode cavity multipole filters or planar passive elements for coplanar monolithic microwave integrated circuits (MMICs). In this paper, we describe a rigorous design of dielectric resonator (DR) filters applying the finite-element method (FEM). We first present a dual mode coupling technique which replaces classical DRs, coupling, and tuning screws, which are commonly used in dual-mode filters, by slotted DRs. Next, a new theoretical analysis based on the contribution to the dual-mode filter response of the first DR hybrid mode and of higher order modes is described. This analysis can be applied to any type of microwave dual-mode filter. It allows us to define a procedure which explains the presence and controls the position of the two transmission zeros in the filter responses. In this paper, this procedure has been applied to improve filtering performances of a dual-mode DR filter. Finally, a synthesis method is developed to rigorously design for the first time, a four- and an eight-pole slotted DR elliptic filters. The experimental results were obtained with no tuning and the theoretical ones show good agreement.

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Analytically determined quasi-static parameters of shielded or open multiconductor microstrip lines

D. Homentcovschi and R. Oprea. "Analytically determined quasi-static parameters of shielded or open multiconductor microstrip lines." 1998 Transactions on Microwave Theory and Techniques 46.1 (Jan. 1998 [T-MTT]): 18-24.

An exact analytical expression for the capacitance matrix of a shielded or open multiconductor microstrip structure is derived by solving the system's dual integral equations by constructing a Volterra boundary-value problem (BVP). The solution is expressed in terms of infinite matrices with very good convergence properties. This new approach uses a series of Bessel functions rather than trigonometric series to approximate the solution which results in an efficient algorithm. Simplified formulas are given for the even and odd capacitance of symmetric coupled microstrip lines and compared to the results given by the finite analytical solution available in this particular case. Numerical examples demonstrate that the method yields accurate results and is computationally effective for structures having a large number of conductors.

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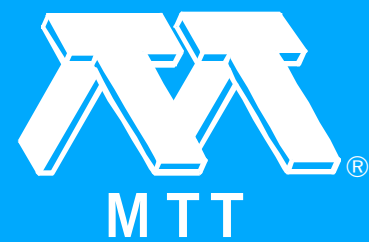
An iterative measured equation technique for electromagnetic problems

Jun Chen, Wei Hong and Jian-Ming Jin. "An iterative measured equation technique for electromagnetic problems." 1998 Transactions on Microwave Theory and Techniques 46.1 (Jan. 1998 [T-MTT]): 25-30.

An iterative measured equation technique (IMET) is presented for a numerical solution of electromagnetic problems. This technique is an extension and improvement of the method of measured equation of invariance (MEI). In this technique, an iterative scheme is designed in such away that a new set of metrons used to generate the measured equations is formed in each iteration based on the solution of the previous iteration. The new metrons are more meaningful in that they converge to the physical quantity of interest such as the surface current density for electrodynamic problems and the surface charge density for electrostatic problems. The IMET offers several advantages over the MEI method because it requires only two mesh layers, resulting in a significant reduction in the memory requirement and computing time. More importantly, it provides a means for a systematic improvement of the accuracy of solution. The IMET is applied successfully to two-dimensional (2-D) electrodynamic and three-dimensional (3-D) electrostatic problems. Numerical results show that the technique is highly accurate and the iterative process converges very quickly, usually within two iterations.

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Near-field microwave imaging of biologically-based materials using a monopole transceiver system

P.M. Meaney, K.D. Paulsen and J.T. Chang. "Near-field microwave imaging of biologically-based materials using a monopole transceiver system." 1998 Transactions on Microwave Theory and Techniques 46.1 (Jan. 1998 [T-MTT]): 31-45.

A prototype monopole-transceiver microwave imaging system has been implemented, and initial single and multitarget imaging experiments involving biologically relevant property distributions have been conducted to evaluate its performance relative to a previously developed-waveguide system. A new, simplified, but more effective calibration procedure has also been devised and tested. Results show that the calibration procedure leads to improvements which are independent of the type of radiator used. Specifically, data-model match is found to increase by 0.4 dB in magnitude and 4/spl deg/ in phase for the monopoles and by 0.6 dB in magnitude and 7/spl deg/ in phase for the waveguides (on average) on a per measurement basis when the new calibration procedure is employed. Enhancements are also found in the reconstructed images obtained with the monopole system relative to waveguides. Improvements are observed in: 1) the recovered object shape; 2) the uniformity of the background; 3) edge detection; and 4) target property value recovery. Analyses of reconstructed images also suggest that there is a systematic decrease of approximately 10% in the reconstruction errors for the monopole system over its waveguide counterpart in single-target experiments and as much as a 20% decrease in multitarget cases. Results indicate that these enhancements stem from a better data-model match for the monopoles relative to waveguides which is consistent across the type of calibration procedure used. Comparisons of computations and measurements show an average improvement in data-model match of approximately 0.25 dB in magnitude and near 7/spl deg/ in phase in favor of the monopoles in this regard. Beyond this apparent imaging performance enhancement, the monopole system offers economy-of-space and low construction-cost considerations along with computational advantages (as described herein) which make it a compelling choice as a radiator/receiver element around which to construct a clinically viable near-field microwave imaging system.

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Efficient electromagnetic analysis of a doubly infinite array of rectangular apertures

A.W. Mathis and A.F. Peterson. "Efficient electromagnetic analysis of a doubly infinite array of rectangular apertures." 1998 Transactions on Microwave Theory and Techniques 46.1 (Jan. 1998 [T-MTT]): 46-54.

An accurate and rapid method is presented for solving the magnetic field integral equation for the equivalent magnetic currents representing a doubly periodic array of rectangular apertures. Ewald's method is used to accelerate the summations associated with periodic Green's function, allowing the Green's function to be determined to nearly machine precision. Galerkin's method is used to discretize the integral equation with Chebyshev polynomials used as the basis and testing functions. Efficient treatment of the "self-term" singularity is emphasized.

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Abstracts

Image theory for reflected TE/TM wave in waveguide

P.P. Puska and I.V. Lindell. "Image theory for reflected TE/TM wave in waveguide." 1998 Transactions on Microwave Theory and Techniques 46.1 (Jan. 1998 [T-MTT]): 55-61.

The image principle is extended to the time-harmonic problem of TE/TM wave propagation and reflection in a waveguide. The fictitious image generating the reflected field is derived with the aid of Heaviside operational calculus and a transmission-line model of the waveguide. The operational calculus reveals that the image of a point-like source in front of the waveguide discontinuity is another point-like source in the mirror-image position and a line source extending from the mirror-image position to infinity. The image derived with operational calculus turns out to be independent of the waveguide's transverse geometry.



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Split frequencies in planar axisymmetric gyroelectric resonators

S.I. Sheikh, A.A.P. Gibson and B.M. Dillon. "Split frequencies in planar axisymmetric gyroelectric resonators." 1998 Transactions on Microwave Theory and Techniques 46.1 (Jan. 1998 [T-MTT]): 62-69.

Axisymmetric gyroelectric disk, ring, and composite resonator structures have been characterized for both InSb and GaAs semiconductors at 77 K. The calculations assume that these materials can be represented by the tensor permittivity derived from the Drude model of cyclotron motion in a plasma. Resonance and loss regions are identified and the sensitivity of normal mode splitting and onset frequencies to material and geometrical variables are graphed and tabulated. The information is presented in terms of signal frequency and the bias field to permit a direct comparison with results from ferrimagnetic structures. Semiconductor calculations show two extraordinary wave resonances and predict excellent symmetrical wide-band normal mode splitting. Field plots for the semiconductor disk and ring are included to explain coupled mode behaviour between modes in different bias regions.

An automated system for measuring power devices in Ka-band

B. Bonte, C. Gaquiere, E. Bourcier, G. Lemeur and Y. Crosnier. "An automated system for measuring power devices in Ka-band." 1998 Transactions on Microwave Theory and Techniques 46.1 (Jan. 1998 [T-MTT]): 70-75.

An active load-pull system is presented for measuring devices from 50-/spl mu/m to 3-mm gatewidth in Ka-band. It can automatically scan the interesting area of the Smith chart. The system protects the tested devices because the impedance is presented at the output of the device only if the gate current is lower than a fixed value. Results are presented at 30 and 38 GHz on a pseudomorphic high electron-mobility transistor (PM-HEMT).



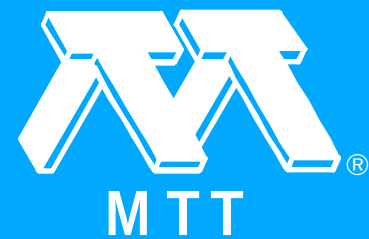
Shifted-frequency internal equivalence

A. Koksal. "Shifted-frequency internal equivalence." 1998 *Transactions on Microwave Theory and Techniques* 46.1 (Jan. 1998 [T-MTT]): 76-81.

The shifted frequency internal equivalence (SFIE) theorem involving inhomogeneous regions is introduced and proven. For a lossless inhomogeneous region using a vector Green's theorem and potential formulation, it is shown that the frequency-domain electromagnetic field at frequency ω inside the region can be obtained using a set of equivalent volume and surface currents radiating in free space and at the different frequency ω_0 . The equivalent currents thus obtained are functions of the two frequencies, electric- and magnetic-volume-type sources of the original problem, material parameters, and the original field phasors at ω_0 , and they only exist inside the region and on its boundary. A direct application of this equivalence is that it can be used to construct an internal equivalence at a shifted frequency for electromagnetic scattering problems if data are needed in a band of frequency. ω_0 can be kept constant while the incident field frequency changes and, as a result, full computation of fields at each different frequency for volume-type equivalent sources can be avoided.



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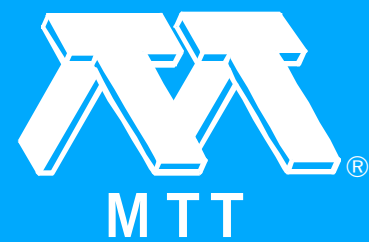
Analyzing electromagnetic structures with curved boundaries on Cartesian FDTD meshes

Yang Hao and C.J. Railton. "Analyzing electromagnetic structures with curved boundaries on Cartesian FDTD meshes." 1998 Transactions on Microwave Theory and Techniques 46.1 (Jan. 1998 [T-MTT]): 82-88.

In this paper, a new finite-difference time-domain (FDTD) algorithm is investigated to analyze electromagnetic structures with curved boundaries using a Cartesian coordinate system. The new algorithm is based on a nonorthogonal FDTD method. However, only those cells near the curved boundaries are calculated by nonorthogonal FDTD formulas; most of the grid is orthogonal and can be determined by traditional FDTD formulas. Therefore, this new algorithm is more efficient than general nonorthogonal FDTD schemes in terms of computer resources such as memory and central processing unit (CPU) time. Simulation results are presented and compared to those using other methods.

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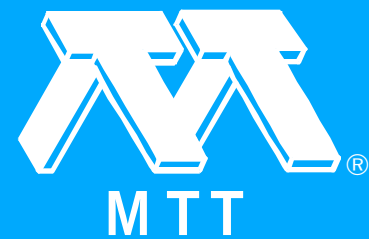
Multimode parameter extraction for multiconductor transmission lines via single-pass FDTD and signal-processing techniques

Yuanxun Wang and Hao Ling. "Multimode parameter extraction for multiconductor transmission lines via single-pass FDTD and signal-processing techniques." 1998 Transactions on Microwave Theory and Techniques 46.1 (Jan. 1998 [T-MTT]): 89-96.

We present two approaches to extract the broadband multimode parameters of guided wave structures from a single-pass finite-difference time-domain (FDTD) simulation. They include a two-dimensional (2-D) Fourier transform (FT) algorithm and a super-resolution estimation of signal parameters via rotational invariance technique (ESPRIT) algorithm. Comparison is made to show the superiority of the super-resolution approach. As a typical application, a three-line coupled microstrip structure is studied. After a single-pass FDTD simulation, broadband multimode parameters such as propagation constants, modal-field templates, and modal impedances are extracted and verified against published data obtained by the spectral-domain method. The main feature of this parameter-extraction methodology is that it decouples the computational electromagnetics engine (in this case, the FDTD simulator) from the post-processing parameter-extraction algorithm, thus providing more flexibility and connectivity among the various simulation tools.

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Full multimodal analysis of an open rectangular groove waveguide

M. Fernyhough and D.V. Evans. "Full multimodal analysis of an open rectangular groove waveguide." 1998 Transactions on Microwave Theory and Techniques 46.1 (Jan. 1998 [T-MTT]): 97-107.

In this paper, a full multimodal analysis of an open rectangular-shaped groove waveguide is presented for both TE and TM modes. The method of solution involves the formulation of the problem in terms of an integral-equation representation to which a Galerkin approximation, which incorporates the anticipated singularities at the edges of the guide, is then applied. The method proves to be extremely accurate and numerically efficient to compute, and results are presented for both the lower and higher order modes.

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Multiwavelength optically controlled phased-array antennas

D.T.K. Tong and M.C. Wu. "Multiwavelength optically controlled phased-array antennas." 1998 Transactions on Microwave Theory and Techniques 46.1 (Jan. 1998 [T-MTT]): 108-115.

A novel multiwavelength scheme is proposed and demonstrated for one-dimensional (1-D) and two-dimensional (2-D) optically controlled phased-array antenna (OCPAA) systems with true time delay (TTD). This hardware-compressive architecture employs a multiwavelength laser source in conjunction with a programmable dispersion matrix (PDM) and switched optical delay lines (SODLs) to generate all the required time delays for beam steering in 2-D phased-array antenna systems. Independent control of elevation and azimuthal scan is achieved by combining wavelength-dependent and wavelength-independent time delays. An experimental prototype of $4/\text{spl times}/2$ array with $2\text{-b}/\text{spl times}/2\text{-b}$ resolution is constructed to demonstrate the feasibility of the multiwavelength OCPAA (MWOCPPA). Broadband linear RF phase shift is measured in both elevation and azimuthal planes over the entire bandwidth of the electro-optic (EO) modulator. System issues such as insertion loss, array size, and channel isolation are discussed. Extension of the multiwavelength scheme to a common transmit/receive (T/R) module with TTD is also described.

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Design of tolerance-corrected filters employing half-cylinder posts

R. Coccioli, A. Morini, G. Pelosi and T. Rozzi. "Design of tolerance-corrected filters employing half-cylinder posts." 1998 Transactions on Microwave Theory and Techniques 46.1 (Jan. 1998 [T-MTT]): 116-118.

An alternative post geometry suitable for the realization of waveguide filters is investigated. The new post consists of half a cylinder. Due to its asymmetry it is possible to vary the electrical characteristics of such an element by means of a simple rotation. This permits us to compensate for fabrication tolerances of a filter without introducing additional screws.

Cross-coupled microstrip hairpin-resonator filters

Jia-Sheng Hong and M.J. Lancaster. "Cross-coupled microstrip hairpin-resonator filters." 1998 Transactions on Microwave Theory and Techniques 46.1 (Jan. 1998 [T-MTT]): 118-122.

A new class of cross-coupled planar microwave filters using microstrip hairpin resonators is introduced. The realization of both the canonical and the cascaded quadruplet (CQ) filters is feasible. Coupling characteristics of four basic coupling structures encountered in this class of filters are investigated in the light of full-wave electromagnetic (EM) simulations. A four-pole cross-coupled filter of this type is designed and fabricated. Both the theoretical and experimental performance is presented.



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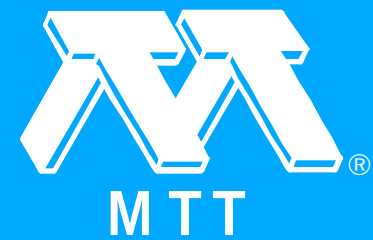
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Microwave tomography: theoretical and experimental investigation of the iteration reconstruction algorithm

S.Y. Semenov, A.E. Bulyshev, A.E. Souvorov, R.H. Svenson, Y.E. Sizov, V.Y. Vorisov, V.G. Posukh, I.M. Kozlov, A.G. Nazarov and G.P. Tatsis. "Microwave tomography: theoretical and experimental investigation of the iteration reconstruction algorithm." 1998 Transactions on Microwave Theory and Techniques 46.2 (Feb. 1998 [T-MTT]): 133-141.

Results of experiments on the two-dimensional (2-D) quasi real-time microwave tomographic system have been reported. Various reconstruction possibilities of this system have been demonstrated on phantoms and canine hearts. The early utilized Rytov approximation is appropriate for low-contrast inverse problems. A new iterative reconstruction algorithm is proposed in this paper. The iterations converge to an accurate solution of the scalar Helmholtz-equation inverse problem in the case of higher contrasts. The goal of the reported study is an experimental and theoretical investigation of the proposed iteration algorithm. The influence on the quality of the reconstructed images and on the spatial resolution of such factors as the number of receivers, the accuracy of the scattered field measurements, and the dielectric contrast have been investigated.

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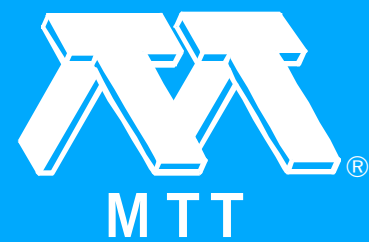


Comparison of optical processing techniques for optical microwave signal generation

A.J. Lowery and P.C.R. Gurney. "Comparison of optical processing techniques for optical microwave signal generation." 1998 Transactions on Microwave Theory and Techniques 46.2 (Feb. 1998 [T-MTT]): 142-150.

Recently, there have been several proposals on using the higher RF harmonics of detected pulses from mode-locked semiconductor lasers as a source of microwave and millimeter waves. This paper compares the performance of three optical techniques of signal processing that have been proposed to select a higher harmonic of a mode-locked laser, by using extensive numerical simulations. We show that techniques using delays and splitters are insensitive to the coherence properties of the source, but can introduce amplitude patterning if pulses overlap when recombined. We see that techniques relying on optical filtering to select optical modes require extremely high-Q filters and, thus, are extremely sensitive to tuning. A Fabry-Perot interferometer (FPI) is the optimum filter method in terms of power efficiency for low harmonics, but using two separate bandpass filters can give comparable efficiency when selecting higher harmonics. We also show that gain-switched lasers are unsuitable as sources when used with narrow-band optical filtering techniques because of their low pulse-to-pulse optical coherence.





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A 850-GHz waveguide receiver employing a niobium SIS junction fabricated on a 1-/spl mu/m Si/sub 3/N/sub 4/ membrane

J.W. Kooi, J. Pety, B. Bumble, C.K. Walker, H.G. LeDuc, P.L. Schaffer and T.G. Phillips. "A 850-GHz waveguide receiver employing a niobium SIS junction fabricated on a 1-/spl mu/m Si/sub 3/N/sub 4/ membrane." 1998 Transactions on Microwave Theory and Techniques 46.2 (Feb. 1998 [T-MTT]): 151-161.

We report on a 850-GHz superconducting-insulator-superconducting (SIS) heterodyne receiver employing an RF-tuned niobium tunnel junction with a current density of 14 kA/cm/sup 2/, fabricated on a 1-/spl mu/m Si/sub 3/N/sub 4/ supporting membrane. Since the mixer is designed to be operated well above the superconducting gap frequency of niobium (2/spl Delta//h/spl ap/690 GHz), special care has been taken to minimize niobium transmission-line losses. Both Fourier transform spectrometer (FTS) measurements of the direct detection performance and calculations of the IF output noise with the mixer operating in heterodyne mode, indicate an absorption loss in the niobium film of about 6.8 dB at 822 GHz. These results are in reasonably good agreement with the loss predicted by the Mattis-Bardeen theory in the extreme anomalous limit. From 800 to 830 GHz, we report uncorrected receiver noise temperatures of 518 or 514 K when we use Callen and Welton's law to calculate the input load temperatures. Over the same frequency range, the mixer has a 4-dB conversion loss and 265 K/spl plusmn/10 K noise temperature. At 890 GHz, the sensitivity of the receiver has degraded to 900 K, which is primarily the result of increased niobium film loss in the RF matching network. When the mixer was cooled from 4.2 to 1.9 K, the receiver noise temperature improved about 20% 409-K double sideband (DSB). Approximately half of the receiver noise temperature improvement can be attributed to a lower mixer conversion loss, while the remainder is due to a reduction in the niobium film absorption loss. At 982 GHz, we measured a receiver noise temperature of 1916 K.

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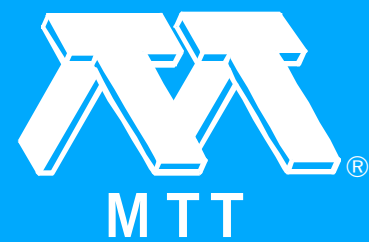
A model for discretization error in electromagnetic analysis of capacitors

E.H. Lenzing and J.C. Rautio. "A model for discretization error in electromagnetic analysis of capacitors." 1998 Transactions on Microwave Theory and Techniques 46.2 (Feb. 1998 [T-MTT]): 162-166.

The error due to discretization in a method-of-moments analysis of a parallel plate or metal-insulator-metal (MIM) capacitor is discussed. A technique related to Richardson extrapolation is used to develop a model for the error due to subsectional discretization. The results are for Galerkin's method using rooftop basis functions; however, the technique can be applied to any variational moment-method calculation. An expression is presented for the error in capacitance calculations, which is shown to hold for changes in geometry and dielectric constant. In addition, the expression for error is shown to be accurate for a wide range of meshing geometries. Surprisingly, the error model is not an upper bound, but rather is met nearly in equality for all geometries considered. Thus, the error may be simply subtracted from the calculated value for a more accurate result.

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Analysis of ferrite circulators by 2-D finite-element and recursive Green's function techniques

H.S. Newman and C.M. Krowne. "Analysis of ferrite circulators by 2-D finite-element and recursive Green's function techniques." 1998 Transactions on Microwave Theory and Techniques 46.2 (Feb. 1998 [T-MTT]): 167-177.

Ferrite circulator operation is analyzed here by two techniques. The first employs a two-dimensional (2-D) finite-element (FE) technique, using a publicly available FE package. We show how to adapt this code to the solution of the magnetostatic equations and solve for the distribution of internal magnetic field inside a round ferrite puck of finite thickness, and use it to verify existing approximations for the demagnetizing fields. Additionally, the 2-D FE method has also been used to calculate the RF fields and scattering parameters in circulators having noncircular shapes, as well as nonuniform material properties and bias conditions. We have also investigated the field solutions for round circulators, calculated using a recursive Green's function (RGF) technique. This technique allows for radially varying properties in the material or bias fields, and thus accommodates the nonuniform demagnetizing field distribution in finite pucks. A comparison of the results of this technique with experiment is made. We show how the impedance-matching structures attached to the circulator affect the field distributions inside, and present plots of the field distributions as a function of frequency, which provide insight into circulator operation.





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Two-dimensional singular vector elements for finite-element analysis

Z. Pantic-Tanner, J. Scott Savage, D.R. Tanner and A.F. Peterson. "Two-dimensional singular vector elements for finite-element analysis." 1998 Transactions on Microwave Theory and Techniques 46.2 (Feb. 1998 [T-MTT]): 178-184.

The finite-element method (FEM) exhibits a reduced convergence rate when used for the analysis of geometries containing sharp edges where the electromagnetic field is singular. The convergence of the method can be improved by introducing singular elements that model analytically predicted singular behavior. A number of authors have developed singular elements that are compatible with the scalar FEM. In this paper, we propose a new singular element that is compatible with edge-based vector finite elements and can cope with any order of singularity while preserving the sparsity of the FEM equations. Edge-based singular elements more correctly model singular fields and thus require fewer unknowns, while avoiding the introduction of spurious modes in the numerical solution. Numerical results verify that the convergence of the FEM is significantly improved.

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A simplified formulation to analyze inhomogeneous waveguides with lossy chiral media using the finite-element method

L. Valor and J. Zapata. "A simplified formulation to analyze inhomogeneous waveguides with lossy chiral media using the finite-element method." 1998 Transactions on Microwave Theory and Techniques 46.2 (Feb. 1998 [T-MTT]): 185-187.

In this paper, an efficient finite-element formulation is presented for the analysis of the propagation characteristics in arbitrarily shaped lossy inhomogeneous waveguides loaded with chiral media. It is a simplified form of the one proposed for the bi-anisotropic media. In this formulation, showing no spurious modes, the frequency or the propagation constants may be treated as eigenvalues of a resulting sparse quadratic eigenproblem. However, in order to handle losses easily and to facilitate computation of complex modes, the frequency is specified as an input parameter and the eigensystem is solved for the complex propagation constant as the eigenvalue. This sparse eigensystem is further transformed into a generalized one, thus maintaining the sparse properties of the matrices. New numerical finite-element results are presented.

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Synthesis of configuration of uniformly radiating longitudinal slots in the sections of nonregular rectangular waveguides

M.V. Davidovich and V.P. Meschanov. "Synthesis of configuration of uniformly radiating longitudinal slots in the sections of nonregular rectangular waveguides." 1998 Transactions on Microwave Theory and Techniques 46.2 (Feb. 1998 [T-MTT]): 188-191.

The integral-equation method has been applied along with perturbation theory to investigate the leaky-wave parameters of the fundamental mode in the regular waveguide with a narrow longitudinal slot on its broad wall, opened into shielded semispace. Then, the simple analytical formulas have been derived for the engineering synthesis of radiating elements (REs), which are formed by a nonuniform waveguide section with a nonregular slot on its broad wall. The long slot was cut in the longitudinal direction along certain curved or several connected broken lines, forming small local angles with the waveguide axis. The synthesis of RE's by single-mode approximation has been carried out for the condition of good uniformity of radiating electrical-field distribution along the RE axis near the slot. Good agreement of theoretical and experimental results was obtained.

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Mode-matching analysis of circular-ridged waveguide discontinuities

U. Balaji and R. Vahldieck. "Mode-matching analysis of circular-ridged waveguide discontinuities." 1998 Transactions on Microwave Theory and Techniques 46.2 (Feb. 1998 [T-MTT]): 191-195.

This paper describes a mode-matching algorithm for S-parameter computation of circular-ridged waveguide (CRW) discontinuities. The ridges are shaped like the cross section of a cone (pie-shaped) with a geometry that can be described in cylindrical coordinates. This idea avoids the use of a mixed-coordinate system in the analysis of the electromagnetic fields in the ridged sections, which can, therefore, be expressed in terms of modal functions. The resulting algorithm is fast and accurate and has been utilized to design and optimize a five-section double-ridge filter and a quadruple-ridge waveguide transformer. The measured response of the filter is in good agreement with the calculated data.

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Simple determination of all capacitances for a set of parallel microstrip lines

F. Sellberg. "Simple determination of all capacitances for a set of parallel microstrip lines." 1998 Transactions on Microwave Theory and Techniques 46.2 (Feb. 1998 [T-MTT]): 195-198.

A fast and moderately accurate method to describe the complicated dependence on design and process parameters of coupling capacitances between a set of parallel lines is presented in this paper. It involves only one circuit-dependent parameter at a time. This is accomplished by calculating the capacitance coefficient matrix through inversion of a potential coefficient matrix with much simpler dependence on geometry. Self elements are approximately independent of the presence of other lines, and mutual elements do not depend on linewidths or interfering lines as long as the ground is sufficiently far away. The potential coefficients are derived by inverting one- or two-line capacitance matrices that are either theoretically calculated or determined by measurements on integrated circuit (IC) test structures. Look-up tables for a specific IC process can then be constructed with only linewidth as the parameter for self potential elements and distance between line centers as parameter for mutual potential elements. General algorithms have been derived for microstrip on one or two layers of dielectric.

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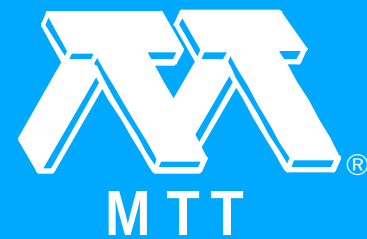


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Comparison between theoretical and measured microstrip gap parameters involving anisotropic substrates

J. Martel, F. Medina, R.R. Boix and M. Horno. "Comparison between theoretical and measured microstrip gap parameters involving anisotropic substrates." 1998 Transactions on Microwave Theory and Techniques 46.2 (Feb. 1998 [T-MTT]): 198-201.

In this paper, experimental results are presented for microstrip symmetrical-gap discontinuities. The experimental technique is based on the measurement of the resonant frequencies of several gap-coupled rectangular microstrip resonators. In particular, gap discontinuities on anisotropic dielectric and two-layer composite substrates have been investigated. Reasonably good agreement has been found in most cases between theoretical data [obtained by means of the excess charge technique in the spectral domain (EC-SDA)] and experimental data, even though the theoretical results have been obtained by using a quasi-static approach.



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Efficient Mpie Approach for the Analysis of Three-dimensional Microstrip Structures in Layered Media (Correction)

R. Bunger and F. Arndt. "Efficient Mpie Approach for the Analysis of Three-dimensional Microstrip Structures in Layered Media (Correction)." 1998 Transactions on Microwave Theory and Techniques 46.2 (Feb. 1998 [T-MTT]): 202-202.



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A High-accuracy Realization of the Yee Algorithm Using Non-standard Finite Differences (Correction)

J.B. Cole. "A High-accuracy Realization of the Yee Algorithm Using Non-standard Finite Differences (Correction)." 1998 Transactions on Microwave Theory and Techniques 46.2 (Feb. 1998 [T-MTT]): 202-202.



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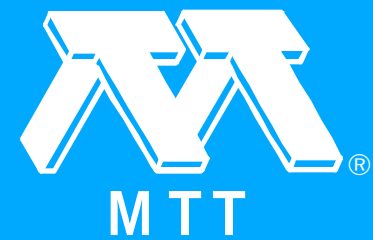
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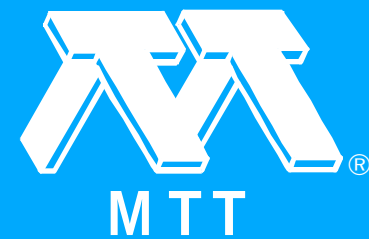
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J.W. Mink. "Editor's Preface (Mar. 1998 [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.3 (Mar. 1998 [T-MTT]): 205-205.



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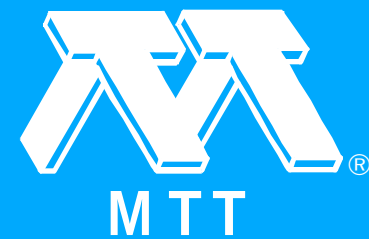
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A.J. Giarola. "Guest Editor's Overview (Mar. 1998 [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.3 (Mar. 1998 [T-MTT]): 206-207.



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Multilayer analysis of anisotropic heat flux in vertical cavity-surface emitting lasers with quarter-wave semiconducting mirrors

A.A. Leal, M. Osinski and E. Conforti. "Multilayer analysis of anisotropic heat flux in vertical cavity-surface emitting lasers with quarter-wave semiconducting mirrors." 1998 Transactions on Microwave Theory and Techniques 46.3 (Mar. 1998 [T-MTT]): 208-214.

Monolithic arrays of vertical cavity-surface emitting lasers (VCSELs) have the potential to be used in microwave systems based on opto-electronic technologies. However, the temperature has a strong influence over several characteristics of VCSELs. Self-heating may restrain the gain inside the device cavity and it is responsible for an increase in the laser threshold current as well as a decrease of its output power. In this paper, the thermal behavior of VCSELs was evaluated by means of a procedure that takes into account the multilayer aspects of the heat-flux propagation. The method has the advantage of dealing with the heat propagation inside each layer of the periodic structures of the device. Thus, the different characteristics and influence of the materials employed in the chip manufacturing can be considered and the device temperature profile can be predicted. From the method assumptions and simulations, the thermal resistances of typical devices were calculated. The results were shown to be in good agreement with experimental values reported in the literature.





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Coupled-mode analysis of highly asymmetric directional couplers with periodic perturbation

B.-H.V. Borges and P.R. Herczfeld. "Coupled-mode analysis of highly asymmetric directional couplers with periodic perturbation." 1998 Transactions on Microwave Theory and Techniques 46.3 (Mar. 1998 [T-MTT]): 215-226.

This paper presents an in-depth analysis of highly asymmetric grating assisted directional couplers. The directional coupler consists of a polymer waveguide with dimensions and refractive indices closely matching a single-mode fiber fabricated atop a Ga/sub 0.6/Al/sub 0.4/As/GaAs/Ga/sub 0.4/Al/sub 0.6/As waveguide. The structure is investigated analytically by means of a new orthogonal coupled-mode theory formulated in terms of the Lorentz reciprocity theorem. For the first time, the analysis includes three distinct loss mechanisms, namely, the leakage of power toward the semiconductor substrate, the power lost to radiation modes (mode mismatching), and the grating radiation loss.

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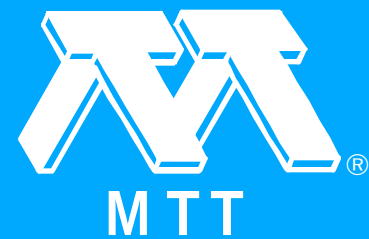


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New method of computation of electrical Y-matrix for arbitrarily connected multielement SAW devices

S.M. Balashov, R.C. Pinto, C.M. Cabreira and C.A. Finardi. "New method of computation of electrical Y-matrix for arbitrarily connected multielement SAW devices." 1998 Transactions on Microwave Theory and Techniques 46.3 (Mar. 1998 [T-MTT]): 227-233.

We treat surface-acoustic wave (SAW) devices as an arbitrary multielement system. To describe it, a modified form of the chain matrix (E-matrix) is introduced. The E-matrix has a property of turning the calculation of the transfer matrix of this system into a simple multiplication procedure. This allows one to perform computation of electrical response of almost any type of SAW device since the total transfer matrix could be reduced to a Y-matrix. Examples and simulation results confirming the method described are shown.



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A theoretical analysis of the coupling of light to surface-plasmon oscillations at the edge of a slab waveguide

E. Fontana. "A theoretical analysis of the coupling of light to surface-plasmon oscillations at the edge of a slab waveguide." 1998 Transactions on Microwave Theory and Techniques 46.3 (Mar. 1998 [T-MTT]): 234-241.

A theoretical method that accounts for diffraction and backcoupling of surface plasmon (SP) oscillations excited at the metallized edge of a planar waveguide is described in this paper. The model explains previously reported experimental studies related to the development of SP-based optical-fiber sensors. The method is based on a Fourier transform approach and predicts the appearance of a spatial SP resonance within the light diffracted from the waveguide edge. The approach also allows one to obtain the spectral dependence of light guided back from the remote waveguide edge and can be used to determine design parameters for optimum sensor operation.



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Design of broad-band matching network with lossy junctions using the real-frequency technique

E. Kerherve, P. Jarry and P.-M. Martin. "Design of broad-band matching network with lossy junctions using the real-frequency technique." 1998 Transactions on Microwave Theory and Techniques 46.3 (Mar. 1998 [T-MTT]): 242-249.

A computer-aided design (CAD) procedure based on the real-frequency technique (RFT) is introduced for treating the matching of an arbitrary load to a complex generator. In this paper, the method has been applied to the design of interstage matching networks for microwave active circuits. The RFT provides several advantages over most of the usual techniques. It requires neither any transistor model because it directly includes measuring scattering- and noise-parameter data, nor a predetermined matching-circuit topology is necessary. A low-noise amplifier (LNA) design proceeding directly from experimental data is presented. Moreover, a new idea for treating the broadband matching problem leads to the use of an equalizer topology containing cascaded transmission lines with lossy junctions. Thus, gain-flatness and stability are satisfied by designing the input and the output matching circuits by the line-segment technique. An example is presented for the matching of a 0.1-5 GHz amplifier.





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Computer-aided design of reflector antennas: The Green Bank Radio Telescope

M.A.B. Terada and W.L. Stutzman. "Computer-aided design of reflector antennas: The Green Bank Radio Telescope." 1998 Transactions on Microwave Theory and Techniques 46.3 (Mar. 1998 [T-MTT]): 250-253.

This paper presents an evaluation of the electrical performance of the Green Bank Telescope (GBT) reflector antenna, operating as single- and dual-offset configurations, as well as a general overview of the GBT system. The GBT dual-offset Gregorian configuration is designed for low cross polarization (XPOL) using the dual-offset reflector antenna (DORA) synthesis package code developed by the authors. The procedure implemented in DORA to upgrade an existing main reflector to a low cross-polarized dual-offset Gregorian reflector antenna is also described in this paper. All computed patterns were obtained with the parabolic reflector analysis code (PRAC) program, also developed by the authors, and with the commercial code GRASP7. The GBT radiation patterns and performance values, which include original data not available anywhere else as far as the authors know, indicate that low XPOL performance can be achieved with a dual-offset configuration, provided that a low XPOL feed is used. The GBT configuration is employed as a case example for the aforementioned procedure. However, an effort is made to present the main conclusions as generically as possible.

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Abstracts

Recirculating loop for experimental evaluation of EDFA saturated regime effects on optical communication systems

C. Mazzali and H.L. Fragnito. "Recirculating loop for experimental evaluation of EDFA saturated regime effects on optical communication systems." 1998 Transactions on Microwave Theory and Techniques 46.3 (Mar. 1998 [T-MTT]): 253-257.

We demonstrate an optical-fiber recirculating loop for experimental simulation of long-haul optical communication systems using cascaded erbium-doped fiber amplifiers (EDFA's) operating in the gain saturation regime. The loop contains sections of dispersion shifted fibers (DSF's), standard fiber, and a set of in-line devices, such as tuning filters, optical amplifiers, polarization controllers, and a variable attenuator. The main results presented here are related to the observation of the effects due to the slow dynamics of the EDFA. We also discuss the validity of using an optical attenuator to simulate an extra length of fiber.



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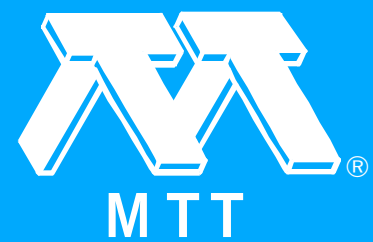
A time-frequency analysis method for radar scattering

H.N. Kritikos and J.G. Teti, Jr.. "A time-frequency analysis method for radar scattering." 1998 Transactions on Microwave Theory and Techniques 46.3 (Mar. 1998 [T-MTT]): 257-260.

A time-frequency analysis method to study electromagnetic scattering is presented and demonstrated using canonical objects. The time-frequency analysis method utilizes the Bargmann transform to formulate the signal representation in phase space. The use of the Bargmann transform leads to an attractive parametric signal representation in terms of complex polynomials, and elliptical filters can be constructed to crop or extract selected areas of the phase plane. The signal representation and filtering operations are demonstrated using scattering responses from spheres and thin wires, and the prominent scattering features are identified and extracted.

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Experimental study of large rectenna array for microwave energy transmission

N. Shinohara and H. Matsumoto. "Experimental study of large rectenna array for microwave energy transmission." 1998 Transactions on Microwave Theory and Techniques 46.3 (Mar. 1998 [T-MTT]): 261-268.

For a field experiment on microwave power transmission (MPT) which was jointly conducted by the Radio Atmospheric Science Center of Kyoto University, Kobe University, and Kansai Electric Power Company from 1994 to 1995, we had developed and tested a new type of rectenna (rectifying antenna) based on a circular microstrip antenna (CMA). A square shape of array with an area of 3.2 m/spl times/3.6 m was then constructed using the developed rectennas for experiment. The whole rectenna array is composed of 256 sub-arrays, each with nine rectenna elements. We place the rectenna sub-array with better RF-DC conversion efficiency in the central area of the whole rectenna array. Such spatial optimization is needed because the power density of the microwave beam used in the experiment has a spatial gradient with a peak at the center of the beam. We then examined dependence of the rectenna array characteristics on the electrical connection of the sub-arrays. The difference of the output DC power of the whole array for five different electrical connections is within 5%. The load characteristics, therefore, suffers little change even if the electrical connection of the rectenna sub-array is changed.





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Numerical analysis of the propagation characteristics of multiangle multislot coaxial cable using moment method

Seon-Taek Kim, Gi-Ho Yun and Han-Kyu Park. "Numerical analysis of the propagation characteristics of multiangle multislot coaxial cable using moment method." 1998 Transactions on Microwave Theory and Techniques 46.3 (Mar. 1998 [T-MTT]): 269-279.

In this paper, multiangle multislot coaxial cable is analyzed qualitatively and quantitatively. This is the extended result of the previous studies of the single-slot coaxial cable. The properties of this cable have been studied by many authors, especially for the surface-wave type. However, the slotted coaxial cable utilizing leaky waves has not been treated rigorously despite its wide use. In this paper, a numerical analysis of a leaky coaxial cable with a multiangle multislot configuration is performed to obtain many useful results, which are impossible to derive employing the approximate model frequently used in this area. Using the moment method, the propagation constant has been obtained for the leaky coaxial cable as a function of various parameters. Several slot configurations are considered to give insight into the properties of coupling loss and transmission loss complicated by simultaneous existence of leaky and surface waves.

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Abstracts

A new iterative diakoptics-based multilevel moments method for planar circuits

S. Ooms and D. De Zutter. "A new iterative diakoptics-based multilevel moments method for planar circuits." 1998 Transactions on Microwave Theory and Techniques 46.3 (Mar. 1998 [T-MTT]): 280-291.

This paper combines a multilevel moments method (MMM) scheme with a modified diakoptics (MD) technique and a block Gauss-Seidel (BGS) iterative technique to reduce the solution time of large planar microwave structures. The proposed MMM scheme has two levels. On the lower level, the planar circuit is divided into several subcircuits using two types of artificial ports. At the higher level, general basis functions defined over the complete circuit are generated in an iterative way. The validity and the efficiency of the new technique are validated by several examples, including a large low-pass filter.



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Small-signal modeling of HBTs using a hybrid optimization/statistical technique

H. Ghaddab, F.M. Ghannouchi, F. Choubani and A. Bouallegue. "Small-signal modeling of HBTs using a hybrid optimization/statistical technique." 1998 Transactions on Microwave Theory and Techniques 46.3 (Mar. 1998 [T-MTT]): 292-298.

A new formulation for extracting the elements of the small-signal equivalent-circuit model of heterojunction bipolar transistors (HBTs) is proposed in this paper. This approach avoids the main problem of the conventional extraction methods which, in most cases, is the use of brute-force optimization techniques to extract a large number of parameters. At the beginning, this technique first uses the extraction procedure of a low-frequency HBT model. An analytical formulation that allows the reduction of the number of the unknowns of the low-frequency model to only two, which have to be calculated using a suitable optimization technique, is described. This makes the optimization problem much easier to handle and increases the probability for converging to the actual elements of the model, thus avoiding the converging to spurious solutions. Secondly, in order to extend the model to higher frequencies, a statistical approach is proposed to extract parasitic extrinsic elements. An experimental validation is carried out on three HBT devices and satisfactory results are obtained up to 30 GHz.





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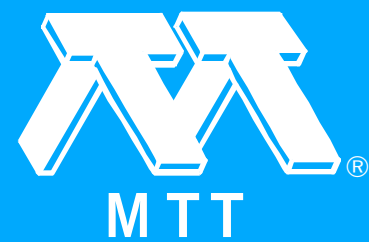
Twofold Mur's first-order ABC in the FDTD method

J.-F. Mao. "Twofold Mur's first-order ABC in the FDTD method." 1998 Transactions on Microwave Theory and Techniques 46.3 (Mar. 1998 [T-MTT]): 299-301.

In this paper, it is shown that the reflection error of Mur's first-order absorbing boundary condition (ABC) can be canceled effectively by applying the ABC twice to an electromagnetic (EM) field on two diagonally neighboring nodes on the x-t, y-t and t-t planes. Following this idea, we have developed a twofold Mur's first-order ABC (TMFABC), which is efficient to absorb both propagative and evanescent EM waves and very convenient for implementation to multilayered structures. TMFABC improves Mur's first-order ABC more effectively at lower frequencies. This is very important because most energy of a high-speed pulse is concentrated at lower frequencies.

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Solution of the general Helmholtz equation in homogeneously filled waveguides using a static Green's function

M. Balagangadhar, T.K. Sarkar, I. Rejeb and R.R. Boix. "Solution of the general Helmholtz equation in homogeneously filled waveguides using a static Green's function." 1998 Transactions on Microwave Theory and Techniques 46.3 (Mar. 1998 [T-MTT]): 302-307.

The new boundary-integral method used in this paper illustrates a novel approach to solve the general Helmholtz equation in homogeneously filled waveguides. Based on the method-of-moments Laplacian solution, the main feature of this formulation is that the Helmholtz equation is "reduced" to the Poisson's equation, which is then solved by using a static Green's function. In other words, the Green's function used in this method is frequency independent, unlike the most conventionally used Hankel functions. Hence, the computational time, while analyzing the waveguide over a range of different frequencies, is reduced considerably compared to other well-known numerical methods, since the frequency term just appears as a scaling factor in the evaluation of matrix elements. The numerical results obtained using the present method compare well with actual results (in the case of rectangular waveguides) and published results (in the case of L-shaped and single-ridge waveguides).

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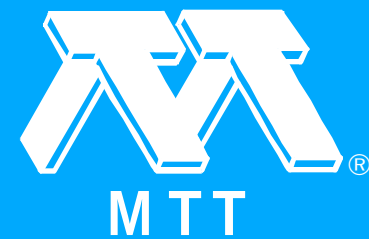
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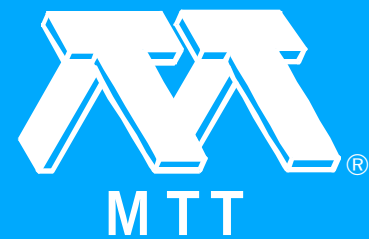
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Unexpected physical phenomena indicated by FDTD modeling of the Sigma-60 deep hyperthermia applicator

C.E. Reuter, A. Taflove, V. Sathiaselalan, M. Piket-May and B.B. Mittal. "Unexpected physical phenomena indicated by FDTD modeling of the Sigma-60 deep hyperthermia applicator." 1998 Transactions on Microwave Theory and Techniques 46.4 (Apr. 1998 [T-MTT]): 313-319.

We investigate the numerical convergence properties of two-dimensional (2-D) and three-dimensional (3-D) finite-difference time-domain (FDTD) models of the BSD-2000 Sigma-60 annular phased array used for deep hyperthermia. The FDTD modeling data indicate unexpected physical phenomena for the case of Sigma-60 excitation of an elliptical tissue phantom embedded in a circular water bolus. These phenomena include: (1) high-Q energy storage; (2) electromagnetic (EM) mode flipping within the water bolus/phantom; and (3) whispering-gallery transmission of energy to the opposite side of the phantom relative to the exciting dipole pair. We conclude that these phenomena substantially impact the FDTD numerical modeling of this system, and further conclude that the whispering-gallery effect can impact clinical applications of the Sigma-60.

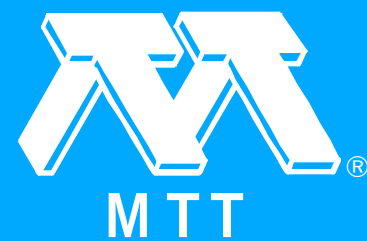
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Optical microwave generation and transmission experiments in the 12- and 60-GHz region for wireless communications

R.-P. Braun, G. Grosskopf, H. Heidrich, C. von Helmolt, R. Kaiser, K. Kruger, U. Kruger, D. Rohde, F. Schmidt, R. Stenzel and D. Trommer. "Optical microwave generation and transmission experiments in the 12- and 60-GHz region for wireless communications." 1998 Transactions on Microwave Theory and Techniques 46.4 (Apr. 1998 [T-MTT]): 320-330.

Experiments on the optical generation and transmission of millimeter-wave radio signals are reported. The millimeter-wave signals are generated by heterodyning the optical spectral lines of a mode-locked laser (MLL) or of two or more semiconductor lasers at an optic/millimeter-wave converter (OMC). 70-, 140-, and 155-Mb/s data transmission experiments have been carried out successfully in optical single-channel and multichannel systems at radio frequencies of 12 GHz and 58-70 GHz. Bit-error-rate measurements yielded error-free transmission and no error floor was observed. A monolithically integrated tunable optical-signal source was developed and used for generating the millimeter-wave signals. This technology promises a high cost-saving potential for applications in radio-over-fiber systems.



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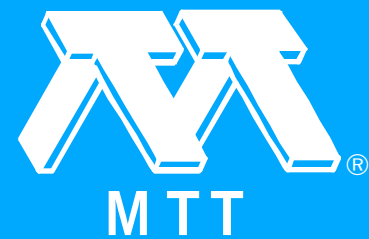
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Optimum design of multihole directional couplers with arbitrary aperture spacing

H. Oraizi. "Optimum design of multihole directional couplers with arbitrary aperture spacing." 1998 Transactions on Microwave Theory and Techniques 46.4 (Apr. 1998 [T-MTT]): 331-342.

A numerical procedure based on the method of least squares is presented for the optimum design of multihole directional couplers with a specified number of apertures and their arbitrary spacing in a desired frequency band for a given coupling coefficient (C) together with maximization of the mean value of isolation (I) or equivalently directivity (D) across the band and also specified values of (C) and (D) (or equivalently isolation I). An error function is constructed in the band for optimization of C and D or I, which after minimization gives the best values of the hole radii and spacing. The proposed method is quite suitable for computer-aided design (CAD) and has several advantages over common design methods for multihole directional couplers, such as simplicity of analysis and development of the numerical algorithm, flexibility of hole spacing, specification of the desired values of C and D or I, and actual optimization of the coupler design in the desired frequency band. The proposed method is potentially applicable to the design of other couplers.

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Abstracts

A unified approach to the design, measurement, and tuning of coupled-resonator filters

J.B. Ness. "A unified approach to the design, measurement, and tuning of coupled-resonator filters." 1998 Transactions on Microwave Theory and Techniques 46.4 (Apr. 1998 [T-MTT]): 343-351.

The concept of coupling coefficients has been a very useful one in the design of small-to-moderate bandwidth microwave filters. It is shown in this paper that the group delay of the input reflection coefficients of sequentially tuned resonators contains all the information necessary to design and tune filters, and that the group-delay value at the center frequency of the filter can be written quite simply in terms of the low-pass prototype values, the LC elements of a bandpass structure, and the coupling coefficients of the inverter coupled filter. This provides an easy method to measure the key elements of a filter, which is confirmed by results presented in this paper. It is also suggested that since the group delay of the reflection coefficient (i.e., the time taken for energy to get in and out of the coupled resonators) is easily measured, it is a useful conceptual alternative to coupling concepts.



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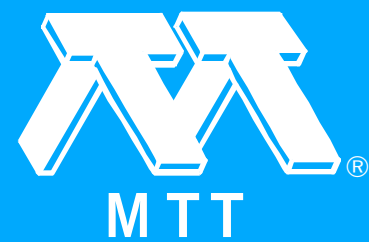


Systematic evaluation and analysis for 60-GHz dielectric resonators coupled to a microstrip line on a GaAs substrate

K. Hosoya, T. Inoue, M. Funabashi and K. Ohata. "Systematic evaluation and analysis for 60-GHz dielectric resonators coupled to a microstrip line on a GaAs substrate." 1998 *Transactions on Microwave Theory and Techniques* 46.4 (Apr. 1998 [T-MTT]): 352-358.

This paper presents the first systematic evaluation and analysis of 60-GHz-band TE/sub 01/spl delta//mode cylindrical dielectric resonators coupled to a microstrip line on a GaAs substrate. The loss components of the unloaded Q are analyzed using simple numerical techniques. The distance between the resonator center and the microstrip line which gives the maximum coupling coefficient is found to be approximately 3/5 of the resonator radius, whose ratio is almost constant for all practical cases. The temperature characteristics are also demonstrated and the origins of temperature dependences of the unloaded Q and the coupling coefficient are discussed. An equivalent circuit model for the dielectric resonator coupled to the microstrip line is presented, whose element parameters can express the dependences of the resonant frequency, the unloaded Q, and the coupling coefficient on the structural parameters and the temperature.





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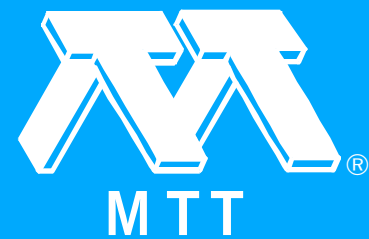


Implicit 3-D dyadic Green's function using self-adjoint operators for inhomogeneous planar ferrite circulator with vertically layered external material employing mode-matching

C.M. Krowne. "Implicit 3-D dyadic Green's function using self-adjoint operators for inhomogeneous planar ferrite circulator with vertically layered external material employing mode-matching." 1998 Transactions on Microwave Theory and Techniques 46.4 (Apr. 1998 [T-MTT]): 359-377.

Self-adjoint operators are found for the differential equations describing the z-dependent field variation in the medium external to the ferrite microstrip circulator puck. The external medium is, in general, inhomogeneously layered, consisting of media with permittivity properties, magnetic properties, or both. Eigenvalue equations characterizing the radially sectioned medium outside the puck are found, as are the eigenvectors. When the z-dependent parts are multiplied with the radial and azimuthal dependences, the complete three-dimensional (3-D) field expressions are determined. Source-constraint equations (representing microstrip lines) driving the circulator are then combined with the mode-matching technique to obtain in direct space, implicit dyadic Green's function elements. Mode orthogonality is employed to encourage sparsity in matrix system development where appropriate or convenient. The implicit Green's function is particularly useful because field information and s-parameters may be found in real space, completely avoiding typical inverse transformations.

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Upper cutoff frequency of the bound wave and new leaky wave on the slotline

J. Zehentner, J. Machac and M. Miglozzi. "Upper cutoff frequency of the bound wave and new leaky wave on the slotline." 1998 Transactions on Microwave Theory and Techniques 46.4 (Apr. 1998 [T-MTT]): 378-386.

Printed-circuit lines exhibit interesting behavior due to leakage of power. We have attempted to work toward a more profound understanding of uniplanar circuit properties when it comprehends planar transmission lines. Our work has focused on the slotline. We realized that the solution of its dispersion equation is multivalued. This enabled us to identify and report a new leaky wave on the slotline. The leaky wave brings down the upper cutoff frequency of the bound wave propagating over the slotline due to overlapping of the bound- and leaky-mode regions. For this case, we present some simple closed-form formulas providing this frequency limit when there is a frequency gap or when simultaneous propagation of the bound and the first or second leaky wave occurs. Propagation of the bound and leaky wave at the same time is a straightforward consequence of the multivalued nature of the solution of the dispersion equation. Evolution of the real and complex improper solutions of the equation in dependence on slotline dimensions demonstrates this clearly. We believe that conclusions drawn for the slotline also hold generally for other printed-circuit lines.

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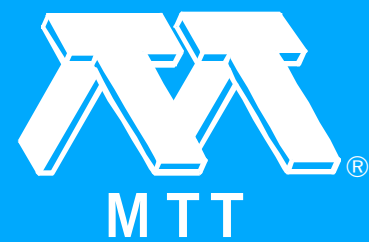
The use of FDTD for the analysis of magnetoplasma channel waveguides

R.G. Farias and A.J. Giarola. "The use of FDTD for the analysis of magnetoplasma channel waveguides." 1998 Transactions on Microwave Theory and Techniques 46.4 (Apr. 1998 [T-MTT]): 387-394.

The finite-difference time-domain (FDTD) method is used for the analysis of magnetoplasma rectangular channel waveguides. Single and parallel-coupled waveguides are considered. The effect of varying the amplitude and the orientation of the bias magnetic field B_0 on the dispersion characteristics of the first modes is examined. However, the FDTD formulation, does not excite evanescent modes for a sufficiently long time interval, particularly when in the presence of the propagating or dynamic modes. As a result, the nonreciprocal properties of these structures, primarily associated with the evanescent modes, could not be investigated.

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Thin-stratified medium fast-multipole algorithm for solving microstrip structures

Jun-Sheng Zhao, Weng Cho Chew, Cai-Cheng Lu, E. Michielssen and Jiming Song. "Thin-stratified medium fast-multipole algorithm for solving microstrip structures." 1998 Transactions on Microwave Theory and Techniques 46.4 (Apr. 1998 [T-MTT]): 395-403.

An accurate and efficient technique called the thin-stratified medium fast-multipole algorithm (TSM-FMA) is presented for solving integral equations pertinent to electromagnetic analysis of microstrip structures, which consists of the full-wave analysis method and the application of the multilevel fast multipole algorithm (MLFMA) to thin stratified structures. In this approach, a new form of the electric-field spatial-domain Green's function is developed in a symmetrical form which simplifies the discretization of the integral equation using the method of moments (MoM). The patch may be of arbitrary shape since their equivalent electric currents are modeled with subdomain triangular patch basis functions. TSM-FMA is introduced to speed up the matrix-vector multiplication which constitutes the major computational cost in the application of the conjugate gradient (CG) method. TSM-FMA reduces the central processing unit (CPU) time per iteration to $O(N \log N)$ for sparse structures and to $O(N)$ for dense structures, from $O(N/\sup 3/)$ for the Gaussian elimination method and $O(N/\sup 2/)$ per iteration for the CG method. The memory requirement for TSM-FMA also scales as $O(N \log N)$ for sparse structures and as $O(N)$ for dense structures. Therefore, this approach is suitable for solving large-scale problems on a small computer.

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Time-domain vector-potential analysis of transmission-line problems

N. Georgieva and E. Yamashita. "Time-domain vector-potential analysis of transmission-line problems." 1998 Transactions on Microwave Theory and Techniques 46.4 (Apr. 1998 [T-MTT]): 404-410.

A time-domain vector-potential (TDVP) approach for the analysis of transient electromagnetic fields is proposed in this paper. The field is analyzed by the magnetic VP for which the wave equation is solved by a finite-difference (FD) scheme. The feasibility of the method has been shown by simulations of several transmission-line problems. The results have been compared with reported data obtained by the conventional finite-difference time-domain (FDTD) method, empirical formulas, and measurements. The proposed approach is not inferior to the FDTD method in terms of generality and memory requirements. At the same time, a reduction of central processing unit (CPU) time is achieved because only three scalar wave equations are solved instead of the six Maxwell equations for all field components. It has also been shown that there are certain structures where the components of the magnetic VP are decoupled, which implies the possibility for a consecutive algorithm with reduced memory requirements.

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A contour-based approach to the multimode network representation of waveguide transitions

W.L. Schroeder and M. Guglielmi. "A contour-based approach to the multimode network representation of waveguide transitions." 1998 Transactions on Microwave Theory and Techniques 46.4 (Apr. 1998 [T-MTT]): 411-419.

A flexible and efficient numerical method is presented by which the multimode network representation (MMNR) of the abrupt transition between a standard waveguide and a waveguide of arbitrary cross section can be established without reference to the cross-sectional fields. The approach combines the boundary integral-equation method (BIEM) with contour integral expressions for the coupling coefficients, and a novel highly efficient scheme to express modal normalization constants in terms of coupling coefficients and eigenvalues. Application is demonstrated for a variety of multiridge circular waveguide (MRCW) configurations and transitions between MRCW and circular waveguide (CW). Comparison is made against most published results for this problem.

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Abstracts

Time-domain analysis of periodic structures at oblique incidence: orthogonal and nonorthogonal FDTD implementations

J.A. Roden, S.D. Gedney, M.P. Kesler, J.G. Maloney and P.H. Harms. "Time-domain analysis of periodic structures at oblique incidence: orthogonal and nonorthogonal FDTD implementations." 1998 Transactions on Microwave Theory and Techniques 46.4 (Apr. 1998 [T-MTT]): 420-427.

A novel implementation of periodic boundary conditions incorporated into the finite-difference time-domain (FDTD) technique in both orthogonal and nonorthogonal grids is presented in this paper. The method applied is a field-splitting approach to the discretization of the Floquet-transformed Maxwell equations. As a result, the computational burden is reduced and the stability criterion is relaxed. The results of the two methods are compared to experimental data.



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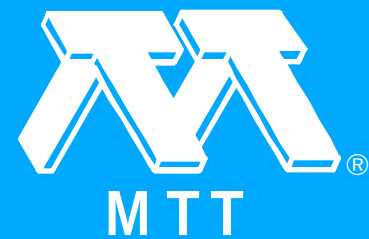
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Electrostatic potential due to a potential drop across a slit

Y.C. Noh and H.J. Eom. "Electrostatic potential due to a potential drop across a slit." 1998 Transactions on Microwave Theory and Techniques 46.4 (Apr. 1998 [T-MTT]): 428-430.

The electrostatic potential and charge density due to a potential drop across a slit in a thick conducting plane are obtained in analytic closed form. The Fourier transform, mode matching, and superposition are used to represent the potential in the spectral domain. The residue calculus is applied to represent the potential distribution in converging series form. Numerical computations are performed to illustrate the charge-density distribution through a slit.

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Abstracts

A numerically efficient technique for the analysis of slots in multilayer media

N. Kmayman, G. Dural and M.I. Aksun. "A numerically efficient technique for the analysis of slots in multilayer media." 1998 Transactions on Microwave Theory and Techniques 46.4 (Apr. 1998 [T-MTT]): 430-432.

A numerically efficient technique for the analysis of slot geometries in multilayer media is presented using closed-form Green's functions in spatial domain in conjunction with the method of moments (MoM). The slot is represented by an equivalent magnetic-current distribution, which is then used to determine the total power crossing through the slot and the input impedance. In order to calculate power and current distribution, spatial-domain closed-form Green's functions are expanded as power series of the radial distance $/\rho/$, which makes the analytical evaluation of the spatial-domain integrals possible, saving a considerable amount of computation time.



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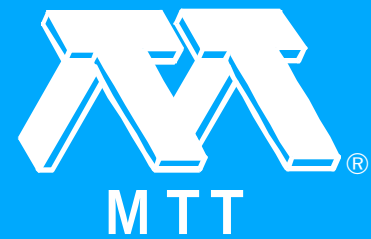
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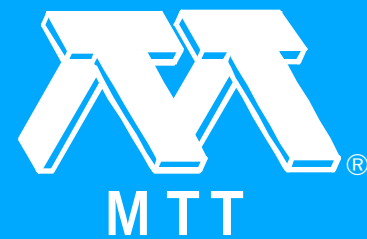
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MTT-S Transactions and Letters On-Line (May 1998, Part I [T-MTT])

J.P. Wendler. "MTT-S Transactions and Letters On-Line (May 1998, Part I [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part I [T-MTT]): 437-438.



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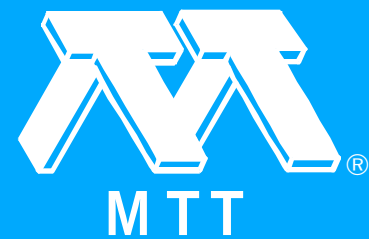
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Fabrication of very weakly and weakly magnetized microstrip circulators

J. Helszajn. "Fabrication of very weakly and weakly magnetized microstrip circulators." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part I [T-MTT]): 439-449.

The synthesis of practical microstrip circulators in terms of a microwave specification remains in practice a difficult problem. If a very weakly magnetized model is adopted for its gyrator circuit, this task should in principle be (once the quality factor of the resonator is stipulated) a simple endeavor provided the substrate thickness can be varied. If it is not possible to do so, it is necessary to either alter the resonator shape or the minimum ripple level of the microwave specification or vary both quantities. This paper demonstrates that the very weakly magnetized model of a junction circulator using either a side- or an end-coupled triangular resonator is more restricted than may be at first supposed. A weakly magnetized solution for the design of such junction circulators which bridges the interval between the very weakly and the moderately magnetized regimes is the main contribution of this paper.

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Abstracts

Mode coupling and leakage effects in finite-size printed interconnects

L. Carin, G.W. Slade and K.J. Webb. "Mode coupling and leakage effects in finite-size printed interconnects." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part I [T-MTT]): 450-457.

A multimode analysis is used to describe how leakage effects are manifested in general printed interconnects situated on substrates of finite size. In the vicinity of discrete frequencies, it is shown that the analysis reduces to classical coupled-mode theory. The general results are then specialized to the particular case of shielded microstrip on an anisotropic substrate, for which numerical and experimental mode-coupling results are presented. The numerical results are demonstrated in the form of dispersion curves and field plots, and are computed using the finite-element method and the spectral-domain technique. The experimental results are performed using a network analyzer, and are given in terms of scattering parameters.



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Multifunctional fiber-optic microwave links based on remote heterodyne detection

U. Gliese, T.N. Nielsen, S. Norskov and K.E. Stubkjaer. "Multifunctional fiber-optic microwave links based on remote heterodyne detection." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part I [T-MTT]): 458-468.

The multifunctionality of microwave links based on remote heterodyne detection (RHD) of signals from a dual-frequency laser transmitter is discussed and experimentally demonstrated in this paper. Typically, direct detection (DD) in conjunction with optical intensity modulation is used to implement fiber-optic microwave links. The resulting links are inherently transparent. As opposed to DD links, RHD links can perform radio-system functionalities such as modulation and frequency conversion in addition to transparency. All of these three functionalities are presented and experimentally demonstrated with an RHD link based on a dual-frequency laser transmitter with two offset phase-locked semiconductor lasers. In the modulating link, a 1-Gb/s baseband signal is QPSK modulated onto a 9-GHz RF carrier. The frequency converting link demonstrates up-conversion of a 100-Mb/s PSK signal from a 2-GHz carrier to a 9-GHz carrier with penalty-free transmission over 25 km of optical fiber. Finally, the transparent link transmits a standard FM video 7.6-GHz radio-link signal over 25 km of optical fiber without measurable distortion.





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Empirical model of the microwave properties of high-temperature superconductors

O.G. Vendik, I.B. Vendik and D.I. Kaparkov. "Empirical model of the microwave properties of high-temperature superconductors." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part I [T-MTT]): 469-478.

This paper presents simple correct models of high-temperature superconductor (HTS) film parameters at microwave frequencies. The models are based on the enhanced two-fluid model of a superconductor. The quasi-particle scattering and peculiarities of the normal conductivity of the HTS at microwaves, including residual resistance of a material, are taken into account. The difference between the known Gorter and Casimir two-fluid model of low-temperature superconductor and the enhanced two-fluid model of HTS is proven. A simple quasi-static model of current distribution across the microstrip line and coplanar waveguide is used for a simulation of a contribution of the superconductor transport processes into impedance per unit length of the transmission lines considered. The models developed were applied to a simulation of microstrip line and coplanar waveguide resonators. Good agreement of simulated results and measurements in a wide temperature range has been demonstrated. The model presented can be considered as a starting point for the formation of the computer-aided design (CAD) package of HTS microwave components.

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Analysis of ridged circular waveguides by the coupled-integral-equations technique

S. Amari, S. Catreux, R. Vahldieck and J. Bornemann. "Analysis of ridged circular waveguides by the coupled-integral-equations technique." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part I [T-MTT]): 479-493.

Cutoff wavenumbers of transverse electric (TE) and transverse magnetic (TM) modes of ridged circular waveguides are accurately determined using the coupled-integral-equations technique (CIET). A set of coupled integral equations for the electric field at the interfaces are derived and then solved by the moment method. Basis functions which include the edge conditions at all metallic edges are used. Results from this paper are compared with available data to demonstrate the accuracy and efficiency of the approach.

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Synchronization analysis of autonomous microwave circuits using new global-stability analysis tools

A. Suarez, J. Morales and R. Quere. "Synchronization analysis of autonomous microwave circuits using new global-stability analysis tools." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part I [T-MTT]): 494-504.

A new spectral-balance technique for the global-stability analysis of autonomous circuits is presented in this paper. This technique relies on the introduction of measuring probes into the circuit and it allows a simple determination of both bifurcation diagrams and bifurcation loci as a function of any suitable parameter. Through the proposed algorithms, this kind of analysis can be easily added to any existing software, since it is performed externally to the harmonic-balance (HB) calculation. Due to its local nature, it also allows an easy selection of the bifurcation parameters, which spreads the simulation possibilities. Both periodic and quasi-periodic regime simulations are possible, and bifurcations are detected in both operating modes. The synchronization phenomenon in injected oscillators and frequency dividers is also analyzed in detail for an accurate prediction of the operating bands. The simulation techniques are illustrated by means of their application to a cubic nonlinearity oscillator. They are then used for the stability analysis of a monolithic microwave integrated circuit (MMIC) divider by two operating in the millimetric range. A very good agreement has been obtained with the experimental results.

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High-Q capacitors implemented in a CMOS process for low-power wireless applications

C.-M. Hung, Y.-C. Ho, I.-C. Wu and K. O. "High-Q capacitors implemented in a CMOS process for low-power wireless applications." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part I [T-MTT]): 505-511.

In a foundry 0.8- μm CMOS process, low-cost capacitors with a measured Q factor of around 50 at 3 GHz and high intrinsic capacitance/area ($\sim 200 \text{ nF/cm}^2$) were demonstrated. When extrapolated to 900 MHz, the Q factor is greater than 100. The capacitors use a poly-to-n-well MOS structure which has been commonly dismissed for high-Q applications due to the high n-well sheet resistance ($\sim 1 \text{ k}\Omega/\square$). Utilizing the structure, a low-noise amplifier (LNA) with a resonant frequency of 960 MHz, power gain of 16.2 dB, 1-dB compression point ($P_{1\text{dB}}$) of -5 dBm, and noise figure of 3.5 dB was demonstrated. Using a rule of thumb, the third-order harmonic intercept point (P_{IP3}) was estimated to be 5 dBm from the $P_{1\text{dB}}$ data. Despite concerns for nonlinearity of the capacitors, these results suggest that this capacitor structure could be used in LNA's with a large dynamic range.

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General constraints on the propagation of complex waves in closed lossless isotropic waveguides

T. Rozzi, L. Pierantoni and M. Farina. "General constraints on the propagation of complex waves in closed lossless isotropic waveguides." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part I [T-MTT]): 512-516.

Complex propagation in linear time-invariant lossless isotropic closed waveguides is a theoretically intriguing subject. Complex modes are also practically important in the characterization of discontinuities as they contribute in pairs with complex conjugate (c.c.) propagation constants to local power storage. By the systematic application of Lorentz's reciprocity theorem, we derive the constraints linking complex propagation constant, Poynting's integral, and electromagnetic energy storage per unit length. Previously known conditions are recovered, and novel constraints on the exchange power between the two components of the pairs are derived. It is emphasized that existing relationships individually derived by different methods and scattered in the literature, as well as novel ones, are derived from a single fundamental theorem. This set of constraints is believed to pose the tightest necessary conditions so far for the existence of complex waves.





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Time-domain measurement of the electromagnetic properties of materials

C.C. Courtney. "Time-domain measurement of the electromagnetic properties of materials." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part I [T-MTT]): 517-522.

A time-domain measurement and data-reduction technique is presented that can yield the broad-band frequency-dependent values of a sample material's electrical properties (complex permittivity and permeability). The method uses the material's response to the spectral content of a fast rise-time pulse to determine the frequency dependence of the complex relative permittivity (ϵ_{rel}) and permeability (μ_{rel}). The measurement procedure and data-reduction scheme are described, and the derived material values for a sample material are given. The advantages of this method include a potentially lower equipment cost and the avoidance of awkward calibration procedures that are inherent in frequency-domain methods. Though the material examined was nonmagnetic, the procedure is general and rigorous (for low-loss materials, low dispersion over the bandwidth) for the determination of both electrical and magnetic properties.

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Power loss for multimode waveguides and its application to beam-waveguide system

W.A. Imbriale, T.Y. Ootshi and C. Yeh. "Power loss for multimode waveguides and its application to beam-waveguide system." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part I [T-MTT]): 523-529.

The conventional way of expressing power loss in decibels/meter for a multimode waveguiding system with finite wall conductivity (such as a beam-waveguide (BWG) system with protective shroud) can be incorrect and misleading. The power loss (in decibels) for a multimode waveguiding system is, in general, not linearly proportional to the length of the waveguide. New power-loss formulas for multimode system are derived in this paper for arbitrarily shaped conducting waveguide tubes. In these formulas, there are factors such as $[\exp(jx)-1]/(jx)$, where $x=(\beta_a/\beta_b)l$, with β_a and β_b being the propagation constants of the different propagating modes and l being the distance from the source plane to the plane of interest along the guide. For a large BWG supporting many propagating modes, β_a 's are quite close to β_b 's, thus the mode coupling terms remain important for a very long distance from the source plane. The multimode power loss formula for a large circular conducting tube has been verified by experiments. This formula was also used to calculate the additional noise temperature contribution due to the presence of a protective shroud surrounding a millimeter-wave BWG system.

Analysis and application of a two-port aperture-coupled microstrip antenna

Wen-Jen Tseng and Shyh-Jong Chung. "Analysis and application of a two-port aperture-coupled microstrip antenna." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part I [T-MTT]): 530-535.

A two-port aperture-coupled microstrip antenna was analyzed using the method of moments together with a mixed potential integral equation (MPIE). The antenna contains two microstrip-line ports (i.e., a feeding port and a coupling port). The field coming from one microstrip line on the circuit layer is fed into the patch through an aperture on the ground plane. Part of the field is then coupled back to a second microstrip line through another aperture on the same ground. The influences of the stub lengths, along with the positions and sizes of the apertures, on the coupling power and the resonant frequency were investigated. As an application, a feedback antenna oscillator was designed using the present structure where the antenna served not only as a radiator, but also as a feedback resonator. The oscillation was stable and with a clean spectrum at the frequency of 9.79 GHz, which was only 0.2% different from the design one. An effective isotropic radiated power (EIRP) of 39 mW was achieved. The measured cross-polarized fields were at least 15 dB lower than the copolarized ones.



Abstracts

Multimode TRL. A new concept in microwave measurements: theory and experimental verification

C. Seguinot, P. Kennis, J.-F. Legier, F. Huret, E. Paleczny and L. Hayden. "Multimode TRL. A new concept in microwave measurements: theory and experimental verification." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part I [T-MTT]): 536-542.

An original multimode thru-reflection line (TRL) algorithm is used to derive the generalized scattering parameters of multimode two-port networks. Theoretical developments are detailed for calibration procedures based on two ports as well as multiple-port vector network analyzer (VNA) measurements. First-run experimental results demonstrate the validity of this technique. This method allows the experimental characterization of multiconductor transmission-line devices. It could also be used to characterize power coupling to undesired modes in monolithic microwave integrated circuit (MMIC) structures using conductor-backed coplanar waveguides.



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Losses in multiport stripline/microstrip circulators

H. How, C. Vittoria and R. Schmidt. "Losses in multiport stripline/microstrip circulators." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part I [T-MTT]): 543-545.

We have included losses in the analysis of a 3N-port stripline/microstrip circulator and have reformulated the circulation conditions previously postulated for the lossless case. Our calculations have been compared to published data on circulator designs biased above ferromagnetic resonance (FMR). Scattering parameters at each port have been calculated as a function of assumed material losses and coupling capacitance of a multiport circulator.





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Efficient circuit simulation of nonuniform transmission lines

D. Kuznetsov. "Efficient circuit simulation of nonuniform transmission lines." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part I [T-MTT]): 546-550.

This paper extends the transmission-line simulation method presented previously by Kuznetsov and Schutt-Aint (see IEEE Trans. Circuits Syst. I, vol. 43, p. 111-121, Feb. 1996) to nonuniform lines. The method is applicable to multiconductor lossy frequency-dependent transmission lines characterized by sampled frequency-domain responses. The resulting model can be directly incorporated into a circuit simulator. The implementation includes AC, DC, and transient analyses. The method is reliable, accurate, and as efficient as the simple replacement of interconnects by lumped resistors. The method is based on approximation, and its accuracy and efficiency result from the simplicity of characteristic responses. To apply the method to nonuniform lines, two novel nonuniform line models are introduced. An open-loop model completely separates forward and backward waves and results in the simplest aperiodic responses, but does not guarantee their stability. An open-loop distributed-reflection model explicitly includes the internal distributed reflections, and provides the simplest stable characterization. It is shown that for nonuniform lines, the generalized method of characteristics no longer separates forward and backward waves. Numerical example of a parabolically tapered frequency-dependent four-conductor line is given.

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Micromachined thermocouple microwave detector by commercial CMOS fabrication

V. Milanovic, M. Gaitan and M.E. Zaghloul. "Micromachined thermocouple microwave detector by commercial CMOS fabrication." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part I [T-MTT]): 550-553.

This paper reports on the design and testing of a thermocouple microwave detector fabricated through a commercial CMOS foundry with an additional maskless etching procedure. The detector measures true r.m.s. power of signals in the frequency range from 50 MHz to 20 GHz, and input power range from -30 to +10 dBm, the device has linearity better than $\pm 0.4\%$ for input power versus output voltage over the 40 dB dynamic range. Measurements of the return loss, obtained using an automatic network analyzer, show acceptable input return loss of less than -20 dB over the entire frequency range. The sensitivity of the detector was measured to be (1.007 ± 0.004) mV/mW.

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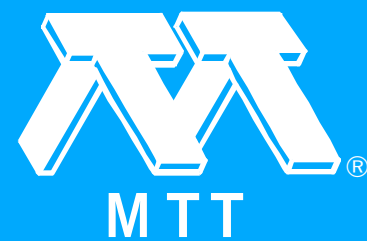


Abstracts

Simple and efficient computation of electromagnetic fields in arbitrarily shaped inhomogeneous dielectric bodies using transpose-free QMR and FFT

C.F. Wang and J.M. Jin. "Simple and efficient computation of electromagnetic fields in arbitrarily shaped inhomogeneous dielectric bodies using transpose-free QMR and FFT." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part I [T-MTT]): 553-558.

A simple and efficient numerical method is presented for computing electromagnetic fields in three-dimensional (3-D) inhomogeneous-dielectric bodies. The method employs a two-stage discretization to convert an integro-differential equation into an implicit system of linear algebraic equations. This discrete system is then solved using a transpose-free quasi-minimal residual (TFQMR) algorithm, which avoids the calculation of the multiplication between the transpose of the system matrix and a vector. The simple multiplication between the system matrix and a vector required in the TFQMR algorithm is calculated efficiently using only six fast Fourier transforms (FFTs). Numerical results for strongly inhomogeneous and lossy spheres show that the method has a stable convergence behavior and excellent numerical performance.



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Two-dimensional wavelet-analysis of a microstrip open

G. Oberschmidt, K. Bubke and A.F. Jacob. "Two-dimensional wavelet-analysis of a microstrip open." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part I [T-MTT]): 558-561.

Simple two-dimensional (2-D) wavelet systems are used in a moment method to analyze a microstrip discontinuity. This allows one to efficiently compress the impedance matrix. The achievable sparsity is discussed for different resolution depths where up to 85% was obtained for an error below 1%.

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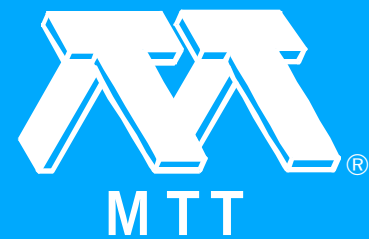
The generalized TLM-based FDTD modeling of frequency-dependent and anisotropic media

Z. Chen and J. Xu. "The generalized TLM-based FDTD modeling of frequency-dependent and anisotropic media." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part I [T-MTT]): 561-565.

A generalization of the previously proposed transmission-line matrix (TLM)-based finite-difference time-domain (FDTD) method is presented for modeling frequency-dependent and anisotropic media. The generalized scheme incorporates electric- and magnetic-flux densities in addition to variable mesh sizes. Since it is in an FD form, modeling techniques developed for the conventional FDTD can be easily adapted into the proposed TLM-based technique. In this paper, a modified z-transform technique for frequency-dependent media is implemented, and a two-dimensional (2-D) full-wave technique for guided-wave structures is developed. In all the FDTD computations, no conversions between the field quantities and TLM circuit parameters such as open- and short-circuited stubs are required.

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Study of whispering gallery modes in double disk sapphire resonators (Comments)

A. Abramowicz, K. Derzakowski and J. Krupka. "Study of whispering gallery modes in double disk sapphire resonators (Comments)." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part I [T-MTT]): 566-566.

For the original paper see *ibid.*, vol. 44, no. 6, p. 848-853 (1996). In the above paper is presented a simplified, but quite accurate, method for the calculation of the resonant frequencies of whispering gallery modes in dielectric resonators. Abramowicz et al. have compared the result obtained by the author with the results of the full-wave radial mode-matching method, finding very good agreement. However, a part of the paper describing a model of coupled resonators and, particularly its solution were, in the commenters' opinion, faulty.

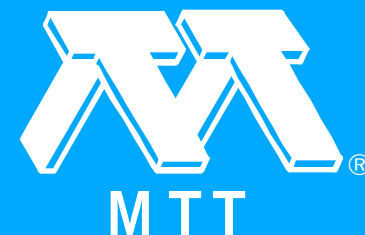
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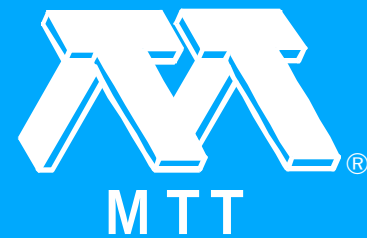
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Introduction To The Special Issue On Microwave Circuits On Silicon Substrates

G.E. Ponchak. "Introduction To The Special Issue On Microwave Circuits On Silicon Substrates." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part II [T-MTT] (Special Issue on Microwave Circuits on Silicon Substrates)): 569-571.



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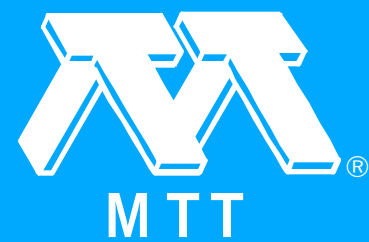
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SiGe HBT technology: a new contender for Si-based RF and microwave circuit applications

J.D. Cressler. "SiGe HBT technology: a new contender for Si-based RF and microwave circuit applications." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part II [T-MTT] (Special Issue on Microwave Circuits on Silicon Substrates)): 572-589.

The silicon-germanium heterojunction bipolar transistor (SiGe HBT) is the first practical bandgap-engineered device to be realized in silicon. SiGe HBT technology combines transistor performance competitive with III-V technologies with the processing maturity, integration levels, yield, and hence, cost commonly associated with conventional Si fabrication. In the ten-and-one-half years since the first demonstration of a functional transistor, SiGe HBT technology has emerged from the research laboratory, entered manufacturing on 200-mm wafers, and is poised to enter the commercial RF and microwave market. State-of-the-art SiGe HBT's can deliver: (1) $f_{\text{sub T}}$ in excess of 50 GHz; (2) $f_{\text{sub max}}$ in excess of 70 GHz; (3) minimum noise figure below 0.7 dB at 2.0 GHz; (4) $1/f$ noise corner frequencies below 500 Hz; (5) cryogenic operation; (6) excellent radiation hardness; (7) competitive power amplifiers; and (8) reliability comparable to Si. A host of record-setting digital, analog, RF, and microwave circuits have been demonstrated in the past several years using SiGe HBT's, and recent work on passives and transmission lines on Si suggest a migratory path to Si-based monolithic microwave integrated circuits (MMIC's) is possible. The combination of SiGe HBT's with advanced Si CMOS to form an SiGe BiCMOS technology represents a unique opportunity for Si-based RF system-on-a-chip solutions. This paper reviews state-of-the-art SiGe HBT technology and assesses its potential for current and future RF and microwave systems.

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Si and SiGe millimeter-wave integrated circuits

P. Russer. "Si and SiGe millimeter-wave integrated circuits." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part II [T-MTT] (Special Issue on Microwave Circuits on Silicon Substrates)): 590-603.

Monolithic integrated millimeter-wave circuits based on silicon and SiGe are emerging as an attractive option in the field of millimeter-wave communications and millimeter-wave sensors. The combination of active devices with passive planar structures, including also antenna elements, allows single-chip realizations of complete millimeter-wave front-ends. This paper reviews the state-of-the-art silicon- and SiGe-based monolithic integrated millimeter-wave circuits. The technological background as well as active and nonlinear devices and passive circuit structures suitable for silicon- and SiGe-based monolithic integrated millimeter-wave circuits are discussed. Examples of such integrated circuits and first systems applications are also presented.

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A nonlinear microwave MOSFET model for SPICE simulators

C.E. Biber, M.L. Schmatz, T. Morf, U. Lott and W. Bachtold. "A nonlinear microwave MOSFET model for SPICE simulators." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part II [T-MTT] (Special Issue on Microwave Circuits on Silicon Substrates)): 604-610.

As the gate lengths of silicon MOSFET's become smaller and smaller, these devices are usable to frequencies in the gigahertz range. The nonlinear MOSFET model presented in this paper is based on S-parameter measurements over a large bias range, and has been implemented in a SPICE simulator. The improvements consist of new equations for the nonlinear capacitances and output conductance of the MOS transistor. This new large-signal model shows very good agreement between measured and simulated S-parameters of single transistors at various bias points up to 10 GHz. Intermodulation (IM) and circuit performance are also well predicted. Simulated S-parameters of a simple amplifier showed excellent agreement with measured results, confirming the performance of this model.





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Characteristics of deep-submicrometer MOSFET and its empirical nonlinear RF model

Yi-Jen Chan, Chia-Hung Huang, Chung-Chian Weng and Boon-Khim Liew. "Characteristics of deep-submicrometer MOSFET and its empirical nonlinear RF model." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part II [T-MTT] (Special Issue on Microwave Circuits on Silicon Substrates)): 611-615.

Si MOSFET's with submicrometer gate length were fabricated and characterized by RF evaluation. Devices with a $0.25 \mu\text{m}$ gate length demonstrated a $g_{\text{sub m}}$ of 258 mS/mm, an $f_{\text{sub T}}$ of 28 GHz, and a minimum noise figure of 1.8 dB at 900 MHz. A nonlinear device model was constructed based on the measured results. Empirical equations are used to represent the nonlinear elements such as $g_{\text{sub m}}$, $C_{\text{sub gs}}$, $C_{\text{sub gd}}$, $C_{\text{sub ds}}$, and $R_{\text{sub out}}$. These nonlinear elements, together with device parasitics, provide designers with a comprehensive model for using these devices for RF circuits.

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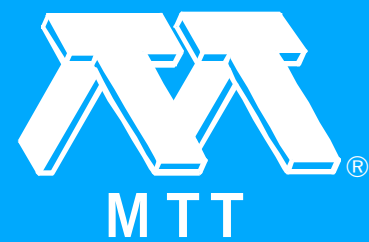
Transmission lines and passive elements for multilayer coplanar circuits on silicon

C. Warns, W. Menzel and H. Schumacher. "Transmission lines and passive elements for multilayer coplanar circuits on silicon." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part II [T-MTT] (Special Issue on Microwave Circuits on Silicon Substrates)): 616-622.

In this paper, propagation properties of both standard and multilayer coplanar lines on different types of silicon substrates, as well as a number of quasi-lumped and stub-type circuit elements, are investigated. For the transmission lines, emphasis is placed on losses. As examples for circuit elements, a lumped parallel resonator and a high-low impedance low-pass filter are demonstrated.

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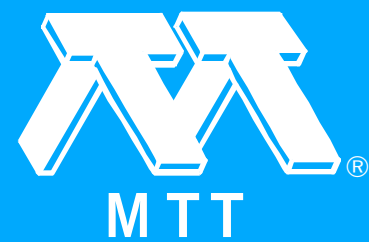
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Characteristics of trenched coplanar waveguide for high-resistivity Si MMIC applications

Suidong Yang, Zhirun Hu, N.B. Buchanan, V.F. Fusco, J.A.C. Stewart, Yunhong Wu, B.M. Armstrong, G.A. Armstrong and H.S. Gamble. "Characteristics of trenched coplanar waveguide for high-resistivity Si MMIC applications." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part II [T-MTT] (Special Issue on Microwave Circuits on Silicon Substrates)): 623-631.

A novel low RF loss trenched coplanar waveguide (CPW) transmission-line structure fabricated using evaporated aluminum tracks on a high-resistivity (10-k/spl Omega/ cm) silicon (HRS) substrate is reported. By assuming that Schottky contact boundaries exist at the metal silicon substrate interface in the CPW line, the finite-element analysis method is used to determine the simulated behavior of the structure. The distributed capacitance, leakage conduction current, and dynamic shunt conductance for the line are shown to be a function of dc bias applied to the line, and also to reduce as a function of trench depth in the normal bias regime. Experimental results show: (1) the reduction of RF losses in comparison with conventional aluminum conductor CPW line structures may be as much as 0.5 dB/cm at 30 GHz; (2) by proper positive dc biasing of a CPW line on a p-type HRS substrate, a further reduction (0.2 dB/cm) in RF loss at 30 GHz can be achieved; (3) predicted trends in line leakage current, capacitance, and relative characteristics impedance are experimentally verified. The proposed waveguide structure may be utilized in a special fabrication process designed for RF/microwave applications.





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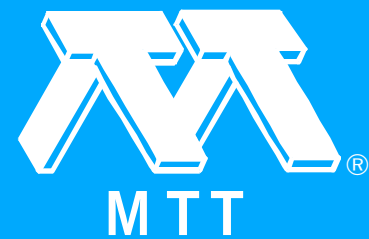
Characterization of broad-band transmission for coplanar waveguides on CMOS silicon substrates

V. Milanovic, M. Ozgur, D.C. DeGroot, J.A. Jargon, M. Gaitan and M.E. Zaghloul.

"Characterization of broad-band transmission for coplanar waveguides on CMOS silicon substrates." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part II [T-MTT] (Special Issue on Microwave Circuits on Silicon Substrates)): 632-640.

This paper presents characteristics of microwave transmission in coplanar waveguides (CPW's) on silicon (Si) substrates fabricated through commercial CMOS foundries. Due to the CMOS fabrication, the metal strips of the CPW are encapsulated in thin films of Si dioxide. Many test sets were fabricated with different line dimensions, all on p-type substrates with resistivities in the range from 0.4 $\Omega \cdot \text{cm}$ to 12.5 $\Omega \cdot \text{cm}$. Propagation constant and characteristic impedance measurements were performed at frequencies from 0.1 to 40 GHz, using a vector-network analyzer and the through-reflect-line (TRL) deembedding technique. A quasi-TEM equivalent circuit model was developed from the available process parameters, which accounts for the effects of the electromagnetic fields in the CPW structure over a broad frequency range. The analysis was based on the conformal mapping of the CPW multilayer dielectric cross section to obtain accurate circuit representation for the effects of the transverse fields.





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Microwave PtSi-Si Schottky-barrier-detector diode fabrication using an implanted active layer on high-resistivity silicon substrate

Yunhong Wu, B.M. Armstrong, H.S. Gamble, Zhirun Hu, Qiang Chen, Suidong Yang, V.F. Fusco and J.A.C. Stewart. "Microwave PtSi-Si Schottky-barrier-detector diode fabrication using an implanted active layer on high-resistivity silicon substrate." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part II [T-MTT] (Special Issue on Microwave Circuits on Silicon Substrates)): 641-646.

A surface-oriented planar Schottky diode for use as a detector diode on Si monolithic microwave integrated circuits (MMIC's) was developed. The active n-on-n/sup +/- and contact n/sup +/- regions were doped on the high-resistivity silicon substrate using phosphorus ion implantation. The PtSi-Si barrier was formed by metallurgical interaction between pure platinum film and silicon. The process technology developed for the Schottky-detector diode fabrication is precise, simple, and cheap, and is suitable for mass production. The typical measured cutoff frequency of a zero-biased fabricated Schottky diode is 118 GHz.





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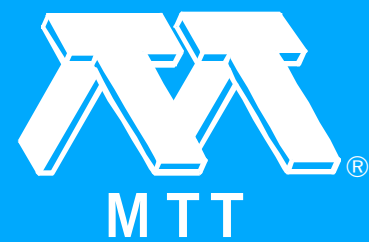
Low-frequency noise properties of SiGe HBT's and application to ultra-low phase-noise oscillators

B. Van Haaren, M. Regis, O. Llopis, L. Escotte, A. Gruhle, C. Mahner, R. Plana and J. Graffeuil. "Low-frequency noise properties of SiGe HBT's and application to ultra-low phase-noise oscillators." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part II [T-MTT] (Special Issue on Microwave Circuits on Silicon Substrates)): 647-652.

This paper presents an extensive electrical characterization of Si/SiGe/Si heterojunction bipolar transistors (HBT's) grown by molecular beam epitaxy (MBE). These devices are designed for microwave and millimeter-wave applications since they present a maximum oscillation frequency in the 40-GHz range. The processing technology, featuring a high-quality oxide passivation, results in ideal Gummel plots and an input noise corner frequency of 250 Hz at lowest. A dielectric resonator oscillator (DRO) at 4.7 GHz has, therefore, been realized. The measured phase-noise level of this oscillator is below -135 dBc/Hz at 10-kHz offset frequency, which is at least 10 dB better than the best FET or HBT state-of-the-art DRO's.

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Base-profile optimization for minimum noise figure in advanced UHV/CVD SiGe HBT's

W.E. Ansley, J.D. Cressler and D.M. Richey. "Base-profile optimization for minimum noise figure in advanced UHV/CVD SiGe HBT's." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part II [T-MTT] (Special Issue on Microwave Circuits on Silicon Substrates)): 653-660.

We investigate the base-profile design issues associated with optimizing ultrahigh vacuum/chemical vapor deposition (UHV/CVD) silicon-germanium (SiGe) heterojunction bipolar transistors (HBT's) for minimum broad-band noise. Using the simulator for cryogenic research and SiGe bipolar device optimization (SCORPIO), the impact of Ge profile, base doping level, and base thickness on minimum noise figure (NF/sub min/) are quantitatively examined across the -55/spl deg/C-125/spl deg/C temperature range. We introduce a novel Ge profile for optimum NF/sub min/, which allows independent control of current gain (/spl beta/) and achieves maximum $f_{sub T}$ while maintaining thermodynamic stability. Simulations show that this profile can achieve a /spl beta/ of /spl sim/200, a peak $f_{sub T}$ > 50 GHz, a peak $f_{sub max}$ > 60 GHz, and an NF/sub min/ < 0.5 dB at 2 GHz and < 1 dB at 10 GHz using a conservative base width of /spl sim/90 nm. We predict that a 45-nm base-width/0.5-/spl mu/m emitter-width device with a thermodynamically stable flat Ge profile, manufacturable using an UHV/CVD growth technique, should be able to achieve an NF/sub min/ < 0.4 dB at 2 GHz and /spl sim/0.8 dB at 10 GHz along with a /spl beta/ of /spl sim/300, a peak $f_{sub T}$ > 70 GHz, and a peak $f_{sub max}$ > 90 GHz. These 300-K performance values improve as the temperature is reduced.

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RFIC's for mobile communication systems using SiGe bipolar technology

R. Gotzfried, F. Beisswanger, S. Gerlach, A. Schuppen, H. Dietrich, U. Seiler, K.-H. Bach and J. Albers. "RFIC's for mobile communication systems using SiGe bipolar technology." 1998 *Transactions on Microwave Theory and Techniques* 46.5 (May 1998, Part II [T-MTT] (Special Issue on Microwave Circuits on Silicon Substrates)): 661-668.

We report on design aspects and the implementation of RF integrated circuits (RFIC's) using TEMIC's SiGe heterojunction bipolar transistor (HBT) technology. SiGe HBT's with 50-GHz $f_{\text{sub T}}$ and $f_{\text{sub max}}$ were obtained by a production process including polysilicon resistors, nitride capacitors, and spiral inductors showing Q values up to 10. RF noise figures down to 1 dB at 2 GHz with an associated gain of 14-dB and 1-kHz 1/f corner frequency were obtained. The differences between the device parameters of Si bipolar junction transistor (BJT) and SiGe HBT technology and their influence on IC design are discussed. Design and measurement results of RFIC's, including a low-noise amplifier (LNA) and a power amplifier (PA) for application in a 1.9-GHz digital enhanced cordless telecommunications (DECT) RF front-end and 900-MHz preamplifier for a global system for mobile communication (GSM) power module are presented.





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SIMMWIC rectennas on high-resistivity silicon and CMOS compatibility

K.M. Strohm, J. Buechler and E. Kasper. "SIMMWIC rectennas on high-resistivity silicon and CMOS compatibility." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part II [T-MTT] (Special Issue on Microwave Circuits on Silicon Substrates)): 669-676.

Rectifying antennas (rectennas) are realized on high-resistivity silicon substrates using silicon monolithic millimeter-wave integrated circuit (SIMMWIC) technology. Monolithically integrated coplanar Schottky barrier diodes are used as rectifying elements embedded in different antenna structures. Both p- and n-type Schottky barrier diodes are realized with cutoff frequencies up to 1 THz. The rectennas are combined with a CMOS preamplifier mounted as a multichip module (MCM) next to the rectenna on a high-resistivity silicon substrate. An amplification of 32 dB is measured. Maximum sensitivity of the detector circuit including preamplification is 1600 mV/mW/spl middot/cm/sup -2/ at 94.6 GHz. For a monolithic integration of high-frequency circuits with low-frequency control and signal-processing electronics, the monolithic integration of CMOS circuitry on high-resistivity silicon is discussed.

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Three-dimensional silicon MMIC's operating up to K-band

K. Nishikawa, I. Toyoda, K. Kamogawa and T. Tokumitsu. "Three-dimensional silicon MMIC's operating up to K-band." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part II [T-MTT] (Special Issue on Microwave Circuits on Silicon Substrates)): 677-684.

This paper presents three-dimensional (3-D) Si monolithic microwave integrated circuit (MMIC) technology and Si MMIC operation up to K-band using this technology, and describes X- and K-band mixers with design details and measurements. The 3-D Si MMIC technology isolates passive circuits from the low-resistivity Si substrate. The evaluations use Si bipolar transistors with an emitter size of $0.3 \mu\text{m}/0.54 \mu\text{m}$ and f_{max} of 30 GHz. The mixers are base and collector LO injection types. The mixers, fabricated in an area of $0.76 \text{ mm} \times 0.54 \text{ mm}$ for the X-band mixers and in $0.46 \text{ mm} \times 0.42 \text{ mm}$ for the K-band mixers, exhibit a frequency conversion loss of 5-12 dB from 3.5 to 10 GHz and from 10 to 25 GHz. This technology is extremely effective for single-chip integration of receivers and transmitters and also for mixed-mode MMIC's up to K-band frequencies.



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X- and Ku-band amplifiers based on Si/SiGe HBT's and micromachined lumped components

Jae-Sung Rieh, Liang-Hung Lu, L.P.B. Katehi, P. Bhattacharya, E.T. Croke, G.E. Ponchak and S.A. Alterovitz. "X- and Ku-band amplifiers based on Si/SiGe HBT's and micromachined lumped components." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part II [T-MTT] (Special Issue on Microwave Circuits on Silicon Substrates)): 685-694.

A double mesa-structure Si/SiGe heterojunction bipolar transistor (HBT) and novel micromachined lumped passive components have been developed and successfully applied to the fabrication of X- and Ku-band monolithic amplifiers. The fabricated 5/spl times/5 /spl mu/m/sup 2/ emitter-size Si/SiGe HBT exhibited a DC-current gain /spl beta/ of 109, and f/sub T/ and f/sub max/ of 28 and 52 GHz, respectively. Micromachined spiral inductors demonstrated resonance frequency of 20 GHz up to 4 nH, which is higher than that of conventional spiral inductors by a factor of two. Single-, dual-, and three-stage X-band amplifiers have been designed, based on the extracted active- and passive-device model parameters. A single-stage amplifier exhibited a peak gain of 4.0 dB at 10.0 GHz, while dual- and three-stage versions showed peak gains of 5.7 dB at 10.0 GHz and 12.6 dB at 11.1 GHz, respectively. A Ku-band single-stage amplifier has also been designed and fabricated, showing a peak gain of 1.4 dB at 16.6 GHz. Matching circuits for all these amplifiers were implemented by lumped components, leading to a much smaller chip size compared to those employing distributed components as matching elements.

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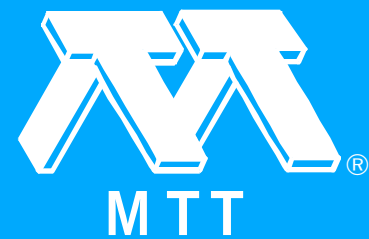
Design and realization of a millimeter-wave Si/SiGe HBT frequency multiplier

S.P.O. Bruce, A. Rydberg, M. Kim, F.J. Beißwanger, J.-F. Luy, H. Schumacher, U. Erben, M. Willander and M. Karlsteen. "Design and realization of a millimeter-wave Si/SiGe HBT frequency multiplier." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part II [T-MTT] (Special Issue on Microwave Circuits on Silicon Substrates)): 695-700.

In this paper, the design of an active millimeter-wave frequency doubler using an Si/SiGe heterojunction bipolar transistor (HBT) as the active device is studied. Simulations are made using a developed physics-based large-signal model for Si/SiGe HBT's, which includes thermal dependence. Despite the high-output operating frequency of the fabricated doubler being close to $f_{\text{sub max}}/67$ GHz for the Si/SiGe HBT, the conversion efficiency in a not completely optimized circuit is found to be better than -12 dB. The 3-dB bandwidth for the doubler is approximately 7.4%. These results are found to be comparable to a heterojunction field-effect transistor (HFET) doubler operating equally close to its $f_{\text{sub max}}$. Simulated results of the doubler performance with varied terminating impedances for the HBT are presented as design aids.

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Multifunctional radar sensor for automotive application

M. Wollitzer, J. Buechler, J.-F. Luy, U. Siart, E. Schmidhammer, J. Detlefsen and M. Esslinger. "Multifunctional radar sensor for automotive application." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part II [T-MTT] (Special Issue on Microwave Circuits on Silicon Substrates)): 701-708.

A multifunctional radar system for vehicles consisting of two modules with a combined bistatic/monostatic arrangement is presented. One module acts as a transceiver, whereas the other is a receiving circuit. The transmitting part radiates a frequency-modulated signal alternately in two orthogonal polarizations. The receiving parts work with different local oscillator (LO) frequencies and detect both polarizations of the scattered signal simultaneously. From the resulting Doppler spectra and a distance measurement, the velocity, tilt angle, height with respect to ground, and the direction of the movement of a vehicle can be derived. From the polarimetric information, a classification of the road condition is possible. In a first approach, the sensor was built in a conventional waveguide technique. The second step was to realize the millimeter-wave circuits of both modules with monolithic silicon millimeter-wave integrated circuit (SIMMWIC) technology. To achieve a flat arrangement, a leaky-wave antenna is developed and coupled to the SIMMWIC's.

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Coplanar passive elements on Si substrate for frequencies up to 110 GHz

W. Heinrich, J. Gerdes, F.J. Schmuckle, C. Rheinfelder and K. Strohm. "Coplanar passive elements on Si substrate for frequencies up to 110 GHz." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part II [T-MTT] (Special Issue on Microwave Circuits on Silicon Substrates)): 709-712.

This paper provides both modeling and design information on coplanar passive elements on a silicon substrate. The influence of substrate resistivity on coplanar waveguide (CPW) loss is discussed, and elements of a cell library for coplanar monolithic microwave integrated circuits (MMIC's) on high-resistivity substrates are presented. The elements include discontinuities, junctions, and spiral inductors. The models are based on field-theoretical simulations and verified by S-parameter measurements up to 110 GHz.

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Investigation of microstrip and coplanar transmission lines on lossy silicon substrates without backside metallization

W. Durr, U. Erben, A. Schuppen, H. Dietrich and H. Schumacher. "Investigation of microstrip and coplanar transmission lines on lossy silicon substrates without backside metallization." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part II [T-MTT] (Special Issue on Microwave Circuits on Silicon Substrates)): 712-715.

Silicon circuits, now penetrating well into the microwave frequency range, use lossy silicon substrates. Consequently, the microwave performance of transmission lines on this substrate becomes increasingly important and has been investigated here up to 20 GHz. It is shown that transmission lines on 20-/spl Omega//spl middot/cm substrates have no need for backside metallization and backside via holes. Two models for different line types are derived from measurements and verified against them. A coplanar waveguide (CPW) with an overall width of less than 30 /spl mu/m was fabricated with an attenuation of 0.5 dB/mm at 20 GHz, which is acceptable for monolithic microwave integrated circuit (MMIC) design.

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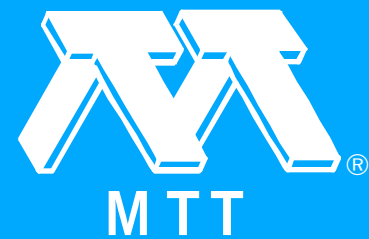


Circularly polarized millimeter-wave rectenna on silicon substrate

R.H. Rasshofer, M.O. Thieme and E.M. Biebl. "Circularly polarized millimeter-wave rectenna on silicon substrate." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part II [T-MTT] (Special Issue on Microwave Circuits on Silicon Substrates)): 715-718.

A circularly polarized (CP) silicon-integrated W-band rectenna (r_e_c_t_ifying ante_n_n_a_) for use in six-port polarimetric radar systems was designed, numerically optimized, and fabricated. A rigorous numerical optimization was performed by using the supergrid method (SGM). The rectenna applies a novel low-loss purely planar dual-patch antenna (DPA) layout, which allows the receiver to be manufactured using monolithic integration. The measurement results for the receiver demonstrate an excellent cross-polarization discrimination (XPD) >14 dB @ 76 GHz over a wide range of the scan angle (12 dB @ /spl plusmn/20/spl deg/).





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Reduction of leakage currents in silicon mesa devices

R.D. Kuhne and E. Kasper. "Reduction of leakage currents in silicon mesa devices." 1998 Transactions on Microwave Theory and Techniques 46.5 (May 1998, Part II [T-MTT] (Special Issue on Microwave Circuits on Silicon Substrates)): 719-722.

Easily and rapidly manufacturable silicon mesa devices suffer from additional leakage currents from the mesa rim where n-p junctions are exposed to the surface. A modified mesa structure is proposed, which reduces the drawbacks of leakage currents. The structure contains a metallization smaller than the mesa and a very thin (10-nm) contact layer as, for instance, can be grown by molecular beam epitaxy (MBE). The current distribution for a forward-biased junction is given. For cylindrical symmetry, it was possible to derive analytical solutions. At high current densities, the voltages at the mesa edge are effectively reduced and the current contribution of the outer part is only a small fraction of the total current. Numerical examples are given for large test structures as used for microwave IMPATT diodes.

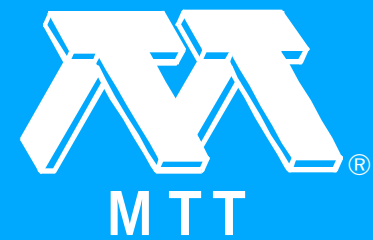
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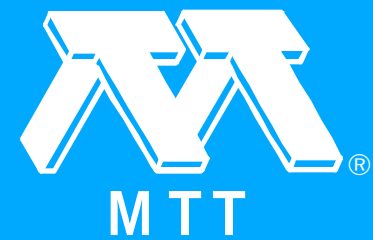
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Guest Editor's Overview (Jun. 1998 [T-MTT])

J.F. Harvey. "Guest Editor's Overview (Jun. 1998 [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 725-726.



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Millimeter-wave research activities in Japan

T. Yoneyama. "Millimeter-wave research activities in Japan." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 727-733.

Millimeter-wave research activities in Japan are reviewed from various points of view. It is shown that a quarter of the papers presented at microwave sessions in the two major annual conferences of the Institute of Electronics, Information and Communications Engineers (IEICE), Japan, are millimeter-wave research papers. Monolithic microwave integrated circuit (MMIC) devices such as high-power amplifiers (HPAs), low-noise amplifiers (LNAs), and mixers developed by several companies are compared in terms of state-of-the-art performances. Unique cost-reduction techniques are also discussed. Two types of car collision-avoidance radar systems have been constructed using nonradiative dielectric waveguide (NRD-guide) technology peculiar to Japan. Topics presented at Microwave Photonics '96, Japan, are reviewed, with emphasis on the Japanese contributions to this field.



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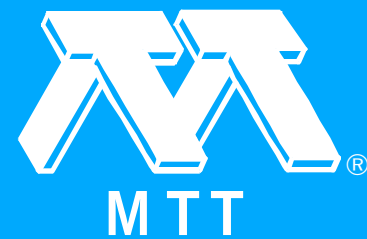


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Commercial satellite applications for heterojunction microelectronics technology

P. Greiling and N. Ho. "Commercial satellite applications for heterojunction microelectronics technology." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 734-738.

Future commercial satellite-based communication systems will be supporting a variety of high data-rate consumer and business applications, including universal telephony access, computer networking, teleimaging, telecommuting, videoconferencing, and high-speed Internet. In response to the anticipated system-performance requirements, heterojunction technology for ultra-low noise amplifiers (LNAs), high-efficiency power amplifiers, and high-speed analog/digital circuits capable of operating at multigigabit per second rates are being developed. An overview of the status and issues related to this development effort is presented.



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Two-terminal millimeter-wave sources

H. Eisele and G.I. Haddad. "Two-terminal millimeter-wave sources." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 739-746.

Basic principles of operation, fundamental power-generation capabilities, and fabrication technologies are reviewed for three groups of two-terminal devices, i.e., resonant-tunneling diodes (RTDs), transferred-electron devices (TEDs), and transit-time diodes. The paper focuses on devices for frequencies above 30 GHz, and an overview of recent research in this area and of various state-of-the-art laboratory results is given. As an outlook, the potential of some new material systems for high-power devices is discussed.

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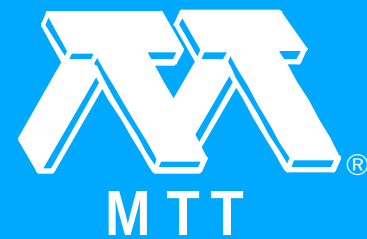


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Emerging trends in millimeter-wave CAD

K.C. Gupta. "Emerging trends in millimeter-wave CAD." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 747-755.

This paper discusses three emerging trends in the area of millimeter-wave (mm-wave) electromagnetic (EM) simulation and computer-aided design (CAD). Diakoptics techniques for frequency- and time-domain EM-simulation methods are needed for mm-wave circuit design. Development of artificial neural network (ANN) models is likely to result in an efficient use of EM simulators. Possible applications of knowledge-based tools are suggested for initial stages of the design process.



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GaN microwave electronics

U.K. Mishra, Yi-Feng Wu, B.P. Keller, S. Keller and S.P. Denbaars. "GaN microwave electronics." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 756-761.

In this paper, recent progress of AlGaIn/GaN-based power high-electron-mobility transistors (HEMT's) is reviewed. Remarkable improvement in performances was obtained through adoption of high Al contents in the AlGaIn layer. The mobility in these modulation-doped structures is about $1200 \text{ cm}^2/\text{V}\cdot\text{s}$ at 300 K with sheet densities of over $1 \times 10^{13} \text{ cm}^{-2}$. The current density is over 1 A/mm with gate-drain breakdown voltages up to 280 V. f_{max} values up to 52 GHz have been demonstrated. Continuous wave (CW) power densities greater than 3 W/mm at 18 GHz have been achieved.





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Si-micromachined coplanar waveguides for use in high-frequency circuits

K.J. Herrick, T.A. Schwarz and L.P.B. Katehi. "Si-micromachined coplanar waveguides for use in high-frequency circuits." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 762-768.

This paper describes the development and characterization of a new class of Si-micromachined lines and circuit components for operation between 2-110 GHz. In these lines, which are a finite-ground coplanar-waveguide (FGC) type, Si micromachining is used to remove the dielectric material from the aperture regions in an effort to reduce dispersion and minimize propagation loss. Measured results have shown a considerable loss reduction to levels that compare favorably with those of membrane lines and rectangular waveguides. Micromachined FGC lines have been used to develop V- and W-band bandpass filters. The W-band micromachined FGC filter has shown a 0.8-dB improvement in insertion loss at 94 GHz over a conventional FGC line. This approach offers an excellent alternative to the membrane technology, exhibiting very low loss, no dispersion, and mode-free operation without using membranes to support the interconnect structure.

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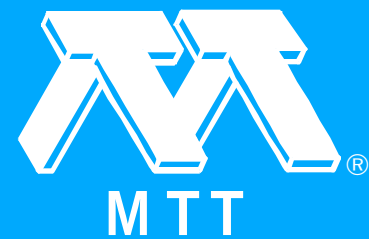


Abstracts

Stability of grid amplifiers

Cheh-Ming Liu, M.P. De Lisio, A. Moussessian and D.B. Rutledge. "Stability of grid amplifiers." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 769-774.

We present a stability model for quasi-optical grid amplifiers. This model is useful for predicting and suppressing the common-mode oscillations that often occur in amplifier grids. Three stabilization techniques will be discussed. The first technique uses a capacitor to stabilize the grid. The second approach employs resistance to suppress the oscillations. The final technique stabilizes the grid by reducing the on-chip common-mode resistance, allowing greatly increased amplifier efficiencies. Experimental evidence will be presented to confirm the validity of our stability model.



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TM surface-wave power combining by a planar active-lens amplifier

A.F. Perkons, Yongxi Qian and T. Itoh. "TM surface-wave power combining by a planar active-lens amplifier." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 775-783.

Power combining of TM surface waves by a planar active-lens amplifier is the subject of this paper. An amplifier gain of 11 dB at 8.25 GHz with a 3-dB bandwidth of 0.65 GHz has been demonstrated. Gain is measured from input to output connector to facilitate comparisons with more conventional amplifiers. Measurements of output power versus input power are also presented. The amplifier behaved in a linear manner and no problems with spurious oscillations were encountered. Construction of the amplifier is compatible with planar fabrication technologies. A key component of the combiner is a microstrip-fed Yagi-Uda slot-array antenna for TM surface-wave excitation of a thick dielectric slab. Design and optimization guidelines for the antenna are presented as well as detailed spectral-domain and finite-difference time-domain (FDTD) analysis results. Measured and simulation results show an input return loss and front-to-back ratio better than 10 dB over a 5% bandwidth. Calculated and measured results for the fields radiated by the antenna confirm forward radiation of the dominant TM mode in the thick dielectric slab. Integration of the computed radiated fields shows the antenna has a surface-wave launching efficiency of 85%.





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Spatial power combining for two-dimensional structures

C.W. Hicks, Huan-Sheng Hwang, M.B. Steer, J.W. Mink and J.F. Harvey. "Spatial power combining for two-dimensional structures." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 784-791.

The two-dimensional (2-D) hybrid dielectric slab-beam open and closed waveguide systems are suitable for the design of planar quasi-optical integrated circuits and devices. An open system consisting of an active E-plane amplifier array consisting of Vivaldi-type antennas with MESFET and monolithic microwave integrated circuit (MMIC) devices was investigated. The 4/spl times/1 MESFET amplifier array generated 11 and 4.5 dB of amplifier and system gain, respectively, at 7.12 GHz, and the cascade MMTC Vivaldi-type antenna produced 24 dB of amplifier gain at 8.4 GHz. Also, experiments on a new 2-D H-plane parallel-plate closed system with a stripline slot antenna is introduced, and the wavebeam-mode theory is presented. The new system minimizes scattering and isolation losses associated with open structures. The amplifier gain of the closed system based on slot antennas is compared to the open system based on Vivaldi antennas.

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Novel single-layer waveguides for high-efficiency millimeter-wave arrays

M. Ando, J. Hirokawa, T. Yamamoto, A. Akiyama, Y. Kimura and N. Goto. "Novel single-layer waveguides for high-efficiency millimeter-wave arrays." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 792-799.

This paper presents novel single-layer waveguides for challenging design of high-gain, high-efficiency, and mass-producible planar slotted arrays for the millimeter wave region. The key features of three types of waveguides, as well as state-of-the-art performance of the arrays using these, are surveyed. A model antenna realizes 35-dBi gain and 64% efficiency at 60.2 GHz.

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Slot-array antennas fed by coplanar waveguide for millimeter-wave radiation

H. Kobayashi and Y. Yasuoka. "Slot-array antennas fed by coplanar waveguide for millimeter-wave radiation." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 800-805.

Slot-array antennas with parasitic slots, slot-array antennas fed by coplanar waveguide (CPW), and two-dimensional slot-array antennas fed by CPW were fabricated on fused quartz substrates, and the receiving properties of the antennas were investigated at 94 GHz with the goal of increasing the power gain of the slot antennas. It was found that the power gain of the slot antenna could be increased by 11 dB over a single-slot antenna by using a two-dimensional (8/spl times/3) slot-array antenna fed by CPW. It was confirmed that the improvement of the power gain was caused by decreasing surface-wave power in the substrate and by sharpening antenna patterns perpendicular to the substrate.

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High-speed ASK transceiver based on the NRD-guide technology at 60-GHz band

F. Kuroki, M. Sugioka, S. Matsukawa, K. Ikeda and T. Yoneyama. "High-speed ASK transceiver based on the NRD-guide technology at 60-GHz band." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 806-810.

A new type of high-speed amplitude shift-keying (ASK) transceiver has been developed in an integrated manner at 60 GHz by using the nonradiative dielectric waveguide (NRD-guide) technology. An emphasis is placed on the high-speed performance of the newly developed ASK modulator. The modulator uses a Schottky barrier diode (SBD), which has higher switching speed than a p-i-n diode. In addition, the operation principle of it is different from that of the conventional p-i-n diode modulator. A pair of NRD-guide transceivers have been fabricated and 400-Mb/s data-transmission test has been carried out successfully by using them.

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Millimeter-wave-band amplifier and mixer MMICs using a broad-band 45/spl deg/ power divider/combiner

H. Hayashi, H. Okazaki, A. Kanda, T. Hirota and M. Muraguchi. "Millimeter-wave-band amplifier and mixer MMICs using a broad-band 45/spl deg/ power divider/combiner." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 811-819.

This paper demonstrates millimeter-wave-band amplifier and mixer monolithic microwave integrated circuits (MMIC's) using a broad-band 45/spl deg/ power divider/combiner. At first, we propose a broad-band 45/spl deg/ power divider/combiner, which combines a Wilkinson divider/combiner, 45/spl deg/ delay line, and 90/spl deg/ short stub. A coupling loss of 4.0/spl plusmn/0.2 dB and a return loss and an isolation of more than 19 dB with 45/spl plusmn/1/spl deg/ phase difference was obtained from 17 to 22 GHz for the fabricated K-band MMIC 45/spl deg/ power divider/combiner. Next, a parallel amplifier using the broad-band 45/spl deg/ power divider/combiner, which can be used in a power-combining circuit configuration requiring no isolator, is shown. Comparing the transmitter intermodulation generated in the parallel amplifier using the broad-band 45/spl deg/ power divider/combiner and that generated in the one using the conventional type, the broad-band suppression effect was confirmed. Finally, an application of the broad-band 45/spl deg/ power divider/combiner to a single-sideband (SSB) subharmonically pumped (SHP) mixer requiring no IF switch is shown. In an RF frequency range from 22.89 to 26.39 GHz, the fabricated K-band MMIC mixer achieved (for up-conversion) the good results of more than -13-dB conversion gain and more than 24-dB image-rejection ratio. These contribute significantly to the miniaturization of millimeter-wave communication equipment.

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Abstracts

A novel FET model including an illumination intensity parameter for simulation of optically controlled millimeter-wave oscillators

S. Kawasaki, H. Shiomi and K. Matsugatani. "A novel FET model including an illumination intensity parameter for simulation of optically controlled millimeter-wave oscillators." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 820-828.

This paper demonstrates an illuminated FET model including an illumination-intensity parameter for simulation of optical characteristics of microwave and millimeter wave integrated circuits (MMIC's). Modeling for an illuminated GaAs MESFET and an InP high electron-mobility transistor (HEMT), and analysis and experimental results from optically controlled microwave and millimeter-wave hybrid integrated circuit (HIC) and MMIC oscillators are discussed. The proposed illuminated FET model was able to explain the photoresponse of both the GaAs MESFET and the InP HEMT, and the photooperation of their circuits.



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A high-gain 50-GHz-band monolithic balanced gate mixer with an external IF balun

K. Kawakami, N. Uehara, K. Matsuo, T. Kashiwa, K. Itoh, Y. Isota and O. Ishida. "A high-gain 50-GHz-band monolithic balanced gate mixer with an external IF balun." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 829-833.

This paper presents a 90-GHz-band high-gain monolithic balanced gate mixer. IF impedance of the balanced gate mixer is approximated from a small-signal equivalent circuit, and conversion gain of the mixer is improved by using an external IF balun with high impedance-transforming ratio. The maximum conversion gain of 8.2 dB is achieved at LO power of 0 dBm. Effectiveness of the described mixer is confirmed experimentally.

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Abstracts

Application of microwaves and millimeter waves for the characterization of teeth for dental diagnosis and treatment

N. Hoshi, Y. Nikawa, K. Kawai and S. Ebisu. "Application of microwaves and millimeter waves for the characterization of teeth for dental diagnosis and treatment." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 834-838.

This paper presents applications of microwaves and millimeter waves for the characterization of teeth. This is done by measuring the complex permittivity over the frequency range from 0.04 to 40 GHz. These measurements have revealed that dental caries are significantly more lossy to microwaves and millimeter waves than the healthy tooth, and this difference can be used for dental diagnosis. The experimental results have been confirmed by using the finite-difference time-domain (FDTD) method. In addition, millimeter-wave heating of the lossy dental caries can be used as a sterilization treatment. It is concluded that millimeter waves can be used for dental medical diagnosis as well as dental medical treatment.



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Monolithic rat-race mixers for millimeter waves

H. Matsuura, K. Tezuka, I. Aoki, M. Yamanaka, S. Kobayashi, T. Fujita and A. Miura.

"Monolithic rat-race mixers for millimeter waves." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 839-841.

In this paper, we report on fully monolithic millimeter-wave Schottky-barrier diode (SBD) down-converters with an IF amplifier using heterojunction bipolar transistors (HBT's). A rat-race circuit is used for the mixer, and is analyzed using a harmonic-balance simulator. The measured conversion gain and the isolation are 7.1 and 29 dB in the V-band design, and 8.0 and 25 dB in the W-band design, respectively. The conversion gains are matched well with the circuit simulation.

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A switchable multi-sector antenna for indoor wireless LAN systems in the 60-GHz band

Y. Murakami, T. Kijima, H. Iwasaki, T. Ihara, T. Manabe and K. Iigusa. "A switchable multi-sector antenna for indoor wireless LAN systems in the 60-GHz band." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 841-843.

A switchable multi-sector antenna for indoor wireless local-area network (LAN) systems in the 60-GHz band has been proposed. The antenna has a pyramidal configuration. Each isosceles-triangular surface of the pyramid has been inclined 30/spl deg/ from the vertical axis in order to cover an appropriate elevation angle range. This antenna excites a right-handed circularly polarized wave to suppress unwanted multipath delayed waves. The low-loss curved microstrip-line feeding has been introduced at the junction between antenna feed lines and monolithic microwave integrated circuit (MMIC) amplifiers at the bottoms of the pyramid. Using this antenna, a terminal receiver for indoor wireless LAN systems in the 60-GHz band has been developed.

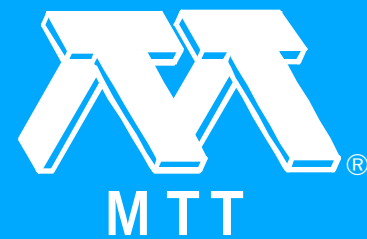


Abstracts

An eight-device extended-resonance power-combining amplifier

A.L. Martin, A. Mortazawi and B.C. Deloach, Jr.. "An eight-device extended-resonance power-combining amplifier." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 844-850.

An extended resonance technique for designing power amplifiers is investigated. This technique provides a planar power-combining structure whose primary distinction from conventional structures is that it does not require quarter-wave or multiple quarter-wave spacing between devices. A theoretical analysis of extended-resonance combiners is presented, followed by experimental data from an eight-device power amplifier. This approach is adaptable to monolithic circuit-fabrication techniques and should be useful for millimeter-wave applications.



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Power dependence of HTS disk-resonator quality factor

O.G. Vendik and I.B. Vendik. "Power dependence of HTS disk-resonator quality factor." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 851-856.

The simple closed-form model of nonlinear response of a high-temperature superconducting disk resonator on microwave power is proposed. The model is based on superconducting film nonlinearity and describes the dependence of unloaded quality factor on the incident power. The specified normalizing power is used as the only fitting parameter. Good quantitative agreement of modeled and measured data has been obtained. The results observed exhibit the kinetic nature of the nonlinearity of the disk resonator on an LaAlO/sub 3/ substrate at T=60 K and more complicated, presumably thermal, heating nature of the nonlinearity at lower temperature.





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High-efficiency harmonic-control amplifier

B. Ingruber, W. Pritzl, D. Smely, M. Wachutka and G. Magerl. "High-efficiency harmonic-control amplifier." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 857-862.

A half-sinusoidally driven class-A harmonic-control amplifier (hHCA) combines the advantage of high gain of class A with the advantage of high drain efficiency of class F. Consequently, power-added efficiency is increased as compared with state-of-the-art high-efficiency amplification techniques. As this innovative amplifier concept consists of a pulse-forming class-B amplifier stage followed by a class-A power-amplifier stage, intermodulation distortion is low even in saturation. The realization of such a two-stage hHCA offers 71% overall efficiency, 27.9 dBm output power, and 22.4 dB gain at 1.62 GHz. Two-tone measurements at 1 dB gain compression, where the amplifier's single-carrier (SC) overall efficiency is still 64%, has demonstrated third and fifth-order intermodulation distortion of -29 and -21 dBc, respectively.

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Abstracts

A fast vector-potential method using tangentially continuous vector finite elements

R. Dyczij-Edlinger, Guanghua Peng and Jin-Fa Lee. "A fast vector-potential method using tangentially continuous vector finite elements." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 863-868.

An efficient finite-element method for driven time-harmonic wave-propagation problems is proposed. The special properties of tangentially continuous vector finite elements (TVFEMs) are utilized to formulate an ungauged vector-potential scheme in terms of the field method plus one very sparse "gradient matrix" with two nonzero integer or pointer entries per row. The suggested formalism is intended for use with iterative solvers. It combines the simplicity and modest memory requirements of the field formulation with the superior numerical convergence of the ungauged vector-potential scheme.



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An efficient and accurate technique for the incident-wave excitations in the FDTD method

U. Oguz, L. Gurel and O. Arikan. "An efficient and accurate technique for the incident-wave excitations in the FDTD method." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 869-882.

An efficient technique to improve the accuracy of the finite-difference time-domain (FDTD) solutions employing incident-wave excitations is developed. In the separate-field formulation of the FDTD method, any incident wave may be efficiently introduced to the three-dimensional (3-D) computational domain by interpolating from a one-dimensional (1-D) incident-field array (IFA), which is a 1-D FDTD grid simulating the propagation of the incident wave. By considering the FDTD computational domain as a sampled system and the interpolation operation as a decimation process, signal-processing techniques are used to identify and ameliorate the errors due to aliasing. The reduction in the error is demonstrated for various cases. This technique can be used for the excitation of the FDTD grid by any incident wave. A fast technique is used to extract the amplitude and the phase of a sampled sinusoidal signal.



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Distribution of current induced on metal-strip gratings by plane wave

C.M. Shiao and S.T. Peng. "Distribution of current induced on metal-strip gratings by plane wave." 1998 Transactions on Microwave Theory and Techniques 46.6 (Jun. 1998 [T-MTT]): 883-885.

In this paper, we present a rigorous analysis of current distribution induced on a metal-strip grating by an incident plane wave. The metal strips of the grating are characterized by a complex permittivity, with a large imaginary part to account for their finite conductivity. Such a scattering problem is formulated by the mode-matching method to determine the scattered fields everywhere, so that the volume distribution of current within a metal strip can be explicitly obtained. Numerical results are given to illustrate the effects of the dielectric constant of the surrounding media, as well as the incident angle and polarization on the current distribution induced by an incident plane wave. The air and metal modes form the basis for physical explanations of the numerical results obtained.

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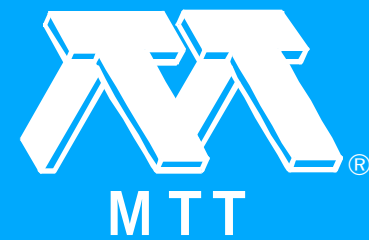
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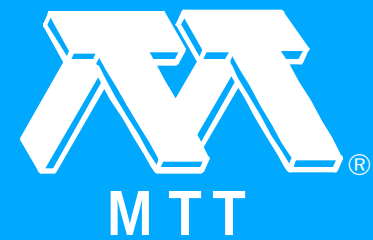
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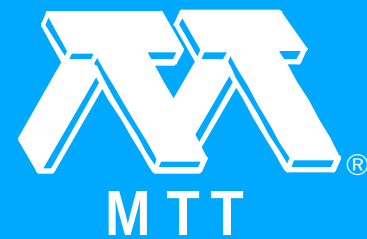


Abstracts

Wave penetration through slits on stacked thick plates

Jean-Fu Kiang. "Wave penetration through slits on stacked thick plates." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 889-893.

Wave penetration through slits on single and stacked metal plates of finite thickness is studied by using the Galerkin method. The limiting case of slits on infinitesimally thin plates are also formulated to compare the shielding effectiveness of metal plates with slits against incident plane waves. It is observed that the wave penetrating through slits on stacked plates with a proper separation is much less than that through a single slit on a plate with twice the thickness.



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Measuring the carrier frequency of single short-duration MW radio-wave pulses

B.D. Zaitsev, V.A. Fedorenko, A.V. Ermolenko and N.I. Sinitsyn. "Measuring the carrier frequency of single short-duration MW radio-wave pulses." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 894-899.

A new method for measuring the carrier frequency of single microwave (MW) radiowave pulse is described, which is based on its transduction to a series of echo pulses using a transversal filter. The analysis of the radio-wave pulses exhibiting constant carrier frequency or frequency modulation is shown to be both theoretically and experimentally feasible with the help of a bulk acoustic-wave delay line. A frequency meter has been developed for single short-duration 2.5-10.5-GHz radiowave pulses, which was demonstrated to be operative under strong radio-interference conditions.

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Monolithic packaging concepts for high isolation in circuits and antennas

R.F. Drayton, R.M. Henderson and L.P.B. Katehi. "Monolithic packaging concepts for high isolation in circuits and antennas." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 900-906.

High-frequency planar circuits experience large electromagnetic (EM) coupling in dense circuit environments. As a result, individual components exhibit performance degradation that ultimately limits overall circuit response. This paper addresses crosstalk in planar microstrip lines by evaluating micromachined packages as a means to reduce coupling. Microstrip lines with straight and meandering paths can exhibit crosstalk coupling as high as -20 dB (i.e., when placed in a side-by-side arrangement). From our study, inclusion of a monolithic package reduces this effect by as much as: -30 dB and, consequently, offers the requisite electrical and environmental protection in addition to shielding of individual elements from parasitic radiation. Presented herein is the development of the micromachined package for microstrip geometries. Included in the discussion are crosstalk effects between straight and bending geometries in open and packaged configurations and an evaluation of package noise characteristics. A packaged antenna element is also included as a demonstration of the potential use of micromachined packaging in array applications.

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Miniature electric near-field probes for measuring 3-D fields in planar microwave circuits

Yingjie Gao and I. Wolff. "Miniature electric near-field probes for measuring 3-D fields in planar microwave circuits." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 907-913.

Three-dimensional (3-D) electric near-field probes applicable to the 0.05-20-GHz band have been developed, which can measure both the magnitude and the phase of the microwave field inside radio-frequency (RF) and microwave circuits. The field probes have very small dimensions and do not need to be connected to the operating device-under-test (DUT), therefore, the circuit properties are nearly not disturbed by the probe. Investigations on different circuits (e.g., antenna, meander lines, filters, and power amplifiers) show that such near-field probes can be applied not only to simple passive circuits, but also to measure the fields inside complex active circuits. These simple, stable, and cheap field probes are very useful for assisting the design of microwave circuits, antenna diagnostics, and testing products in industry.



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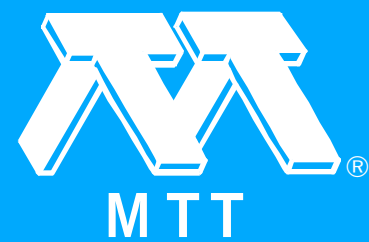
Analysis of an experimental technique for determining Van der Pol parameters of a transistor oscillator

Kuang Yi Chen, P.D. Biernacki, A. Lahrichi and A. Mickelson. "Analysis of an experimental technique for determining Van der Pol parameters of a transistor oscillator." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 914-922.

The Van der Pol (VDP) model of a transistor oscillator describes the behaviour of the oscillator with three parameters. When operating in steady state, only two parameters can be determined by spectrum analysis, these being the oscillation frequency and amplitude of oscillation. In this paper, a technique for measuring the other VDP parameter is examined. In this approach, a periodically modulated voltage is added to the bias of the oscillator to perturb the operational state. A theoretical derivation shows that the power spectrum of the perturbed oscillator contains additional information for determination of the other VDP parameter. A simple analytical perturbation formula predicts the oscillator's response to the ramped bias. Our experimental results agree with the analytical perturbation solution and therefore, this allows one to read off the other VDP parameter from the experimental data. The VDP model allows one to predict the behaviour of coupled transistor oscillators more accurately and simply than does the traditional large-signal model of the transistor. This VDP model will simplify oscillator array design since the number of parameters needed to describe each oscillator is reduced from that which would be required using a large-signal circuit model.

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Performance of MODFET and MESFET, a comparative study including equivalent circuits using combined electromagnetic and solid-state simulator

S.M.S. Imtiaz and S.M. El-Ghazaly. "Performance of MODFET and MESFET, a comparative study including equivalent circuits using combined electromagnetic and solid-state simulator." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 923-931.

A combined electromagnetic and solid-state (CESS) simulation model for the analysis of submicrometer semiconductor devices including the electromagnetic-wave propagation effects is presented. The performance comparison of two important high-frequency devices—modulation doped field-effect transistor (MODFET) and metal-semiconductor field-effect transistor (MESFET)—are illustrated using this model. The CESS simulator couples a semiconductor model to the three-dimensional (3-D) time-domain solution of Maxwell's equations. The semiconductor model is based on the moments of the Boltzmann's transport equation. The simulation uses the electromagnetic-wave concept to emphasize the better performance of MODFET over MESFET. The electromagnetic-wave propagation effects on the two devices are thoroughly analyzed. The use of the electromagnetic model over the conventional quasi-static model provides the actual device response along the gatewidth at high frequencies. The exchange of energy between the electrons and the electromagnetic wave is observed. The CESS model also facilitates the optimum choice of the device width in terms of the output voltage. This model is capable of predicting the large-signal behaviour of the submicrometer devices as well. The equivalent-circuit parameters are extracted at high frequencies for MODFET and MESFET, using a time-domain approach as well as a quasi-static approach.

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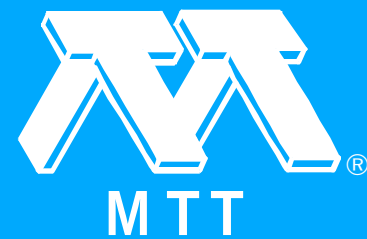


Abstracts

An efficient energetic variational principle for modeling one-port lossy gyrotropic YIG straight-edge resonators

I. Huynen, B. Stockbroeckx and G. Verstraeten. "An efficient energetic variational principle for modeling one-port lossy gyrotropic YIG straight-edge resonators." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 932-939.

This paper presents a new variational principle for the design of one-port gyrotropic magnetostatic-wave (MSW) resonators. We first prove the stationary character of the magnetic energy in the case of a resonator containing lossy gyrotropic media and supporting microwave MSW's. We then show that the variational expression may be successfully used for calculating the input reflection coefficient of a planar multilayered MSW straight-edge resonator (SER). Results obtained using the variational formulation are validated by experiment carried out at X-band. Hence, the resulting model is an efficient tool for designing low-noise wide-band yttrium-iron-garnet (YIG) tuned oscillators.



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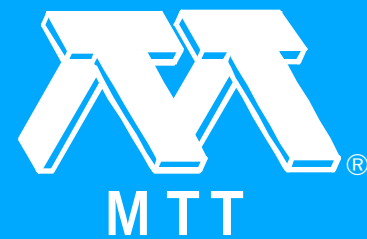


Abstracts

Analysis of high-speed interconnects in the presence of electromagnetic interference (Jul. 1998 [T-MTT])

R. Khazaka and M. Nakhla. "Analysis of high-speed interconnects in the presence of electromagnetic interference (Jul. 1998 [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 940-947.

This paper describes an efficient algorithm based on moment-matching techniques for simulation of high-speed circuits in the presence of electromagnetic interference (EMI). The proposed method is based on the recently developed complex frequency hopping (CFH) technique for interconnect analysis. The new technique is useful for susceptibility analysis and is two to three orders of magnitude faster than conventional simulation techniques. In addition, it can be extended to the analysis of interconnects with frequency-dependent parameters and nonlinear terminations.



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Millimeter-wave beams with phase singularities

G.F. Brand. "Millimeter-wave beams with phase singularities." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 948-951.

Beams of millimeter-wave radiation carrying phase singularities have been generated using specially configured plane and blazed gratings. The blazed grating converts a plane wave into such a beam with very high efficiency. All of the properties of these beams that have been seen at optical wavelengths, such as the hollow profiles of the beams and the way a beam already carrying a singularity is subsequently diffracted, are shown to appear at millimeter wavelengths.

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Novel compact elliptic-function narrow-band bandpass filters using microstrip open-loop resonators with coupled and crossing lines

Cheng-Cheh Yu and Kai Chang. "Novel compact elliptic-function narrow-band bandpass filters using microstrip open-loop resonators with coupled and crossing lines." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 952-958.

Novel compact elliptic-function narrow-band bandpass filters have been designed and fabricated. This new configuration consists of two identical microstrip open-loop resonators with coupled and crossing lines. A theoretical investigation has confirmed that this novel configuration is capable of providing elliptic-function filtering. Furthermore, the feasibility of this filter is verified experimentally. Centered at 2.039 GHz, the fabricated microstrip bandpass filter shows a measured 3-dB bandwidth of 2% and two deep notches in its stopband. In addition, the main circuit of this filter occupies only 2.5 cm/spl times/1.5 cm using a substrate with dielectric constant of 10.5, making it very attractive for applications in the mobile and personal communication systems (PCS's).

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Abstracts

Circuit model for coupling between MMICs in multichip modules including resonance effects

R.W. Jackson and Zhaoyang Wang. "Circuit model for coupling between MMICs in multichip modules including resonance effects." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 959-965.

This paper describes a circuit model to be used for the approximate calculation of coupling between monolithic microwave integrated circuits (MMICs) in a multichip module. The model is developed from basic electromagnetic principles and relies on the formation of equivalent electric dipoles to represent the complex currents on the various MMICs within the module. The technique is suitable for use in layout-based circuit simulators and uses no numerical analysis.



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Analysis of mode coupling on guided-wave structures using Morse critical points

A.B. Yakovlev and G.W. Hanson. "Analysis of mode coupling on guided-wave structures using Morse critical points." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 966-974.

New insight on mode coupling in waveguiding structures is obtained from the theory of Morse critical points (MCP's). It is shown that the traditional coupled-mode formalism has a clear analytical connection with functional properties of the characteristic determinant in the vicinity of the Morse critical point, which determines the minimum of coupling. The relationship between perturbed and independent modes in the mode-coupling region is obtained using the Taylor polynomial of order two about the Morse critical point, and it is found that the coupling factor is proportionally related to the value of a characteristic function at this point. The qualitative modal behaviour in the mode-interaction region is predicted by a simple normal form, which can be geometrically interpreted as a result of the intersection of a saddle surface and a plane corresponding to the minimum of the coupling factor. Numerical results for a variety of guided-wave structures, including printed-circuit transmission lines, planar-slab waveguides, and shielded microstrip-like lines demonstrate the efficiency of the proposed approach for the rapid identification of mode-coupling regions, and for reconstruction of dispersion behaviour in those regions via simple analytic (normal) forms.

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Transfer matrix function (TMF) for wave propagation in dielectric waveguides with arbitrary transverse profiles

Z. Menachem and E. Jerby. "Transfer matrix function (TMF) for wave propagation in dielectric waveguides with arbitrary transverse profiles." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 975-982.

A transfer matrix function (TMF) is derived for the analysis of electromagnetic (EM) wave propagation in dielectric waveguides with arbitrary profiles, situated inside rectangular metal tubes. The TMF relates the wave profile at the waveguide output to the (arbitrary profile) input wave in the Laplace space. The TMF consists of the Fourier coefficients of the transverse dielectric profile and those of the input-wave profile. The method is applicable for inhomogeneous dielectric profiles with single or multiple maxima in the transverse plane. The TMF is useful for the analysis of dielectric waveguides in the microwave and the millimeter-wave regimes and for diffused optical waveguides in integrated optics.

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FDTD treatment of partially magnetized ferrites with a new permeability tensor model

T. Monediere, K. Berthou-Pichavant, F. Marty, P. Gelin and F. Jecko. "FDTD treatment of partially magnetized ferrites with a new permeability tensor model." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 983-987.

This paper outlines the finite-difference time-domain (FDTD) treatment of partially magnetized ferrites characterized by a permeability tensor model, which was recently published. Its causal aspect makes this tensor well adapted to time-domain simulations. Validation is demonstrated for a resonant ferrite structure, Numerical and analytical results are compared, showing good agreement.

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A Galerkin moment method for the analysis of an insulated antenna in a dissipative dielectric medium

P.E. Atlamazoglou and N.K. Uzunoglu. "A Galerkin moment method for the analysis of an insulated antenna in a dissipative dielectric medium." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 988-996.

A Galerkin moment method is employed to solve the problem of a dielectric-coated dipole antenna in a dissipative medium. Piecewise sinusoids are used as basis and testing functions. The dielectric coating is modeled by equivalent-volume polarization currents, which are simply related to the conduction current distribution. No additional unknowns are introduced, and the size of the moment-method matrix is the same as that for bare antennas. Exact and approximate formulas for the near electric field are derived. The computed results exhibit excellent agreement with those previously published for a symmetric, as well as an asymmetric insulated dipole. Compared to its existing competitors, the new method appears to be more general and computationally efficient.

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Scattering at a nonchiral-chiral interface in a coaxial waveguide

Zhongxiang Shen and R.H. MacPhie. "Scattering at a nonchiral-chiral interface in a coaxial waveguide." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 997-1001.

A formally exact full-wave solution is presented for the problem of scattering at a nonchiral-chiral interface in a coaxial waveguide. The field components for the axisymmetric modes in a coaxial chirowaveguide are initially obtained. A new orthogonality relation for the modes is then proposed and used to find expansion coefficients for the electromagnetic fields in the coaxial chirowaveguide. The scattering matrix for the nonchiral-chiral dielectric discontinuity in a coaxial waveguide is finally derived by enforcing the continuity conditions of the tangential field components across the interface. Numerical results for the reflection and transmission coefficients at the nonchiral-chiral interface in a coaxial waveguide are presented.

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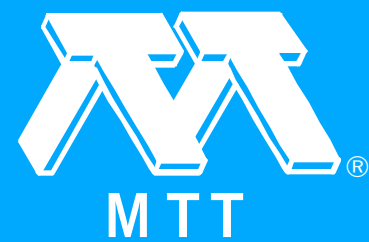


An integrated Doppler-radar transceiver front end using two FET active antennas

Zhengping Ding and Kai Chang. "An integrated Doppler-radar transceiver front end using two FET active antennas." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 1001-1003.

An integrated X-band Doppler-radar transceiver front end has been developed. This front end consists of two adjacently spaced field-effect transistor (FET) active antennas, with one of them being biased to oscillate as its transmitter and the other being biased not to oscillate, but to act as its mixer. This design has the advantage of lower noise at low Doppler frequencies as compared to a self-oscillating mixer scheme. The circuit can be used in low-power Doppler-radar systems to detect slow-moving objects such as pedestrians, intruders, automobiles, etc., with high sensitivity.





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60-GHz monolithic down- and up-converters utilizing a source-injection concept

M. Madihian, L. Desclos, K. Maruhashi, K. Onda and M. Kuzuhara. "60-GHz monolithic down- and up-converters utilizing a source-injection concept." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 1003-1006.

This paper deals with the design considerations, fabrication process, and performance of coplanar waveguide (CPW) heterojunction FET (HJFET) down- and up-converter monolithic microwave integrated circuits (MMIC's) for V-band wireless system applications. To realize a mixer featuring a simple structure with inherently isolated ports, and yet permitting independent port matching and low local oscillator (LO) power operation, a "source-injection" concept is utilized by treating the HJFET as a three-port device in which the LO signal is injected through the source terminal, the RF (or IF) signal through the gate terminal, and the IF (or RF) signal is extracted from the drain terminal. The down-converter chip incorporates an image-rejection filter and a source-injection mixer. The up-converter chip incorporates a source-injection mixer and an output RF filter. With an LO power and frequency of 7 dBm and 60.4 GHz, both converters can operate at any IF frequency within 0.5-2 GHz, with a corresponding conversion gain within -7 to -12 dB, primarily dominated by the related filter's insertion loss. Chip size is 3.3 mm/spl times/2 mm for the down-converter, and 3.5 mm/spl times/1.8 mm for the up-converter.

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Abstracts

Physical scaling rules for AlGaAs/GaAs power HBTs based on a small-signal equivalent circuit

U. Schaper and P. Zwicknagl. "Physical scaling rules for AlGaAs/GaAs power HBTs based on a small-signal equivalent circuit." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 1006-1009.

Physical scaling rules for AlGaAs/GaAs heterojunction bipolar transistors (HBTs) containing 2-16 emitter fingers are demonstrated, the parameter extraction is based on a small signal equivalent circuit. The scaling parameters compare favorably with the measured data from the process control monitor.



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Calibration and verification of the pure-mode vector network analyzer

D.E. Bockelman and W.R. Eisenstadt. "Calibration and verification of the pure-mode vector network analyzer." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 1009-1012.

In this paper, the calibration of a pure-mode vector network analyzer (PMVNA) is presented in detail. The analyzer is intended for the measurement of mixed-mode scattering parameters (s-parameters) of differential circuits, but is also suitable for measurement of general microwave networks with up to four ports. The theory of calibration of the analyzer is developed in terms of a general n-port analyzer, including the correction of port-to-port crosstalk. The type of the standards used in calibration is examined, and the minimum number of standards are summarized for various levels of crosstalk correction. A new standard for all multiport network analyzer calibrations is introduced. A calibration is performed from 0.25 to 25.25 GHz based on standards with coaxial connectors, and verification standards are measured. The measured data is compared with National Institute of Standards and Technology (NIST) traceable measurements, and errors are found to be generally less than ± 1 dB in transmission. In many cases, the error is less than the uncertainty of the NIST traceable measurements.

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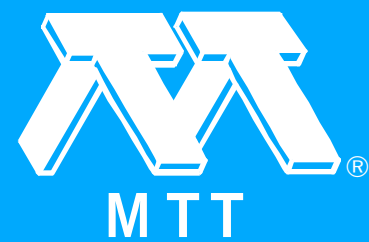
Discussion on spikes and plateaus in pulse distortion shape along exponential microstrip taper

Yue Peng Yan and M. Kobayashi. "Discussion on spikes and plateaus in pulse distortion shape along exponential microstrip taper." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 1013-1015.

The propagation distortions of a nonideal square pulse along an exponential microstrip taper have been numerically calculated. Each part of the distorted pulse shape is related to either the frequency-dependent characteristics of the effective relative permittivity or to the frequency-dependent reflection coefficient characteristics. The components of signal spectra at frequencies below 9 Grad/s do not cause the ringing distortions, but cause the upward slope shift in the center part and the upward parallel shift in the sustained tail part to the distorted pulse shape for the case of no reflection (NR). The ringing distortions and the large spikes of the overshoot and undershoot distortions are caused by the components of the signal spectra in the frequency range $100/\text{spl les//spl omega//spl les/200}$ Grad/s where the effective relative permittivity is changing very quickly with frequency.

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A sub-nanosecond resonant-type monolithic T/R switch for millimeter-wave systems applications

M. Madihian, L. Desclos, K. Maruhashi, K. Onda and M. Kuzuhara. "A sub-nanosecond resonant-type monolithic T/R switch for millimeter-wave systems applications." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 1016-1019.

This paper is concerned with the design consideration, fabrication process, and performance of a V-band monolithic transmit/receive (T/R) switch for millimeter-wave wireless networks applications. The developed switch integrated circuit (IC) has a novel structure in which to pass a signal, it presents a parallel resonant circuit to the signal by forward biasing a pair of switching heterojunction FET's (HJFETs), but to block the signal, it presents a series resonant circuit to the signal by reverse biasing the switching HJFETs. With a control voltage of 0/3.2 V, the developed T/R switch exhibits a minimum insertion loss of 3.9 dB, a maximum isolation of 41 dB, and a high switching speed of 250 ps, over 57-61 GHz. The monolithic T/R switch chip size is 3.3 mm/spl times/1.7 mm.

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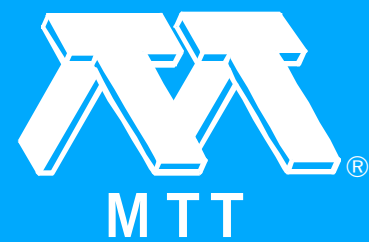


Reflection-type low-phase-shift attenuator

Won-Tae Kang, Ik-soo Chang and Min-Soo Kang. "Reflection-type low-phase-shift attenuator." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 1019-1021.

A transmission-type phase-shift attenuator has a poor reflection characteristic at an output port. In this paper, to avoid such disadvantages, a reflection type low phase-shift attenuator has been designed and measured. As a result, at a center frequency (1855 MHz), the reflection-type low-phase-shift attenuator has an attenuation of 30 dB, within the limit of 3/spl deg/ phase shift and less than -17-dB reflection characteristics at both input and output ports. It also demonstrates that the performance of the reflection type low-phase shift attenuator is better than the transmission type phase-shift attenuator with the same measurement specifications.





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SLIM: a slender technique for unbounded-field problems

S.E. Schwarz. "SLIM: a slender technique for unbounded-field problems." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 1022-1024.

Electrostatic- and electromagnetic-field problems in unbounded regions are often solved using finite differences (FD's) or finite elements (FE) combined with approximate boundary conditions. Inversion of the sparse FD or FE matrix is then required. First-order or higher order absorbing boundary conditions may be used, or one can use more accurate boundary conditions obtained by the measured equation of invariance (MEI) or by iteration. The more accurate boundary conditions are helpful because they permit reduction of the size of the mesh and, thus, the number of unknowns. In this paper, we show that the process can be carried to a maximally simple limit in which the mesh is reduced to a single layer and the matrix-inversion step disappears entirely. This results in the single-layer iterative method (SLIM), an unusually simple technique for unbounded-field problems. Computational experiments demonstrate the effectiveness of SLIM in electrostatics, and also in electrodynamic examples, such as scattering of TM plane waves from a perfectly conducting cylinder. The technique is most likely to be useful in large or complex problems where simplification is helpful, or in repetitive calculations such as scattering of radiation from many angles of incidence.

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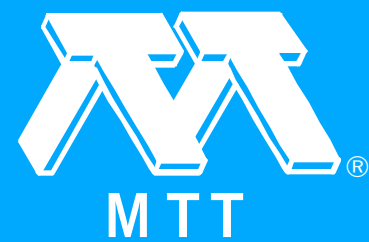
Using selective asymptotics to accelerate dispersion analysis of microstrip lines

S. Amari, R. Vahldieck and J. Bornemann. "Using selective asymptotics to accelerate dispersion analysis of microstrip lines." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 1024-1027.

A selective asymptotic technique (SAT) to accelerate the elements of the impedance matrix in the conventional spectral-domain approach (SDA) is presented. Instead of using the full asymptotic expression of the Green's functions, only those parts which cannot be evaluated in closed form are approximated by their asymptotic expressions. The resulting expressions are more accurate and systematic, as no additional parameter is introduced. The technique is applied to determine the effective dielectric constant of an open microstrip line to demonstrate its efficiency.

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On the use of linear-prediction techniques to improve the computational efficiency of the FDTD method for the analysis of resonant structures

J.A. Pereda, J.E.F. Del Rio, F. Wysocka-Schillak, A. Prieto and A. Vegas. "On the use of linear-prediction techniques to improve the computational efficiency of the FDTD method for the analysis of resonant structures." 1998 Transactions on Microwave Theory and Techniques 46.7 (Jul. 1998 [T-MTT]): 1027-1032.

Linear-prediction (LP) techniques are used to accurately and efficiently compute the frequencies and damping factors of microwave resonant structures from their transient response, which was previously obtained by using the finite-difference time-domain (FDTD) method. The LP equations are formulated in terms of a total least squares (TLS) problem and are solved by using the singular-value decomposition (SVD) algorithm. This approach confers robustness to the LP method, improves the spectral resolution, and provides a simple criterion for selecting the order of the LP model. We illustrate these characteristics of the LP method by applying it to two types of problems: the determination of the propagation constants of waveguides loaded with lossy dielectrics, and the calculation of the resonant frequencies of cylindrical cavities loaded with dielectric ring resonators.

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"Table of Contents (Aug. 1998 [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 0_1-0_2.



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Abstracts

A novel dimension-reduction technique for the capacitance extraction of 3-D VLSI interconnects

Wei Hong, Wei-Kai Sun, Zhen-Hai Zhu, Hao Ji, Ben Song and W.W.-M. Dai. "A novel dimension-reduction technique for the capacitance extraction of 3-D VLSI interconnects." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1037-1044.

In this paper, a new capacitance extraction method called the dimension-reduction technique (DRT) is presented for three-dimensional (3-D) very large-scale integration (VLSI) interconnects. The DRT converts a complex 3-D problem into a series of cascading simple two-dimensional (2-D) problems. Each 2-D problem is solved separately, thus we can choose the most efficient method according to the arrangement of conductors. We have used the DRT to extract the capacitance matrix of multilayered and multiconductor crossovers, bends, vias with signal lines, and open-end. The results are in close agreement with those of Ansoft's SPICELINK and the Massachusetts Institute of Technology's (MIT) FastCap, but the computing time and memory size used by the DRT are several (even ten) times less than those used by SPICELINK and FastCap.



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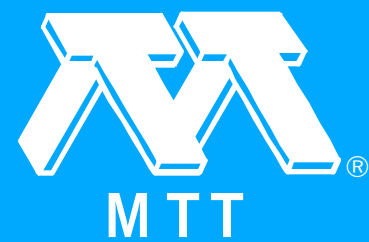
Reducing losses in dielectric waveguide discontinuities

R. Elio and E.-B. El-Sharawy. "Reducing losses in dielectric waveguide discontinuities." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1045-1054.

Rectangular dielectric waveguides are used in millimeter-wave applications. They have low loss and wide bandwidth at high frequencies. Another major advantage to dielectric waveguides is that they are inexpensive to design and manufacture. However, a major disadvantage to the dielectric waveguide is that they experience relatively high losses at bends and T-junctions. This paper looks at a novel approach in reducing the insertion loss in dielectric waveguide bends and T-junctions. A high dielectric material is inserted at the discontinuity, causing the electromagnetic energy to be coupled and launched toward the output. The dielectric constant of the material, position of the material, and shape of the material are instrumental in reducing the insertion loss. A transition discontinuity in the form of a 45/spl deg/ bend has also been found to reduce insertion loss when properly designed. The size, shape, and location of the discontinuity and the high dielectric material are optimized and compared to the results without a high dielectric material. The 90/spl deg/- and 45/spl deg/-bend simulations were verified by building test structures and comparing predictions of the insertion loss to measurements.

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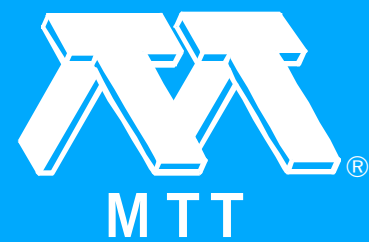
Optimization of a 250-GHz Schottky tripler using novel fabrication and design techniques

J. Thornton, C.M. Mann and P. de Maagt. "Optimization of a 250-GHz Schottky tripler using novel fabrication and design techniques." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1055-1061.

A technique for optimizing a diode waveguide mount for millimeter- and submillimeter-wave applications has been developed. The structure consists of a planar rectangular radiator for which an accurate derivation of impedance is available. The planar radiating probe incorporates the diode contacting tip, is fabricated integrally with the microstrip filter, and is used in a 230-290-GHz frequency tripler. Modification of the tripler using the described technique resulted in an improvement of 6 dB in available output power, compared to the authors' previous results for this device. Device output power exceeds 8.5 mW at 245 GHz for an input power of 132 mW. The best flange-to-flange efficiency (in excess of 11%) was achieved at 3.3-mW output power. This technique was then applied to a waveguide mount, incorporating two diodes contacted in parallel, so that greater input power could be handled. This resulted in a tripler with a maximum output power of 15 mW at 270 GHz for an input of 280 mW.

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Excitation of leaky modes on multilayer stripline structures

C. Di Nallo, F. Mesa and D.R. Jackson. "Excitation of leaky modes on multilayer stripline structures." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1062-1071.

A quasi-analytical method for calculating the excitation of leaky modes on multilayer stripline structures by a finite source is presented in this paper. Simple sources such as an infinitesimal dipole near the conducting strip or a delta-gap feed on the conducting strip of the transmission line are considered. The method uses a numerically constructed Green's function for the source in the presence of the conducting strip, which is calculated from Fourier transform theory in terms of a one-dimensional Green's function for a line source in the presence of the conducting strip. The numerical Green's function involves a one-dimensional integration in the longitudinal wavenumber plane. The residue contributions from the poles of the Green's function define the excitation amplitudes of the leaky and bound modes that exist on the structure. The numerical Green's function is also used to numerically calculate the complete current on the strip excited by the source. The correlation between the leaky-mode current and the complete current is used to define the extent of the physical meaning of the leaky mode. The generalized pencil of functions (GPOF) method is used to study this correlation by resolving the complete current on the strip into exponential waves, which are then compared with the current of the leaky mode. The physical meaning of the leaky modes is also analytically examined by consideration of the branch cuts in the longitudinal wavenumber plane for the numerical Green's function integration. A "path consistency condition" is established as a necessary condition for the physical meaning of the leaky mode.

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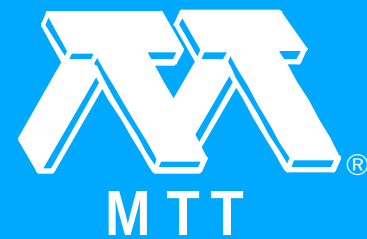


Abstracts

A wide-band multiport planar power-divider design using matched sectorial components in radial arrangement

Yung-Jinn Chen and Ruey-Beei Wu. "A wide-band multiport planar power-divider design using matched sectorial components in radial arrangement." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1072-1078.

This paper proposes a new multiport planar power-divider design by radially combining the sectorial components and the input and output matching networks. This design can achieve good input match over a wide bandwidth without resorting to transformer sections of high-impedance lines, which are difficult to realize. This approach is applied to the design of 4- and 14-way center-fed power dividers in microstrip structures with good input match (voltage standing-wave ratio (VSWR) < 1.5) over a bandwidth of 30% and 15%, respectively. The return loss of output ports and the isolation among them in the 14-way divider are less than -13 dB. A simple analysis method using the radial transmission-line theory to model the microstrip sectorial components is employed to characterize the power dividers. The calculated scattering parameters are found to be in good agreement with the measured data.



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Generation of nonminimum phase from amplitude-only data

T.K. Sarkar and Bin Hu. "Generation of nonminimum phase from amplitude-only data." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1079-1084.

A method is presented for the generation of nonminimum phase from amplitude-only data. The nonminimum phase is generated utilizing the principles of causality and the Hilbert transform. The application of the theory has been applied to some antenna radiation-power patterns and to measured transfer functions of microwave filters to illustrate the applicability of this approach.



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Abstracts

Analysis of dielectric E-plane waveguides and design of filters

H. Kubo, H. Yamashita and I. Awai. "Analysis of dielectric E-plane waveguides and design of filters." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1085-1090.

A small-size waveguide made of high-permittivity ceramic is analyzed. The propagation constants are calculated approximately by an approach where the electromagnetic fields outside the waveguide are fully taken into consideration. The analysis values agree well with the experimental values. The constants of equivalent circuit for the metallic strip section are obtained by using a separate model for the analysis of the structure. Based on these results, bandpass filters (BPF's) are designed and fabricated. The fabricated BPF's have better transmission and reflection characteristics than those designed on the basis of a trough-guide model.



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A new technique for the stable incorporation of static field solutions in the FDTD method for the analysis of thin wires and narrow strips

I.J. Craddock and C.J. Railton. "A new technique for the stable incorporation of static field solutions in the FDTD method for the analysis of thin wires and narrow strips." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1091-1096.

The behavior of the fields around many common objects (e.g., wires, slots, and strips) converges to known static solutions. Incorporation of this a priori knowledge of the fields into the finite-difference time-domain (FDTD) algorithm provides one method for obtaining a more efficient characterization of these structures. Various methods of achieving this have been attempted; however, most have resulted in unstable algorithms. Recent investigations into the stability of FDTD have yielded criteria for stability, and this contribution for the first time links these criteria to a general finite-element formulation of the method. It is shown that the finite-element formulation provides a means by which FDTD may be generalized to include whatever a priori knowledge of the field is available, without compromising stability. Example results are presented for extremely narrow microstrip lines and wires.



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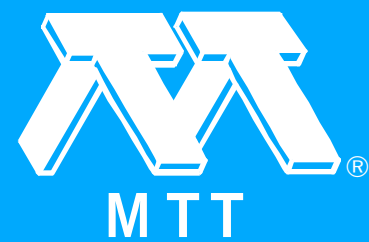
Transient analysis of microwave active circuits based on time-domain characteristic models

Qing-Xin Chu, Yuen-Pat Lau and Fung-Yuel Chang. "Transient analysis of microwave active circuits based on time-domain characteristic models." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1097-1104.

A modular method is presented to speed up transient simulation of microwave active circuits which consist of linear components and active devices that are often nonlinear. Firstly, the linear components and active devices are individually characterized by time-domain characteristic models (TDCM's) and lumped equivalent circuits, respectively, to reduce the computer memory. Then, based on deconvolution, the TDCM's of linear components are synthesized from the terminal voltages and currents of step voltage excitation, which are simulated by the finite-difference time-domain (FDTD) method. Finally, transient analysis of a one-dimensional (1-D) discrete-time system is applied to obtain the terminal responses of the microwave active circuits, in which a larger sampled step is chosen to reduce the simulation time. This method is employed to two realistic circuits to validate its efficiency and accuracy. The results are in good agreement with the time-consuming direct FDTD simulation of entire circuits.

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Optically induced measurement anomalies with voltage-tunable analog-control MMIC's

S. Lucyszyn and I.D. Robertson. "Optically induced measurement anomalies with voltage-tunable analog-control MMIC's." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1105-1114.

Monolithic microwave integrated circuits (MMIC's) may be measured under relatively high-intensity lighting conditions. Later, when they are packaged, any anomalies found in subsequent measurements could be attributed to unwanted parasitics or box modes associated with the packaging. However, optical effects may not always be considered by radiofrequency (RF) and microwave engineers. For the first time, a qualitative assessment is given for the effects of photonic absorption on three broad-band voltage-tunable analog-control circuits. Each circuit has a different function, with each field-effect transistor (FET) operating in a different mode: a hot FET in a variable-gain amplifier, a cold FET in an analog attenuator, and an FET varactor in an analog phase shifter. All three circuit functions have been implemented using two different FET-based technologies. The first with ion-implanted 0.5-/spl mu/m GaAs metal-semiconductor FET's (MESFET's) in circuits operating at either 3 or 10 GHz. The second employs epitaxially grown 0.25-/spl mu/m AlGaAs-InGaAs pseudomorphic high electron-mobility transistors (HEMT's) in circuits operating at 38 GHz. All the MMIC's were fabricated using commercial foundry processes and illuminated under conventional optical microscope lighting conditions. Prominent error peaks have been found at bias points unique to the three different circuit topologies. Large error peaks are found with the MESFET-based circuits, while much smaller error peaks are achieved with the corresponding pseudomorphic HEMT (pHEMT) based circuits.

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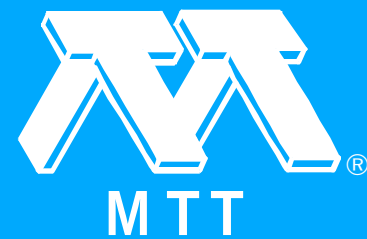


Abstracts

Subspace iteration search method for generalized eigenvalue problems with sparse complex unsymmetric matrices in finite-element analysis of waveguides

J. Arroyo and J. Zapata. "Subspace iteration search method for generalized eigenvalue problems with sparse complex unsymmetric matrices in finite-element analysis of waveguides." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1115-1123.

In this paper, a numerical method for the robust computation of the number of eigenvalues within a closed contour of a generalized complex eigenvalue problem is presented. As a result of this computation, it is possible to perform a systematic search for the eigenvalues, ensuring that no eigenvalues are forgotten, and to optimize their calculation. Application is made to the finite-element modal analysis of inhomogeneous waveguides.



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Resonant frequency and quality factors of a silver-coated $\lambda/4$ dielectric waveguide resonator

A. Chandra Kundu and I. Awai. "Resonant frequency and quality factors of a silver-coated $\lambda/4$ dielectric waveguide resonator." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1124-1131.

In this paper, resonant frequency, radiation loss, conductor loss, and dielectric loss of a silver-coated $\lambda/4$ dielectric waveguide resonator are investigated. Leakage of the electromagnetic field from the open-end face of the resonator is the only source of radiation, which also affects the resonant frequency. New theoretical expressions are devised to calculate resonant frequency, conductor quality (Q) factor, dielectric Q factor, and radiation Q factor. Effective conductivity of the silver-coated resonator is estimated from experimental unloaded Q factor. The theoretical analysis is validated by the experimental result and the data obtained using the finite-difference time-domain (FDTD) technique. Finally, we have designed and fabricated a dual-mode bandpass filter using this resonator.

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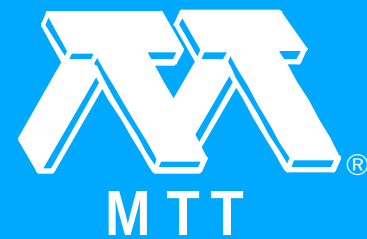


Abstracts

Analytical evaluation of the asymptotic impedance matrix of asymmetric gap discontinuities

Seong-Ook Park and C.A. Balanis. "Analytical evaluation of the asymptotic impedance matrix of asymmetric gap discontinuities." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1132-1140.

New analytical formulas have been developed for evaluating the asymptotic impedance matrix of an asymmetric gap by using the integral transform method. Application of the newly derived formulas shows a dramatic improvement of the computation time for evaluating the overall impedance-matrix elements for the symmetric and asymmetric gaps while retaining the accuracy.



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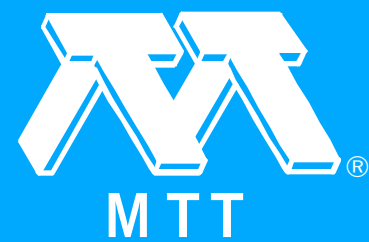
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Efficient time-domain and frequency-domain finite-element solution of Maxwell's equations using spectral Lanczos decomposition method

M.R. Zunoubi, K.C. Donepudi, Jian-Ming Jin and Weng Cho Chew. "Efficient time-domain and frequency-domain finite-element solution of Maxwell's equations using spectral Lanczos decomposition method." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1141-1149.

An efficient three-dimensional solver for the solution of the electromagnetic fields in both time and frequency domains is described. The proposed method employs the edge-based finite-element method (FEM) to discretize Maxwell's equations. The resultant matrix equation after applying the mass-lumping procedure is solved by the spectral Lanczos decomposition method (SLDM), which is based on the Krylov subspace (Lanczos) approximation of the solution. This technique is, therefore, an implicit unconditionally stable finite-element time and frequency-domain scheme, which requires the implementation of the Lanczos process only at the largest time or frequency of interest. Consequently, a multiple time- and frequency-domain analysis of the electromagnetic fields is achieved in a negligible amount of extra computing time. The efficiency and effectiveness of this new technique are illustrated by using numerical examples of three-dimensional cavity resonators.

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Study of the dispersion characteristics of planar chiral lines

G. Plaza, F. Mesa and M. Horno. "Study of the dispersion characteristics of planar chiral lines." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1150-1157.

This paper analyzes the dispersion characteristics of the fundamental modes of some basic chiral planar transmission lines: microstrip, slot-line, coplanar waveguide (CPW), and a coupled microstrip line, including the possible frequency dependence of the chiral parameters. The dispersion characteristics are computed after finding the zeros of the determinantal equation resulting from the application of the Galerkin method in the spectral domain. Because of the biisotropic nature of the substrate, a 4×4 matrix differential equation has been solved to obtain the spectral dyadic Green's function (SDGF). This function is explicitly obtained in terms of a closed-form 4×4 transition matrix that relates the transverse electromagnetic fields at the upper and lower interface of the chiral substrate. This fact is key to developing fast computer codes since it avoids numerical matrix exponentiations. The numerical results have shown that the chiral nature of the substrate basically adds an additional parameter to control the propagation characteristics of the analyzed lines and, in general, makes the lines more dispersive, showing even resonant-like behavior.

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On the computation of the complete spectral Green's dyadic for layered bianisotropic structures

F. Mesa, R. Marques and M. Horno. "On the computation of the complete spectral Green's dyadic for layered bianisotropic structures." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1158-1164.

This paper shows how to obtain a systematic algorithm for computing the complete spectral Green's dyadic (CSGD) of multilayered bianisotropic planar structures. The top and bottom boundary conditions of the structures can be either electric/magnetic walls or any kind of boundary condition suitable for implementation by means of impedance/admittance dyadics. The method presented here makes use of the fact that the sheets of normally directed surface electric-/magnetic-current density can be transformed into equivalent sheets of transverse electric-/magnetic-current density. Once the problem has been reduced to deal only with transverse current densities, the equivalent boundary method (EBM) is extended to obtain the CSGD. This method has been applied to compute the radiation characteristics of arbitrarily oriented dipoles embedded in different layered structures.

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Abstracts

An investigation of the high-frequency limit of a miniaturized commercial voltage-controlled oscillator used in 900-MHz-band mobile-communication handset

Kyung-Whan Yeom. "An investigation of the high-frequency limit of a miniaturized commercial voltage-controlled oscillator used in 900-MHz-band mobile-communication handset." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1165-1168.

The 900-MHz-band voltage-controlled oscillator (VCO) currently used in a commercial mobile-communication handset has the features of light weight, small size, low phase noise, and low DC current consumption. This paper investigates the problems that may occur when these types of VCO's are employed in next-generation high-frequency mobile-communication handsets. The results show that oscillation may not commence above frequency $f_{\text{osc}} \leq \frac{1}{2\pi} \sqrt{\frac{1}{R_{\text{eq}} C_{\text{bb}}}}$, which is significantly below the f_{max} of the device itself, due to the effects of the circuit elements. In addition, a new formula is proposed which provides a practical guideline for selection of the active devices. The procedure for extraction of the small-signal model required by the proposed formula is also described in detail. The results obtained with the formula are in good agreement with those obtained from the measured S-parameters.



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A new approach to nonlinear analysis of noise behavior of synchronized oscillators and analog-frequency dividers

J.C. Nallatamby, M. Prigent, J.C. Sarkissian, R. Quere and J. Obregon. "A new approach to nonlinear analysis of noise behavior of synchronized oscillators and analog-frequency dividers." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1168-1171.

An original theory of phase noise in synchronized oscillators is outlined through the phase-locked loop (PLL) approach. The phase-noise spectrum obtained first by the analytical PLL theory and then by a simulator have been compared with very good accuracy. This new approach permits the best understanding of noise conversion in synchronized devices.



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Static analysis of arbitrarily shaped conducting and dielectric structures

S.M. Rao and T.K. Sarkar. "Static analysis of arbitrarily shaped conducting and dielectric structures." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1171-1173.

In this paper, a simple and efficient numerical procedure is presented to compute the charge distribution and capacitance of conducting bodies in the presence of dielectric structures of arbitrary shape and finite size. The method presented is robust and provides accurate results for both low as well as high dielectric-constant materials as supported by numerical examples.



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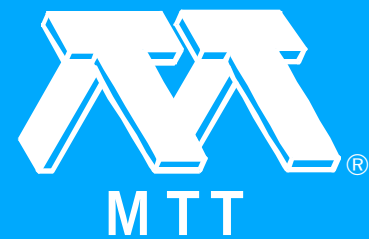
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Analysis of a slot-coupled T-junction between circular-to-rectangular waveguide

S.B. Sharma, S.B. Chakrabarty and B.N. Das. "Analysis of a slot-coupled T-junction between circular-to-rectangular waveguide." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1173-1176.

This paper presents a rigorous analysis of a slot-coupled T-junction between a primary circular cylindrical waveguide and rectangular waveguide, forming the coupled T-arm. The analysis is based on moment-method formulation using full-wave basis functions and Galerkin's technique for testing. Expression for the coupling and reflection coefficients are found, taking into account the effect of finite wall thickness of the circular waveguide in which the coupling slot is milled. A comparison between the theoretical and experimental results on coupling and return loss are presented.

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Thick eccentric circular iris in circular waveguide

S.P. Yeo and S.G. Teo. "Thick eccentric circular iris in circular waveguide." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1177-1180.

Other researchers have observed that eccentric irises possess certain advantageous features that may lead designers to prefer them over the conventional concentric irises. The least-squares boundary residual method (LSBRM) is utilized in this paper to analyze the behavior of such an eccentric-iris structure (of nonzero thickness). Tests have confirmed that the computer model thus obtained is capable of yielding numerical results that are accurate to within /spl perp/1%.

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Development of an improved two-dimensional finite-element code for cylindrically symmetric eigenmodes

K. Masuda, K. Yoshikawa, M. Ohnishi, Y. Yamamoto, H. Toku, M. Sobajima and J. Kitagaki. "Development of an improved two-dimensional finite-element code for cylindrically symmetric eigenmodes." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1180-1182.

A new two-dimensional finite-element (FE) eigenmode solver has been developed, which is suitable for calculating cylindrically symmetric modes. The quantity H_{θ}/r is used in the code to describe the electromagnetic fields instead of H_{θ} or rH_{θ} , which is preferentially used in the existing codes, and the new formulation with H_{θ}/r is found to show higher accuracy and smoother convergence with respect to the number of mesh points. Comparison is also made between linear and quadratic elements, resulting in remarkably higher accuracy by the latter.

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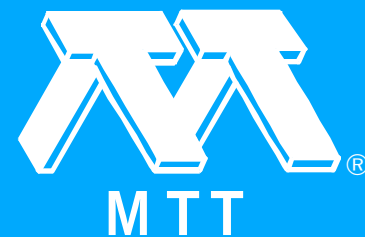


Abstracts

A new dispersion model for microstrip line

A.K. Verma and R. Kumar. "A new dispersion model for microstrip line." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1183-1187.

This paper presents the phenomenological dispersion law and a new logistic dispersion model (LDM) for the microstrip line which has a root-mean-square (rms) accuracy of <1% and a maximum deviation of <2% for any W/h ratio, any permittivity, and at any operating frequency. The model is also applicable to the conductor of finite thickness. The eight existing dispersion models have also been compared against the experimental results and against the spectral-domain analysis (SDA) over a wide range of parameters.



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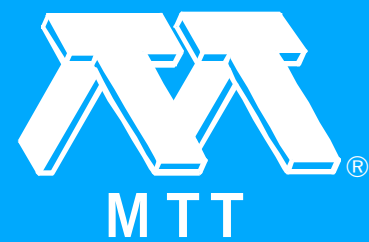
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New empirical unified dispersion model for shielded-, suspended-, and composite-substrate microstrip line for microwave and mm-wave applications

A.K. Verma and R. Kumar. "New empirical unified dispersion model for shielded-, suspended-, and composite-substrate microstrip line for microwave and mm-wave applications." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1187-1192.

By introducing the concept of "virtual relative permittivity," this paper reports several closed-form dispersion models for a multilayered shielded/unshielded microstrip line over $1 < \epsilon_r \leq 20$, $0.1 \leq (w/h) \leq 10$, $(h/3) \leq h \leq 2$ in the frequency range up to 4 GHz/cm. The maximum deviation of the one model against the results of the spectral-domain analysis (SDA) is limited to 3%, while for the other three models, the maximum deviation is <2% and the root-mean-square (rms) deviation is <0.8%. This paper also reports improvement in the closed-form model of March for the determination of $\epsilon_{eff}(O)$ of the shielded microstrip line.

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Abstracts

A total-variation-diminishing finite-difference scheme for the transient response of a lossless transmission line

Kyu-Pyung Hwang and Jian-Ming Jin. "A total-variation-diminishing finite-difference scheme for the transient response of a lossless transmission line." 1998 Transactions on Microwave Theory and Techniques 46.8 (Aug. 1998 [T-MTT]): 1193-1196.

Total-variation-diminishing (TVD) finite-difference schemes have been used in computational fluid dynamics for accurate solutions of fluid problems involving shock phenomena. This paper investigates the possibility of their application in transient electromagnetic-wave problems. A lossless transmission line with a resistive load is considered to illustrate the application. A TVD Lax-Wendroff finite-difference scheme is presented for the numerical solution of transmission-line equations in time domain. Numerical results show that the TVD scheme can approximate the discontinuous waveforms with remarkable accuracy.



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Multitone characterization and design of FET resistive mixers based on combined active source-pull/load-pull techniques

Di-Luan Le and F.M. Ghannouchi. "Multitone characterization and design of FET resistive mixers based on combined active source-pull/load-pull techniques." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1201-1208.

A dual six-port-based measurement setup was developed to synthesize five source and load impedances simultaneously. The setup can perform nonlinear measurements with multifrequency excitation. Active source-pull/load-pull measurements obtained for an NE-9001 transistor operated in a C-band field-effect transistor (FET) resistive mixer mode allow one to optimize the linearity of the mixer while maintaining a typical conversion loss of approximately 7 dB. Two-tone verification at 3.9000 and 3.9005 GHz showed that the level of in-band third-order intermodulation products could be reduced to -50 dBc, with a well-chosen output intermediate frequency (IF) load impedance and sufficient local oscillator (LO) power. The measured performance of the realized mixer is in good agreement with that predicted at the transistor characterization step of the design.

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Over-60-GHz design technology for an SCFL dynamic frequency divider using InP-based HEMTs

Y. Umeda, K. Osafune, T. Enoki, H. Yokoyama, Y. Ishii and Y. Imamura. "Over-60-GHz design technology for an SCFL dynamic frequency divider using InP-based HEMTs." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1209-1214.

A toggle operation of 39-63.5 GHz without tuning has been achieved by a digital dynamic frequency divider (DFD). The DFD employs a pair of clocked inverters (CIs) with source-coupled FET logic (SCFL) and uses 0.1- μm -gate InAlAs/InGaAs/InP high electron-mobility transistors (HEMTs) of good uniformity and high performance. On a 2-in wafer, the frequency divider showed a maximum toggle frequency ($f_{\text{sub tog,max}}$) of 59.1/spl plusmn/3.3 GHz and a fabrication yield of 89%. This is the highest operation frequency ever reported for a broad-band digital frequency divider. Comparison of the DFD and the static frequency divider (SFD) showed that the ratio of $f_{\text{sub tog,max}}$ for the DFD to that for the SFD is much higher than the value expected from the linear-response theory. The comparison also showed that the ratio of the measured $f_{\text{sub tog,max}}$ for the DFD to that for the SFD is 1.7, in contrast with the value of two expected from the circuit simulation. Delay-time analysis revealed that this 15% decrease of the ratio is due to the transmission delay of interconnections and charging time for stray capacitance.





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Two-port noise and impedance measurements for two-terminal devices with a resonant tunneling diode example

A. Prasadka, K.J. Webb and D.B. Janes. "Two-port noise and impedance measurements for two-terminal devices with a resonant tunneling diode example." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1215-1220.

A two-port technique is presented for determining the circuit elements and noise sources of the equivalent circuit of a two-terminal device at microwave frequencies. The two-terminal device is connected as a two-port so that intrinsic and parasitic circuit elements can be obtained from full two-port S-parameter measurements. This measurement does not require one of the two contacts to be grounded, which makes it particularly well suited for the characterization of integrated devices where parasitic elements become important and cannot be easily calculated. The noise of the device is measured by employing a noise-figure meter and the intrinsic noise is computed from the measured terminal noise. As an example, the impedance and noise elements of a resonant tunneling diode (RTD) are measured over frequency ranges of 2-8 and 2-4 GHz, respectively.

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Gyrotron coaxial cylindrical resonators with corrugated inner conductor: Theory and experiment

J.J. Barroso, R.A. Correa and P. Jose de Castro. "Gyrotron coaxial cylindrical resonators with corrugated inner conductor: Theory and experiment." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1221-1230.

Gyrotron coaxial resonators with a longitudinally slotted inner cylinder are examined analytically using a surface impedance model, from which expressions for the electromagnetic field, ohmic quality (Q) factor, and characteristic equation of the transverse eigenvalues $\chi_{m,p}$ are obtained. The major attributes of such resonators are expressed by the dependence of $\chi_{m,p}$ on the parameter C-defined as the ratio of the outer to inner radii of the coaxial structure. In that connection, the effect of the corrugation parameters on $\chi_{m,p}$ is particularly investigated on the basis of an expression derived for the slope function $d\chi_{m,p}/dC$. It is shown that the $\chi_{m,p}(C)$ curve may either exhibit oscillatory behavior or present a flat portion over a wide range of C depending on the corrugation parameters chosen. The theory is checked against experiment in which resonant frequencies and total Q factors were measured for TE modes operating in the range of 8-16 GHz in a coaxial cavity with 40 slots. Good agreement is found in that the magnitude of the relative error in frequency is less than 0.5%. Corrugated coaxial resonators prove to be relevant to megawatt gyrotrons where highly selective cavities are required to ensure high conversion efficiency.

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A new extrinsic equivalent circuit of HEMT's including noise for millimeter-wave circuit design

G. Dambrine, J.-M. Belquin, F. Danneville and A. Cappy. "A new extrinsic equivalent circuit of HEMT's including noise for millimeter-wave circuit design." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1231-1236.

In this paper, we propose a reliable extrinsic equivalent circuit of a high-performance high electron-mobility transistor (HEMT) to determine both the [S]-parameters and noise parameters in the millimeter-wave range from characterizations performed below 40 GHz. In the case of the conventional equivalent circuits, only three extrinsic elements have to be determined instead of (at least) eight. We show the validity of the proposed extrinsic equivalent circuit by [S]-parameters and noise figure measurements up to the W-band (75-110 GHz). The proposed equivalent circuit is reliable and is very well suited for the design of low-noise integrated circuits for millimeter waves.

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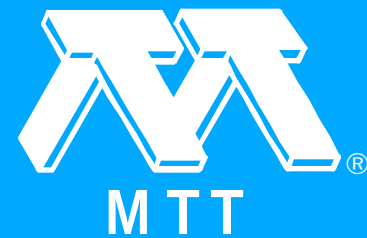


Abstracts

A 44-GHz monolithic waveguide plane-wave amplifier with improved unit cell design [using pHEMTs]

Youngwoo Kwon, E.A. Sovero, D.S. Deakin and J.A. Higgins. "A 44-GHz monolithic waveguide plane-wave amplifier with improved unit cell design [using pHEMTs]." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1237-1241.

A 44-GHz monolithic waveguide plane-wave amplifier (PWA) with improved unit cell design is presented in this paper. The unit cell is a two-stage direct-coupled design and satisfies size, bistability, and stability requirements of the waveguide PWA. The ultra-compact unit cell had a cell size of $0.8 \text{ mm}/\sqrt{2}$, and showed a small-signal gain of 8 dB and an output power of 15 dBm at 44 GHz with a corresponding dc-to-RF efficiency of 10%. A monolithic waveguide PWA using these unit cells showed a "flange-to-flange" gain of 5 dB, an output power of 0.3 W, and an efficiency of 2% at 44 GHz.



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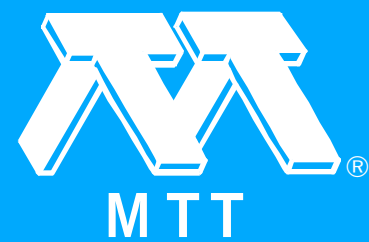
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A new extraction method to determine bias-dependent source series resistance in GaAs FET's

Chung-Hwan Kim, Kyung-Sik Yoon, Jeon-Wook Yang, Jin-Hee Lee, Chul-Soon Park, Jae-Jin Lee and Kwang-Eui Pyun. "A new extraction method to determine bias-dependent source series resistance in GaAs FET's." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1242-1250.

A new method is proposed to determine bias-dependent source resistances for GaAs field-effect transistors (FET's). This method, which is a cold-FET measurement technique, utilizes the relations between the real part of the two-port impedances transformed from the measured S-parameters and their algebraic derivatives. It is based on the fact that the algebraic derivatives of the two-port resistances result in the simple form at the normal cold-FET condition. A bias-independent gate resistance is extracted at the pinched-off cold-FET condition to fulfill necessary and sufficient conditions in extraction. The proposed method is a direct measurement because only algebraic calculation is required, and it is general enough to need only one assumption of the laterally symmetric channel-doping profile. The deleterious results of dispersion (frequency dependence) and negative value in source resistances at the pinched-off cold-FET condition are explained by the effects of the leakage current and the on-wafer pad parasitics, respectively. The problem of deviation of α_{21} and α_{12} from 0.5 at the normal cold-FET condition is also resolved by deembedding the on-wafer pad parasitics. This method allows one to extract bias-dependent source resistances for GaAs FET's.



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The transition from the d- to s-state due to thermal fluctuation for high- T_c superconductors as an evidence from the microwave penetration-depth measurement

Li Jui Chen and Juh Tzeng Lue. "The transition from the d- to s-state due to thermal fluctuation for high- T_c superconductors as an evidence from the microwave penetration-depth measurement." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1251-1256.

A temperature dependence of the penetration depth $\lambda(T)$ measurement for the high- T_c superconductors $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ and $\text{Tl}_2\text{Ba}_2\text{CaCu}_2\text{O}_{7-x}$ thin films elucidates a T^2 dependence at low temperatures and an exponential dependence at high temperatures. The transition temperature for the shift from T^2 to exponential dependence decreases as the duration for the samples exposed to air increases. An impurity scattered mechanism to fluctuate a pure d-wave to the s-wave by thermal fluctuation is proposed for the pairing states of these high- T_c superconducting films.

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Cryogenic millimeter-wave ring filter for space application

P. Piironen, J. Mallat and A.V. Raisanen. "Cryogenic millimeter-wave ring filter for space application." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1257-1262.

A tunerless cryogenic millimeter-wave ring filter has been designed for a space application. Detuning of the center frequency caused by thermal deformations has been compensated by a novel mechanism based on the use of two materials with different temperature expansion coefficients. An improvement of 1:8 in the detuning of the center frequency, compared to an uncompensated ring filter, is reported. By applying the new design, external tuning aids can be avoided even in applications where a wide operational temperature range is of interest. Thus, the new ring filter is especially advantageous in space-borne millimeter-wave receivers.



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Full-wave analysis of a nonradiative dielectric waveguide with a pseudochiral /spl Omega/-slab

A.L. Topa, C.R. Paiva and A.M. Barbosa. "Full-wave analysis of a nonradiative dielectric waveguide with a pseudochiral /spl Omega/-slab." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1263-1269.

This paper presents a new microwave device - a non-radiative dielectric (NRD) waveguide with a dielectric pseudochiral /spl Omega/-slab - the /spl Omega/-NRD waveguide. A rigorous full-wave analysis is presented and the modal equations for the longitudinal-section magnetic (LSM) and longitudinal-section electric (LSE) modes are derived. The dispersion curves and operational diagrams for the first hybrid LSM modes are presented. The effect of the pseudochiral /spl Omega/-medium is discussed. New interesting modal features are revealed, showing that the propagation characteristics may differ considerably from the common isotropic case.

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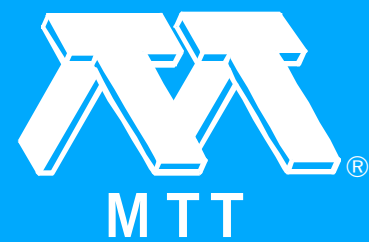


A class of novel uniplanar series resonators and their implementation in original applications

K. Hettak, N. Dib, A.-F. Sheta and S. Toutain. "A class of novel uniplanar series resonators and their implementation in original applications." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1270-1276.

A class of novel millimetric uniplanar series resonators are presented, which can be used in monolithic and hybrid uniplanar microwave integrated circuits (MIC's). The proposed structures are able to demonstrate low radiation and compactness characteristics, which are attractive for passive and active monolithic and hybrid integrated circuits. A principle of achieving these high-quality circuits is described and also confirmed by experimental and theoretical results, which are in good agreement up to 50 GHz. To illustrate the features of the proposed series resonators and demonstrate their effectiveness, two classes of miniature coplanar waveguide (CPW) filters (namely, low-pass and bandpass) are designed using these resonators. The developed low-pass filter has some important advantages such as low insertion loss in passband, very wide stopband, high cutoff rates, small size, low number of elements, and an effective control of spurious signals. On the other hand, the newly developed bandpass filter provides an alternative, yet compact, structure to classical filters. Obviously, many other classes of filters or passive components can also be designed.





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S-domain methods for simultaneous time and frequency characterization of electromagnetic devices

J.E. Bracken, Din-Kow Sun and Z.J. Cendes. "S-domain methods for simultaneous time and frequency characterization of electromagnetic devices." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1277-1290.

An efficient procedure is developed for simultaneously characterizing the time-domain and frequency-domain behavior of electromagnetic devices. The procedure works in the complex-frequency plane called the s-domain and provides an analytical expression for the behavior of the device at any frequency and for any transient excitation. This analytical expression is obtained by first evaluating a reduced-order model of the poles and zeros of the device. These poles and zeros are then used to characterize the device in terms of rational polynomials in the s-domain. Two different methods for evaluating reduced-order models are presented. One is called asymptotic waveform evaluation (AWE) and is combined with the finite-element method; the other is called adaptive Lanczos-Pade sweep (ALPS) and is combined with the boundary-element method. The resulting reduced-order models provide the frequency-domain behavior of the device over a broad bandwidth. Using the Laplace transform, these reduced-order models also provide the time-domain behavior. Several numerical examples have been run using commercial electronic design automation (EDA) software to demonstrate that this solution procedure is a highly efficient and accurate way to characterize the electromagnetic performance of real-life devices.





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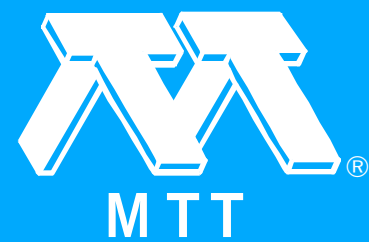
Fast full-wave analysis of planar microstrip circuit elements in stratified media

Rong-Chan Hsieh and Jen-Tsai Kuo. "Fast full-wave analysis of planar microstrip circuit elements in stratified media." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1291-1297.

The fast Hankel transform (FHT) algorithm is implemented in the mixed-potential integral-equation (MPIE) analysis of planar microstrip circuits in stratified media. The spatial-domain Green's functions are accurately and quickly obtained by applying the FHT algorithm to the exact spectral-domain counterparts. Therefore, the entire analysis procedure has high accuracy and efficiency. A nonuniform partition scheme is used to effectively model the rapid change of current distributions around discontinuities. A generalized supplementary equation accounting for arbitrary termination conditions at both feeding and load ends is also derived. The proposed method is used to design a single-stub band-stop filter and a compensated dc block circuit. Experimental measurements are performed to validate the computation.

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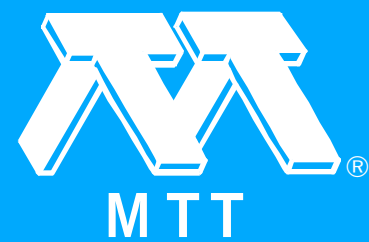
Correction procedures for the numerical parasitic elements associated with lumped elements in global electromagnetic simulators

R. Gillard, S. Dauguet and J. Citerne. "Correction procedures for the numerical parasitic elements associated with lumped elements in global electromagnetic simulators." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1298-1306.

This paper presents a comparative study of the treatment of lumped elements in two different full-wave electromagnetic formulations: the finite-difference time-domain (FDTD) technique and the technique of integral equations. Although these two approaches are basically different, they are seen to exhibit the same kind of numerical troubles when lumped elements are involved. More precisely, lumped elements are systematically associated with numerical parasitic elements that can seriously alter the calculated results. As a solution, this paper proposes a general alternative formulation, which permits one to suppress these numerical parasites. This formulation is successfully applied to the FDTD technique. A simpler numerical deembedding procedure, which does not fundamentally transform the original formulation, is preferred for the integral-equation technique.

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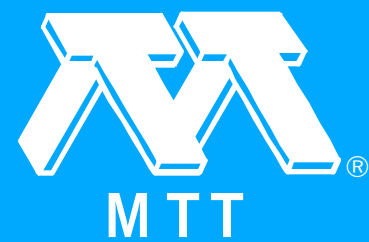
Dielectric constant measurements of finite-size sheet at microwave frequencies by pseudo-Brewster's angle method

R. Afzalzadeh. "Dielectric constant measurements of finite-size sheet at microwave frequencies by pseudo-Brewster's angle method." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1307-1309.

Dielectric constant (ϵ_r) measurements for finite-size dielectric sheets (DS's) at centimeter wavelengths are presented using the method-of-measuring pseudo-Brewster's angle. This method is applied to measure ϵ_r of sheets of Plexiglas and window glass. In the experiment, two horn antennas are used to transmit and receive p-polarized waves. A dielectric sheet is located between the two antennas and rotated 180° , which produces two peaks in the transmittance curves. For a more accurate measurement of Brewster's angle, an optical spectrometer with 1-min accuracy is also used. By this method, ϵ_r of Plexiglas and window glass are obtained to be 2.55 ± 0.13 and 5.35 ± 0.1 , respectively. This method measures $|\epsilon_r|$, but the measurement is easy and nondestructive for DS's. Finally, an accurate method of error calculation is used to calculate the error in the measured values of ϵ_r .

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High-Q radio-frequency structures using one-dimensionally periodic metallic films

H. Contopanagos, N.G. Alexopoulos and E. Yablonovitch. "High-Q radio-frequency structures using one-dimensionally periodic metallic films." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1310-1312.

High-Q structures are very interesting theoretically, and very important practically, for a variety of engineering applications in communication systems. We address the issue of designing a thin-film metal structure of reflectivity higher than the intrinsic reflectivity of the bulk metal itself. We study a finite array of planar conducting layers of arbitrary thickness periodically placed an arbitrary distance apart, and we arrive at an exact analytical formula for the reflection and transmission coefficients. These structures are equivalent to a one-dimensional metallic photonic bandgap (PBG) system. We apply our formulas to the microwave regime and fully explore the system's three-dimensional parameter space, consisting of the number of layers, their thickness, and their spacing. We find very significant enhancements of the radio frequency-Q, relative to the bulk metal, in narrow regions of the parameter space.

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Math methods in transistor modeling: Condition numbers for parameter extraction

F.D. King, P. Winson, A.D. Snider, L. Dunleavy and D.P. Levinson. "Math methods in transistor modeling: Condition numbers for parameter extraction." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1313-1314.

Condition numbers expressing the sensitivity of computed circuit element values to inaccuracies in S-parameter measurements are derived and evaluated for a standard small-signal MESFET model. The condition numbers shed light on the common difficulty experienced by transistor modelers in extracting accurate values for the input resistance. Other elements are also classified according to their sensitivity.

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New tunable phase shifters using perturbed dielectric image lines (Sep. 1998 [T-MTT])

Ming-Yi Li and Kai Chang. "New tunable phase shifters using perturbed dielectric image lines (Sep. 1998 [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1314-1317.

This paper presents new tunable phase shifters using perturbed dielectric image lines (DILs). The propagation constant in the DIL was perturbed by a movable metal reflector plate installed in parallel with the ground plane of the DIL. The phase shift was thus controlled and adjusted by varying the perturbation spacing between the DIL and movable reflector plate at a given operating frequency. A rigorous hybrid-mode analysis was used for calculating the dispersion of propagation constants in the perturbed DIL, and then for designing tunable phase shifters. Ka-band tunable phase shifters have been designed, fabricated, and tested. Measurement results agree well with theoretical predictions. The device is especially useful for millimeter-wave applications where traditional phase shifters are lossy.

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A new technique for in-fixture calibration using standards of constant length

Changhua Wan, B. Nauwelaers, D. Schreurs, W. De Raedt and M. Van Rossum. "A new technique for in-fixture calibration using standards of constant length." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1318-1320.

This paper presents a new technique for in-fixture calibration using standards of constant length. The technique uses a through line, reflective load, symmetric two-port at a reference position, and the same two-port at a different position, all produced on substrates of the same electrical properties and physical length. When compared with the through-reflect line (TRL) technique, this one eliminates the need for a length change during calibration and device measurements while retaining comparable accuracy. Moreover, in contrast with the line-network network (LNN) technique, it provides easy resolution of all error coefficients without ambiguities and does not require physical movement of a reference two-port, but reproduction of a reference two-port on microwave integrated circuit (MIC) substrates, which is easy to realize. All these features make the new technique useful for in-fixture measurements requiring a constant distance between input and output connections. The validity of the proposed technique is illustrated by experimental results.





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Intermodulation analysis of the collector-up InGaAs/InAlAs/InP HBT using Volterra series

Bin Li and S. Prasad. "Intermodulation analysis of the collector-up InGaAs/InAlAs/InP HBT using Volterra series." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1321-1323.

The intermodulation (IM) distortion of the collector-up InGaAs/InAlAs/InP heterojunction bipolar transistor (HBT) is analyzed using Volterra-series theory. A T-equivalent circuit is used for this analysis. The contribution and interaction of four nonlinear elements: base-emitter resistance, base-emitter capacitance, base-collector capacitance, and common base-current gain are analyzed. For the particular device under investigation, it is found that the cancellation effect is not significant and the base-emitter resistance nonlinearity dominates the third-order IM.

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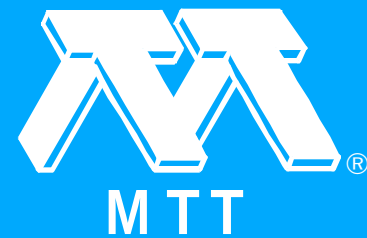


Abstracts

Wide-band 2N-port S-parameter extraction from N-port data

B. Young. "Wide-band 2N-port S-parameter extraction from N-port data." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1324-1327.

A technique is presented for extracting the full $2N \times 2N$ set of S-parameters for an N-conductor interconnect from five sets of N-port S-parameter measurements on three specially prepared samples. Bandwidth is improved over prior techniques using two samples. Experiments confirm the bandwidth enhancement and illustrate the operational mechanism and accuracy expectations.



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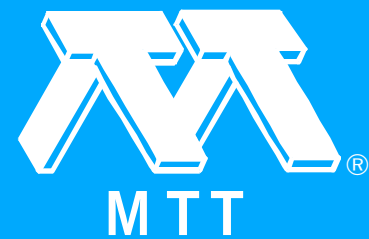
Characteristic impedance of microshield lines with arbitrary shield cross section

J.-F. Kiang. "Characteristic impedance of microshield lines with arbitrary shield cross section." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1328-1331.

A generalized potential-matching method incorporating reflection matrices is developed to calculate the capacitance of microshield lines with trapezoidal, circular, and V-shaped shields. Both completely shielded and half-shielded lines are analyzed. The effects of membrane thickness, strip width, and gapwidth on the characteristic impedance are studied.

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Cutoff frequencies of an asymmetrically loaded cylindrical waveguide

Tat Soon Yeo. "Cutoff frequencies of an asymmetrically loaded cylindrical waveguide." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1331-1334.

The cutoff characteristics of an asymmetrically loaded cylindrical waveguide are analyzed using the null-field method. The fields in the metallic waveguide and dielectric loading are expressed in their corresponding guided-wave modes. The addition theorem of the Bessel function is used to relate the fields across the air-dielectric boundary.

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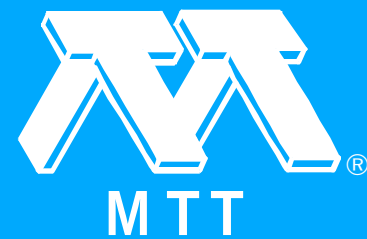


Abstracts

3-D FEM/BEM-hybrid modeling of surface mounted devices within planar circuits

T.F. Eibert and V. Hansen. "3-D FEM/BEM-hybrid modeling of surface mounted devices within planar circuits." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1334-1336.

Three-dimensional (3-D) finite-element (FE) meshes of surface-mounted devices (SMDs) are combined with the surface-current models of planar circuits in multilayered media. This is accomplished on the basis of Huygens' principle via the introduction of equivalent electric and magnetic surface-current densities on a surface enclosing the 3-D parts of the SMDs. The fields in the layered media are described by a surface integral equation based on the dyadic Green's function of the layered media. Special attention is directed to a proper interface of the surface and 3-D parts of the models. Numerical results for a homogeneous and a multilayered capacitor in a microstrip circuit are presented.



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TM scattering from hollow and dielectric-filled semielliptic channels with arbitrary eccentricity in a perfectly conducting plane

W.J. Byun, J.W. Yu and N.H. Myung. "TM scattering from hollow and dielectric-filled semielliptic channels with arbitrary eccentricity in a perfectly conducting plane." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1336-1339.

The behavior of TM wave scattering from hollow and dielectric-filled semielliptic channels in a perfectly conducting substrate is investigated. The scattered field is represented in terms of an infinite series of Mathieu functions with unknown coefficients. By applying the separation of variables and employing the partial orthogonality of the first-kind angular Mathieu functions, the unknown coefficients are obtained. Numerical results are given for the scattered-field patterns by the channels with different eccentricities and permittivities.

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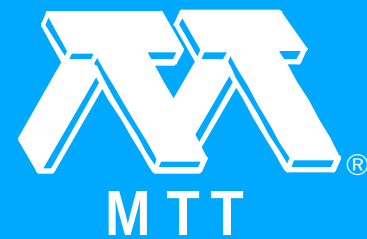


Abstracts

Efficient parameter computation of 2-D multiconductor interconnection lines in layered media by convergence acceleration of dielectric Green's function via Pade approximation

Ji Zheng and Zhengfan Li. "Efficient parameter computation of 2-D multiconductor interconnection lines in layered media by convergence acceleration of dielectric Green's function via Pade approximation." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1339-1343.

In this paper, a novel method is presented for calculation of the capacitance matrix of two-dimensional (2-D) interconnection lines embedded in layered dielectric media. In this method, Pade approximation is used to accelerate the convergence of Green's function, which leads to obvious improvements of computational efficiency for interconnect parameters. The obtained results show good agreement with those in previous publications.



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A note on the application of edge-elements for modeling three-dimensional inhomogeneously-filled cavities (Comments and Extensions)

D.B. Davidson. "A note on the application of edge-elements for modeling three-dimensional inhomogeneously-filled cavities (Comments and Extensions)." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1344-1346.

For the original paper see *ibid.*, vol. 40, no. 9, p. 1767-1773 (1992). Some comments are made on the aforementioned paper and a typographical error is corrected. Eigenvalue solutions for three-dimensional (3-D) cavities computed using an independently implemented finite-element code using edge-based elements are reported as verification of the tabulated formulas in this paper. The question of "trivial" eigenvalues is briefly addressed. The extension of the tabulated formulas to diagonally anisotropic media is presented; it is shown to be very straightforward. Such media currently have significant applications as artificial absorbers in finite-element meshes.



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Transitional combline/evanescent-mode microwave filters (Comments and Authors' Reply)

I. Shapir, V. Sharir, R. Levy, Hui-Wen Yao and K.A. Zaki. "Transitional combline/evanescent-mode microwave filters (Comments and Authors' Reply)." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1346-1347.

For the original paper see *ibid.*, vol. 45, no. 12, p. 2094-99 (1997). In the aforementioned paper, Levy et al. refer to the phenomenon of combline-filter bandwidth expansion (i.e., practical bandwidth versus theoretical TEM-analyzed bandwidth). Levy et al. explain that this phenomenon is mainly caused due to evanescent waveguide modes propagating through the structure, affecting the overall coupling coefficients and bandwidth. The commenters point out that this explanation, known for many years, is only one among other explanations such as coupling between nonadjacent resonators, also known for many years. They suggest that these explanations and derived equivalent models are not fully compliant with practical results and may be applicable only in limited frequencies and structural dimensions. In conclusion, the commenters consider it important to mention that their explanation, based on deviation from quasi-static 2-D cross-sectional TEM-derived coupling coefficients, and modified equivalent model were successfully adopted by others to achieve fast and accurate design procedure, thus proving the validity of their explanation and the practical value of their modified equivalent circuit. In reply Levy et al. say that, on the whole, they disagree with most of the arguments of Shapir and Sharir, but think that they have raised some interesting points which deserve careful consideration, and the authors are grateful for the opportunity both to respond and to clarify certain aspects of their paper which may be subject to misunderstanding.



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"Table of Contents (Oct. 1998, Part I [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 0_1-0_2.



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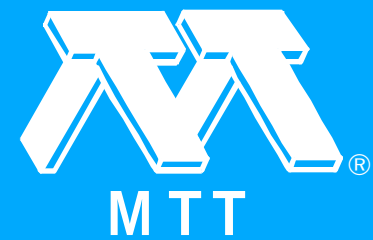
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Inside Cover (Oct. 1998, Part I [T-MTT])

"Inside Cover (Oct. 1998, Part I [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 0_3-0_4.



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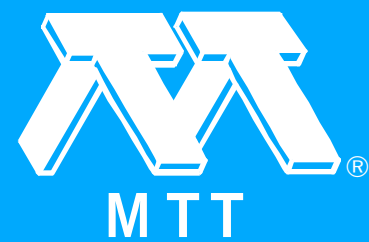
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Uniqueness of the solution of electromagnetic boundary-value problems in the presence of lossy and piecewise homogeneous lossless dielectrics

S. Caorsi and M. Raffetto. "Uniqueness of the solution of electromagnetic boundary-value problems in the presence of lossy and piecewise homogeneous lossless dielectrics." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1353-1359.

In this paper, the uniqueness of the solution of electromagnetic boundary-value problems is investigated and, in some cases, proven. The boundary-value problems considered are always defined in limited regions containing linear dielectric materials that are neither lossy nor lossless everywhere. The boundary conditions are given by specifying over the closed boundaries either the tangential components of the electric field or the tangential components of the magnetic field (or possibly by specifying the tangential components of the electric field over part of the boundaries and the tangential components of the magnetic field over the rest of the boundaries). In particular, the solution is proven to be unique in the case of linear dielectric materials which are piecewise homogeneous and lossless, except for some linear and lossy subregions that may be inhomogeneous. As a byproduct of this analysis, one can conclude that a cavity resonator, loaded with linear and lossy dielectrics together with linear piecewise homogeneous and lossless dielectric materials, does not admit undamped resonances.

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Numerical simulation of an ion-implanted GaAs OPFET

P. Chakrabarti, M. Madheswaran, A. Gupta and N.A. Khan. "Numerical simulation of an ion-implanted GaAs OPFET." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1360-1366.

A numerical model of an ion-implanted GaAs optical field-effect transistor (OPFET) has been presented. The model is a physics-based one, and overcomes the major limitations of the existing models by considering both the photoconductive effect in the channel and photovoltaic effect at the gate Schottky barrier as well as the channel-substrate barrier. The exact potential profile in the channel and variation of gate depletion width and substrate depletion width in the channel as a function of position between source and drain have been computed for the first time for a nonuniformly doped channel. The model can be used to obtain the drain-current-drain-voltage characteristics, transfer characteristics, transconductance and gate-to-source capacitance of the device under dark and illuminated conditions. The model can be used as a basic tool for accurate simulation of optoelectronic integrated circuits (OEICs) using an OPFET.

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Structural determination of multilayered large-signal neural-network HEMT model

K. Shirakawa, M. Shimizu, N. Okubo and Y. Daido. "Structural determination of multilayered large-signal neural-network HEMT model." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1367-1375.

This paper reports on the structure of a large-signal neural-network (NN) high electron-mobility transistor (HEMT) model as determined by a pruning technique and a genetic algorithm. The bias-dependent intrinsic elements of an HEMT's equivalent circuit are described by a generalized multilayered NN whose inputs are the gate-to-source bias (V_{gs}) and the drain-to-source bias (V_{ds}). Using C_{gs} data as an example, we began by experimentally examining some of the features of the multilayered NN model to obtain rules-of-thumb on choosing training parameters and other information for succeeding studies. We then developed and studied a novel pruning technique to optimize the C_{gs} NN model. Excessively large NN configurations can be reduced to an appropriate size by means of a weight decay, which is based on the analysis of a synaptic connection's activity. Finally, we employed a genetic algorithm for the same purpose. By representing the configuration of a standard multilayered NN as a chromosome, the optimum configuration of a C_{gs} model was obtained through a simulated evolution process. For this approach, the configuration of an NN that simultaneously represents seven intrinsic elements (C_{gs} , R_{in} , ..., C_{ds}) of an equivalent circuit was also shown for comparison to previous work. We successfully obtained simplified NN models using both approaches. The advantages and disadvantages of these two approaches are discussed in the conclusion. To our knowledge, this is the first report to clarify the general process of building an NN device model.



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Monte Carlo-based harmonic-balance technique for the simulation of high-frequency TED oscillators

R. Kamoua. "Monte Carlo-based harmonic-balance technique for the simulation of high-frequency TED oscillators." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1376-1381.

A harmonic-balance technique for the analysis of high-frequency transferred electron device (TED) oscillators is developed. The behavior of the nonlinear TED is not obtained from a quasi-static equivalent circuit; rather, a physical transport model is used to determine its response in the time domain. This model is based on the ensemble Monte Carlo technique coupled to a heat-flow equation, which accounts for thermal effects on the device operation. It is found that the standard splitting method for updating the unknown voltage across the diode fails to converge to a steady-state solution at the fundamental frequency. A modified version is proposed, which updates the voltage at the fundamental and higher harmonics differently. This method exhibits much better convergence behavior. Simulation results obtained with the complete model are in very good agreement with experimental data from InP TED oscillators operating at 131.7 and 151 GHz in the fundamental mode and at 188 GHz in the second-harmonic mode.

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94-GHz pulsed silicon IMPATT oscillator modeling

S. Beaussart, O. Perrin, M.-R. Friscourt and C. Dalle. "94-GHz pulsed silicon IMPATT oscillator modeling." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1382-1390.

A new type of 94-GHz pulsed silicon impact avalanche and transit time (IMPATT) oscillator numerical modeling is described. It consists of a set of three models of increasing complexity; namely, a pure sine model, time-domain isothermal model, and time-domain electro-thermal model, which basically rely on a diode one-dimensional bipolar drift-diffusion model embedded in a time-domain circuit modeling. In this paper, they are first used to investigate the 94-GHz diode intrinsic operation and performance. Secondly, the load-impedance level has been optimized. In each case, the thermal behavior is especially considered. Thirdly, pulse-operation-simulation results are compared with experiments performed at Thomson CSF, Radars et Contre-Mesures, Elancourt, France. Finally, some improvements of the present modeling are discussed in Section VI.





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Switched-mode high-efficiency microwave power amplifiers in a free-space power-combiner array

T.B. Mader, E.W. Bryerton, M. Markovic, M. Forman and Z. Popovic. "Switched-mode high-efficiency microwave power amplifiers in a free-space power-combiner array." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1391-1398.

A design-oriented analysis of the microwave transmission-line class-E amplifier is presented. Experiments and harmonic-balance circuit simulations verify the theoretical equations which predict class-E-amplifier output power, maximum frequency of operation, and dc-RF conversion efficiency. Experimental results at 0.5, 1, 2, and 5 GHz are presented. At 0.5 GHz, 83% drain efficiency and 80% power-added efficiency (PAE) are measured, with an output power of 0.55 W, using the Siemens CLY5 MESFET. These results are compared to a class-A and class-F power amplifier using the same device. At 5 GHz, 81% drain efficiency and 72% PAE are measured, with an output power of 0.61 W, using the Fujitsu FLK052WG MESFET. Finally, the 5-GHz class-E power amplifier is successfully integrated into an active-antenna array, demonstrating power combining of four elements with an 85% power-combining efficiency. At 5.05 GHz, the class-E power-amplifier antenna array delivers a total of 2.4 W of output power, with a dc-RF conversion efficiency of 74% and a PAE of 64%.

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Abstracts

Generalized analysis for a class of linear interferometric networks. Part I. Analysis

O. Schwelb. "Generalized analysis for a class of linear interferometric networks. Part I. Analysis." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1399-1408.

A method is introduced to simplify the analysis and design of microwave and optoelectronic networks such as spectral filters, interferometric sensors, etc., comprised of $2/\text{spl times}/2$ couplers, waveguides, reflectors, and mismatched interfaces. The key element which makes it possible to reduce topological complexity and rearrange a network into a chain of cascaded four-ports, is a generalized, single-mode lumped-element $2/\text{spl times}/2$ coupler with arbitrary coupling paths. As a result, one can now enumerate and evaluate all possible feedback-assisted and resonant configurations. The emphasis is on providing a computationally efficient method of analysis applicable to a wide variety of networks, rather than on obtaining the simplest and most transparent analytical expressions for a particular configuration.



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Generalized analysis for a class of linear interferometric networks. Part II. Simulations

O. Schwelb. "Generalized analysis for a class of linear interferometric networks. Part II. Simulations." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1409-1418.

For pt.I see *ibid.*, vol.46, no.10, pp.1399-408 (1998). In Part I of this paper, the author presented a method to simplify the analysis and design of interferometric microwave and optoelectronic networks such as filters, sensors, ring resonators, etc., comprised of $2/\pi$ times/2 couplers, waveguides, reflectors, and mismatched interfaces. The simplification was achieved by introducing a generalized single-mode lumped-element $2/\pi$ times/2 coupler with arbitrary coupling paths. In Part II, the author numerically examines a number of interferometric devices utilizing the analysis described in Part I. These devices include feedback-assisted couplers, multiple-ring resonators, unit transmittance circuits, add/drop filters, grating-assisted Mach-Zehnder (M-Z) interferometers, etc. Results are presented on the characteristics of the output and circulating wave in the resonant rings as a function of frequency, coupling coefficient, loss, and other component parameters. Results on group-delay characteristics are also given.

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Broad-band (/spl ges/20 GHz) laser-diode-based optoelectronic microwave phase shifter

Gong-Ru Lin, Tzung-Shi Hwang, Y.-H. Chuang, S.C. Wang and Ci-Ling Pan. "Broad-band (/spl ges/20 GHz) laser-diode-based optoelectronic microwave phase shifter." 1998 *Transactions on Microwave Theory and Techniques* 46.10 (Oct. 1998, Part I [T-MTT]): 1419-1426.

We demonstrate a new type of broad-band microwave phase shifter with superior performance at frequencies up to 20 GHz. This is implemented by simply adding an offset voltage prior to the loop filter (LF) in a laser-diode-based digital optoelectronic phase-locked loop (OEPLL). Accurate control of the phase of microwave signals with a continuously tunable range exceeding 640/spl deg/ (/spl sim/3.6 /spl pi/) is achieved. The phase fluctuation and long-term drift of any desired phase shift are as small as /spl plusmn/0.40/spl deg/ and 0.08/spl deg/, respectively, at 20 GHz. The relative phase instability can be maintained within 0.09/spl deg/ while operating in a phase-shift-keying (PSK) scheme. We also demonstrate accurate control of relative phase difference between dual phase-locked microwave sources using the phase shifter. Our results indicate potential application of this broad-band optoelectronic phase shifter in a phased-array antenna system.



A semianalytical parameter-extraction procedure for HBT equivalent circuit

Bin Li, S. Prasad, Li-Wu Yang and S.C. Wang. "A semianalytical parameter-extraction procedure for HBT equivalent circuit." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1427-1435.

A parameter-extraction approach for the heterojunction bipolar transistor (HBT), which combines the analytical approach and empirical optimization procedure, is developed. The extraction techniques for extrinsic base-collector capacitance and pad parasitics are also included in this approach. The cutoff operation of the HBT's is utilized to extract the values of the pad capacitances. An excellent fit between measured and simulated S-parameters in the frequency range of 50 MHz-36 GHz is obtained over a wide range of bias points.



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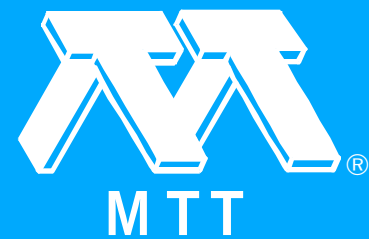
Modeling the substrate effect in interconnect line characteristics of high-speed VLSI circuits

Jae-Kyung Wee, Young-June Park, Hong-Shick Min, Dae-Hyung Cho, Man-Ho Seung and Hun-Sug Park. "Modeling the substrate effect in interconnect line characteristics of high-speed VLSI circuits." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1436-1443.

A new analytic model for interconnect characteristics is proposed. The model includes the frequency-dependent distribution of the current on the interconnect lines and the substrate as the current path. The validity of the proposed model has been checked by a comparison with the measurement data and the numerical simulation. Through this work, it is found that the substrate return path must be considered for the accurate prediction of the high-frequency characteristics of interconnects.

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Asymmetrical Gauss-Hermite beam-mode analysis of the hexagonal horn

Tao Shen, Wenbin Dou and Zhongliang Sun. "Asymmetrical Gauss-Hermite beam-mode analysis of the hexagonal horn." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1444-1451.

Asymmetrical Gauss-Hermite beam-mode analysis is presented to investigate the hexagonal horn. The fractional power in the fundamental beam mode is approximately 86%. The near- and far-field radiation patterns are calculated. The high fractional power in the fundamental beam mode of the horn indicates that it can be used as an efficient Gaussian beam launcher in quasi-optical systems.

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FDTD characterization of waveguide-probe structures

E. Tentzeris, M. Krumpholz, N. Dib, Jong-Gwan Yook and L.P.B. Katehi. "FDTD characterization of waveguide-probe structures." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1452-1460.

The finite-difference time-domain (FDTD) technique is applied in the calculation of the S-parameters of diode mounting and waveguide-probe structures. The influence of the critical geometrical design parameters on the coupling of the coplanar feedline probe to the waveguide is investigated. A waveguide absorber based on analytic Green's functions is used to minimize the reflections over a wide band of frequencies.

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Coupling of a planar waveguide and a dielectric disk [laser resonator]

R.S. Dehmubed and P. Diamant. "Coupling of a planar waveguide and a dielectric disk [laser resonator]." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1461-1470.

The complete analytic solution to the problem of coupling between a slab waveguide and a ring has been derived. The two-configuration problem is reduced to two simultaneous single-configuration problems by the method of equivalence. These are independently solved to yield the exact solution in terms of modal content. The results are illustrated with a numerical example and corroborated independently by a variational approach.



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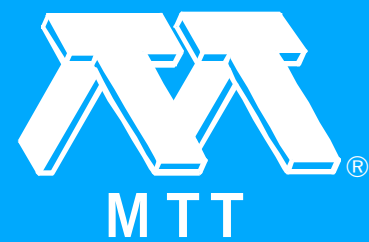
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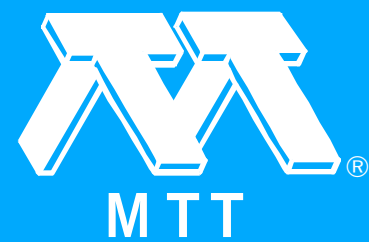
Time-domain analysis of TM scattering from conducting cylinders using a hybrid method

T. Roy, T.K. Sarkar, A.R. Djordjevic and M. Salazar-Palma. "Time-domain analysis of TM scattering from conducting cylinders using a hybrid method." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1471-1477.

In this paper, the finite-element method (FEM) is used to solve open-region problems utilizing the time-domain differential form of Maxwell's equations. The radiation boundary condition for the open-region problem is enforced through the time-domain Green's function as used in integral-equation methods, yet keeping the sparsity of the FEM matrices. In this paper, the proposed method is applied to the time-domain analysis of TM scattering from conducting cylinders. At each time step, the fields inside the discretized domain are calculated using the FEM. The computed induced currents of earlier time steps, together with contributions from the present time step, give the radiation condition at the terminating surface. Numerical results are presented to illustrate the applicability of this technique.

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Microwave characterization of 2-D random materials: numerical simulations and experiments

Thanh-Tuyen Nguyen and G. Maze-Merceur. "Microwave characterization of 2-D random materials: numerical simulations and experiments." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1478-1483.

It is difficult to know what sample dimension allows us to characterize a heterogeneous material in the microwave range. To this end, in this paper, we emphasize the role of characteristic homogenization sizes for the determination of effective medium properties. We have performed a Monte Carlo (MC) numerical simulation of the reflection coefficient of a two-dimensional (2-D) plane composed of randomly distributed nonmagnetic conducting sticks. This method consists of determining the scattered field by integrating Maxwell's equations on a periodic realization of the plane, obtained by randomly dropping d sticks (per unit surface) on a square of side T periodically repeated in the plane. We show that the reflection coefficient strongly depends on the length introduced for the homogenization of this medium and tends to a steady value beyond a characteristic homogenization length T . We consider only the case where there is no current from one stick to another; in other words, there are only isolated sticks. After demonstrating the existence of a minimum homogenization size $T_{\text{sub } c/}$, beyond which this sample can be considered as "homogenizable", we define an intrinsic parameter called the "square impedance". Measurements in the frequency range of 2-18 GHz have been carried out in free space in a broad-band lens focusing facility. Numerical results have been compared to the effective medium theory (EMT) results and validated by measurements.

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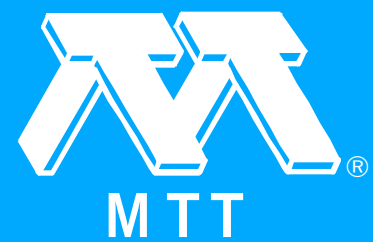
An improved network modeling of slot-coupled microstrip lines

Jeong Phill Kim and Wee Sang Park. "An improved network modeling of slot-coupled microstrip lines." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1484-1491.

This paper proposes an analytical method for slot-coupled microstrip lines with a view to developing an improved network model, which reflects the effects of inclination angles and offset distances. The network model consists of two ideal transformers and an extended slotline. The turn ratios are calculated by applying the reciprocity theorem with the spectral-domain immittance approach. The corresponding network models for several different configurations of these slot-coupled microstrip lines are then explored and shown to yield accurate scattering parameters.

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Reverse modeling of microwave circuits with bidirectional neural network models

M.M. Vai, Shuichi Wu, Bin Li and S. Prasad. "Reverse modeling of microwave circuits with bidirectional neural network models." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1492-1494.

Neural networks have been developed into an alternative modeling approach for the microwave circuit-design process. In this paper, we describe a neural network-based microwave circuit-design approach that implements the solution-searching optimization routine by a modified neural network learning process. Both the development of a microwave circuit model and the searching of a design solution can thus take advantage of a hardware neural network processor, which is significantly faster than a software simulation. In addition, a systematic simulation-based approach to convert conventional circuit models into neural network models for this design process is described. The development of a heterojunction bipolar transistor (HBT) amplifier model and its applications are demonstrated.

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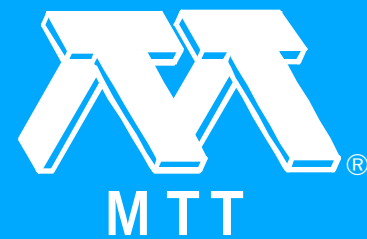


Abstracts

Using the binomial transformer to approximate the Q distribution for maximally flat quarter-wavelength-coupled filters

J.M. Drozd and W.T. Joines. "Using the binomial transformer to approximate the Q distribution for maximally flat quarter-wavelength-coupled filters." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1495-1500.

With the binomial transformer as a basis, a closed-form expression is derived for the Q distribution used to design maximally flat quarter-wavelength-coupled transmission-line filters. The derived expression is shown to be valid for filters with small values of total Q. Also, an existing Q-distribution expression derived from the lumped-element prototype (LEP) circuit is discussed, and is shown to be valid for filters with large values of total Q. By combining the derived binomial transformer Q distribution and the LEP Q-distribution expressions, a piecewise closed-form Q-distribution expression is developed, which is applicable over a wide range of total Q values.



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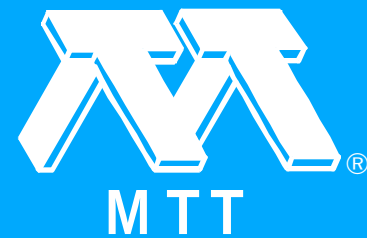


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Circuit theory for spatially distributed microwave circuits

A.I. Khalil and M.B. Steer. "Circuit theory for spatially distributed microwave circuits." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1500-1502.

A spatially distributed radio-frequency (RF) circuit, microwave, or millimeter-wave circuit does not have a global reference node as required in conventional nodal analysis. Instead, local reference nodes associated with ports are required. This paper adapts modified nodal analysis to accommodate spatially distributed circuits, allowing conventional harmonic balance and transient simulators to be used.



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Computation of resonant frequencies of cylindrical ferrite resonators using GIBCs

Myung Jin Kong and B. Beker. "Computation of resonant frequencies of cylindrical ferrite resonators using GIBCs." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1503-1507.

A computational approach for resonant frequencies of cylindrical substrate-mounted resonators is presented in this paper. The resonator is made of ferrite material, which is magnetically anisotropic and characterized by a Hermitian tensor. It is mounted on top of a grounded dielectric substrate, and the entire assembly is covered with a tuning plate, leaving the sidewalls open. The generalized impedance boundary conditions (GIBCs) are derived for the ferrite material and are used to formulate the approximate solution to the boundary-value problem. The resulting transcendental equations are solved numerically, and variations of the resonant frequency with respect to bias field, magnetization, and dimensions of the structure are reported.

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Analysis of propagation characteristics and field images for printed transmission lines on anisotropic substrates using a 2-D-FDTD method

Ming-sze Tong and Yinchao Chen. "Analysis of propagation characteristics and field images for printed transmission lines on anisotropic substrates using a 2-D-FDTD method." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1507-1510.

In this paper, we apply an efficient two-dimensional (2-D) finite-difference time-domain (FDTD) algorithm to an analysis of uniform transmission lines printed on various anisotropic substrates. By investigating the transverse resonant properties of the structures, we obtain their propagation characteristics, as well as the field images at specified frequencies. To eliminate the Gibbs phenomenon generated by a sudden time-stepping termination, we employ the Blackman-Harris window (BHW) function to truncate and modulate the entire time-domain fields, which leads to a significant time saving compared to the conventional time-stepping termination.

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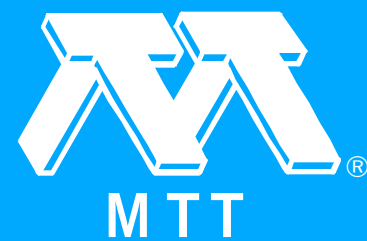


Abstracts

Generalized-material-independent PML absorbers used for the FDTD simulation of electromagnetic waves in 3-D arbitrary anisotropic dielectric and magnetic media

An Ping Zhao. "Generalized-material-independent PML absorbers used for the FDTD simulation of electromagnetic waves in 3-D arbitrary anisotropic dielectric and magnetic media." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1511-1513.

By introducing the material-independent quantities (electric displacement D and flux density B) into the finite-difference time-domain (FDTD) model, a generalized-material-independent perfectly matched layer (GMIPML) absorber used to absorb electromagnetic waves propagating in three-dimensional (3-D) general anisotropic dielectric and magnetic media is proposed. Within the proposed GMIPML absorber, D and B are directly absorbed, whereas E and H are simultaneously absorbed through the relations between E and D , as well as H and B . It is shown that with the help of this GMIPML absorber, Berenger's perfectly matched layer (PML) absorbing boundary condition (ABC) can be simply and effectively extended to 3-D arbitrary anisotropic materials consisting of both arbitrary permittivity and permeability tensors.



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Accurate analysis of periodic structures with an additional symmetry in the unit cell from classical matrix eigenvalues

S. Amari, R. Vahldieck and J. Bornemann. "Accurate analysis of periodic structures with an additional symmetry in the unit cell from classical matrix eigenvalues." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1513-1515.

Dispersion diagrams of periodic structures with an additional symmetry in the unit cell are investigated by the example of a parallel-plate waveguide loaded with irises of zero thickness. The propagation constants of the Floquet modes are determined from the classical eigenvalues of a non-Hermitian matrix.



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Numerical computation of the EM coupling between a circular loop antenna and a full-scale human-body model

W.-T. Chen and H.-R. Chuang. "Numerical computation of the EM coupling between a circular loop antenna and a full-scale human-body model." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1516-1520.

This paper presents numerical computation of the electro-magnetic (EM) coupling between circular loop antennas and a full-scale human-body model. The loop antenna can be x-, y-, or z-oriented. Coupled integral equations (CIE's) and the method of moments (MoM) are employed to numerically solve this antenna-body-coupling problem. Numerical results of the antenna radiation characteristics influenced by the human body and the body-absorption rate from 50 to 400 MHz are presented. The applications of this study include assessment of a radio-frequency (RF) dose from a loop antenna and the body effect on the performance of the loop antenna used in personal communication devices such as radio pagers.

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New tunable phase shifters using perturbed dielectric image lines (Oct. 1998, Part I [T-MTT])

Ming-Yi Li and Kai Chang. "New tunable phase shifters using perturbed dielectric image lines (Oct. 1998, Part I [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part I [T-MTT]): 1520-1523.

This paper presents new tunable phase shifters using perturbed dielectric image lines (DILs). The propagation constant in the DIL was perturbed by a movable metal reflector plate installed in parallel with the ground plane of the DIL. The phase shift was thus controlled and adjusted by varying the perturbation spacing between the DIL and movable reflector plate at a given operating frequency. A rigorous hybrid-mode analysis was used for calculating the dispersion of propagation constants in the perturbed DIL, and then for designing tunable phase shifters. Ka-band tunable phase shifters have been designed, fabricated, and tested. Measurement results agree well with theoretical predictions. The device is especially useful for millimeter-wave applications where traditional phase shifters are lossy.

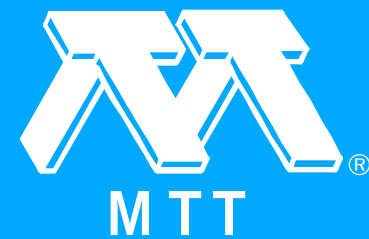
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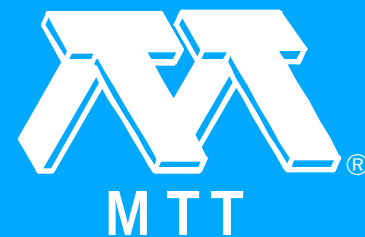
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Abstracts

Inside Cover (Oct. 1998, Part II [T-MTT])

"Inside Cover (Oct. 1998, Part II [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part II [T-MTT] (Special Issue on New Developments in the Design of Microwave and Millimeter-Wave Oscillators)): 0_2-0_3.



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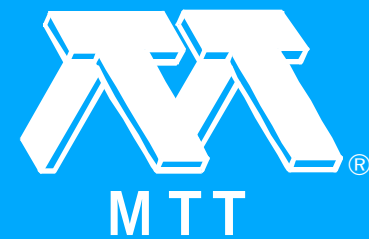
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Editorial (Oct. 1998, Part II [T-MTT])

A. Beyer and S. Maas. "Editorial (Oct. 1998, Part II [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part II [T-MTT] (Special Issue on New Developments in the Design of Microwave and Millimeter-Wave Oscillators)): 1529-1530.



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Ka-band and MMIC pHEMT-based VCO's with low phase-noise properties

P.J. Garner, M.J. Howes and C.M. Snowden. "Ka-band and MMIC pHEMT-based VCO's with low phase-noise properties." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part II [T-MTT] (Special Issue on New Developments in the Design of Microwave and Millimeter-Wave Oscillators)): 1531-1536.

Two pseudomorphic high electron-mobility transistor (pHEMT)-based Ka-band voltage-controlled oscillators (VCO's), which have exhibited novel close-to-carrier phase-noise properties in conjunction with output powers greater than previously reported heterojunction bipolar transistor (HBT) based oscillators, are presented in this paper. Good low phase noises of at least -70 and -75 dBc/Hz at an offset of 100 kHz around 38 GHz have been measured for the two different VCO designs over reasonable frequency tuning ranges with flat or linear output-power tuning in these ranges. Both designs show a strong dependence between phase noise and tuning-element bias conditions.

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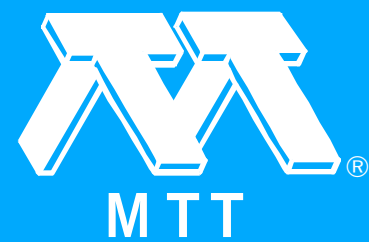
Applications of interferometric signal processing to phase-noise reduction in microwave oscillators

E.N. Ivanov, M.E. Tobar and R.A. Woode. "Applications of interferometric signal processing to phase-noise reduction in microwave oscillators." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part II [T-MTT] (Special Issue on New Developments in the Design of Microwave and Millimeter-Wave Oscillators)): 1537-1545.

To enhance the sensitivity of oscillator phase-noise measurements, an interferometric frequency-discriminator system may be implemented. Such systems consist of a microwave interferometer, incorporating a high-Q resonator and a phase-sensitive microwave readout. Suppressing the carrier at the output of the interferometer enables the microwave readout to operate in the small-signal regime with an effective noise temperature close to its physical temperature. When used as a sensor of a frequency-control system to lock the oscillator to a selected resonant mode of a high-Q resonator, the interferometric frequency discriminator has enabled more than two orders of magnitude improvement in oscillator phase-noise performance as compared with the state-of-the-art. Thus, the phase noise of an S-band oscillator was reduced to -150 dBc/Hz at 1-kHz Fourier frequency without the use of cryogenics, and was limited by the thermal noise in the microwave interferometer. To facilitate tuning and locking, an automatically balanced microwave frequency discriminator was developed using voltage-controlled attenuators and phase shifters. Rapid frequency tuning of the oscillator was achieved by varying the interferometer phase mismatch and automatically controlling the carrier suppression without tuning the high-Q resonator.

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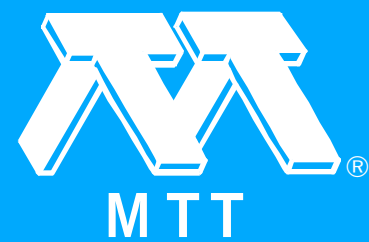
An X-band self-mixing oscillator antenna for transceiver and spatial power-combining applications

C.M. Montiel, Lu Fan and Kai Chang. "An X-band self-mixing oscillator antenna for transceiver and spatial power-combining applications." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part II [T-MTT] (Special Issue on New Developments in the Design of Microwave and Millimeter-Wave Oscillators)): 1546-1551.

The general theory for oscillator and mixer design is applied to develop an X-band self-mixing oscillator antenna. The antenna uses a Gunn diode as the active device that provides the oscillations and self-mixing operations. The circuit uses a slotline ring resonator for frequency stabilization and can be modified to include a varactor diode for wide-band frequency tuning. The circuit performance is compared with theoretical results derived from simple transmission-line models. The radiation patterns of the self-mixing oscillator antenna are also compared with those measured from a similarly configured passive antenna. Since the radiated power also serves as the local oscillator (LO) frequency for the self-mixing operation, the circuit is useful as a half-duplex transceiver. When the self-mixing operation is not required, a single oscillator antenna can be used as a transmitter and several units can be assembled in a planar array for spatial powercombining applications.

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Hybrid integrated HEMT oscillator with a multiple-ring nonradiative dielectric (NRD) resonator feedback circuit

Songxin Qi, Ke Wu and Zifei Ou. "Hybrid integrated HEMT oscillator with a multiple-ring nonradiative dielectric (NRD) resonator feedback circuit." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part II [T-MTT] (Special Issue on New Developments in the Design of Microwave and Millimeter-Wave Oscillators)): 1552-1558.

In this paper, a novel hybrid integrated-oscillator scheme is developed for millimeter-wave sources. A nonradiative dielectric (NRD) multiple-ring resonator is used, not only as a frequency-stabilizing element, but also as a feedback circuit coupled to a planar amplifier through the input and output slots. Such a three-dimensional circuit design indicates that a strong positive feedback can be easily implemented at millimeter wave frequencies to improve characteristics of the oscillator. A field-theoretical model is derived for accurate prediction of the resonant frequency of NRD multiple-ring structures. The very satisfactory agreement observed between our measured and calculated results validates the modeling approach. Subsequently, a 23.3-GHz hybrid integrated high electron-mobility transistor (HEMT) oscillator has been designed, fabricated, and characterized with a dual-ring NRD resonator. The oscillator exhibits 7.0-dBm output power with 6.4% dc-to-RF efficiency and less than -95.7-dBc/Hz phase noise at 1-MHz offset from the carrier. The attractive electrical performance demonstrates a new approach to the design of cost-effective millimeter-wave sources by the use of an extremely low-cost and low-loss NRD material instead of an otherwise expensive conventional high permittivity (usually ceramic-material based) dielectric resonator.

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V-band high-power low phase-noise monolithic oscillators and investigation of low phase-noise performance high drain bias

T. Kashiwa, T. Ishida, T. Katoh, H. Kurusu, H. Hoshi and Y. Mitsui. "V-band high-power low phase-noise monolithic oscillators and investigation of low phase-noise performance high drain bias." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part II [T-MTT] (Special Issue on New Developments in the Design of Microwave and Millimeter-Wave Oscillators)): 1559-1565.

This paper reports on the excellent performance of V-band monolithic high electron-mobility transistor (HEMT) oscillators, and discusses oscillation characteristics on drain bias. With regard to output characteristics, double-hetero (DH) HEMT (especially with a high-density Si-planar doped layer) are superior to single-hetero (SH) HEMT's. A monolithic microwave integrated circuit (MMIC) oscillator has been developed with a planar doped DH HEMT and has achieved the peak output power of 11.1 dBm at a 55.9-GHz oscillation frequency. Phase noise of -85 dBc/Hz at 100-kHz offset and -103 dBc/Hz at 1-MHz offset have been achieved at a drain voltage of 5.5 V and a gate voltage of 0 V. These characteristics have been achieved without any buffer amplifiers or dielectric resonators. This study has revealed that the phase noise decreases as drain voltage increases. This phenomenon is caused by lower pushing figure and lower noise level at a low-frequency range obtained under a high drain voltage. It is because the depletion layer in the channel is extended to the drain electrode with increase of drain voltage, resulting in the small fluctuation of the gate-to-source capacitance. We also investigate low-frequency noise spectra of AlGaAs-InGaAs-GaAs DH HEMT's with different bias conditions. The low-frequency noise decreases for more than 3 V of the drain voltage. A unique mechanism is proposed to explain this phase noise reduction at high drain voltage.

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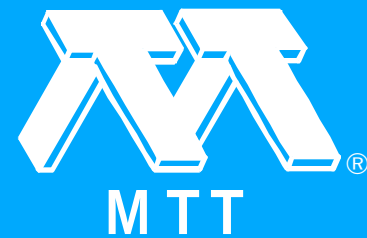


Abstracts

High-efficiency Ku-band oscillators

J.O. McSpadden, Lu Fan and Kai Chang. "High-efficiency Ku-band oscillators." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part II [T-MTT] (Special Issue on New Developments in the Design of Microwave and Millimeter-Wave Oscillators)): 1566-1571.

Ku-band oscillators have been experimentally found to have a high dc-to-radio-frequency (RF) efficiency. Using a packaged pseudomorphic high electron-mobility transistor (pHEMT) device, a maximum efficiency of 60% was measured at 14.5 and 15 GHz with output powers of 16 and 23 mW, respectively. Oscillator circuits also revealed efficiencies of 48% at 16 GHz and 41% at 17.1 GHz with RF output power levels of 11 and 13 mW, respectively.



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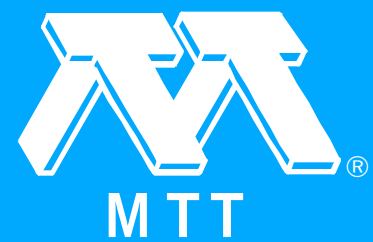
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GaAs HEMT monolithic voltage-controlled oscillators at 20 and 30 GHz incorporating Schottky-varactor frequency tuning

O. Sevimli, J.W. Archer and G.J. Griffiths. "GaAs HEMT monolithic voltage-controlled oscillators at 20 and 30 GHz incorporating Schottky-varactor frequency tuning." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part II [T-MTT] (Special Issue on New Developments in the Design of Microwave and Millimeter-Wave Oscillators)): 1572-1576.

This paper describes the design and fabrication of fully monolithic voltage-controlled oscillator (VCO) circuits using a combined GaAs high electron-mobility transistor (HEMT) and Schottky-varactor diode process. To the authors' knowledge, this is the first time a process of this type has been used for VCO fabrication. Three VCO designs with similar circuit topology, but two different operating frequencies and resonator types, were investigated to compare their relative performance. Two approaches to the integrated resonator were tried: coupled and single microstrip lines. The single resonator approach resulted in better power efficiency, while the coupled resonator was found to provide a wider frequency tuning range and lower phase noise.

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Signal space and its implementation for microwave nonlinear-network analysis

D. Elad and A. Madjar. "Signal space and its implementation for microwave nonlinear-network analysis." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part II [T-MTT] (Special Issue on New Developments in the Design of Microwave and Millimeter-Wave Oscillators)): 1577-1582.

Today, harmonic balance is the most useful approach for microwave nonlinear-network analysis. Fast Fourier transform (FFT) is usually used to convert the nonlinear element time waveforms into the frequency domain as part of the harmonic-balance process. This approach is straightforward for a single-frequency excitation, but is quite complicated and time consuming for the multifrequency-excitation case. In this paper, we propose a mathematical model termed "signal space", which enables (for a given nonlinearity) a direct calculation of the current spectrum (given the voltage spectrum) and is suited for implementation for harmonic balance. Under describing-function criteria, we use the signal-space approach to get expressions for oscillator parameters such as oscillation frequency, stability condition, and injection-locking bandwidth. There is a good, agreement between our results and Kurakawa's expressions.

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Abstracts

Improved HEMT model for low phase-noise InP-based MMIC oscillators

D. Schreurs, H. van Meer, K. van der Zanden, W. De Raedt, B. Nauwelaers and A. Van de Capelle. "Improved HEMT model for low phase-noise InP-based MMIC oscillators." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part II [T-MTT] (Special Issue on New Developments in the Design of Microwave and Millimeter-Wave Oscillators)): 1583-1585.

This paper focuses on two modeling aspects to improve the accuracy of low phase-noise monolithic-microwave integrated-circuit (MMIC) oscillator design. Up until now, the modeling of InP-based high electron mobility transistors (HEMTs) has mainly been limited to the representation of small-signal and thermal noise behavior. In this paper, we present a scaleable nonlinear and bias-dependent low-frequency (LF) noise model.



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Design of radiating K-band HEMT oscillators by means of moment-method approach

M.M. Kaleja and E.M. Biebl. "Design of radiating K-band HEMT oscillators by means of moment-method approach." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part II [T-MTT] (Special Issue on New Developments in the Design of Microwave and Millimeter-Wave Oscillators)): 1586-1589.

This paper discusses the design of radiating K-band oscillators with high electron-mobility transistors (HEMTs) as active devices. In order to allow monolithic integration, the design is based on a uniplanar microstrip configuration, i.e., all terminals of the passive microstrip circuit are located on top of the substrate and no via-holes are needed. In this configuration, feeding of the microstrip lines is incompatible to the fundamental quasi-TEM microstrip mode. Moreover, the radiation losses of these so-called active antennas significantly influence the oscillation condition. Thus, modeling of the passive circuit by means of a full-wave analysis is mandatory. In this paper, we show how a full-wave analysis of the passive circuit can be combined with well-known network-based oscillator design methods using commercially available design tools. By using a moment-method approach for the passive structure and small signal model for the active device, all relevant electromagnetic effects like losses, coupling and radiation, are included, allowing a very precise prediction of the operation frequency.

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Abstracts

Nonlinear modeling and design of bipolar transistors ultra-low phase-noise dielectric-resonator oscillators

M. Regis, O. Llopis and J. Graffeuil. "Nonlinear modeling and design of bipolar transistors ultra-low phase-noise dielectric-resonator oscillators." 1998 Transactions on Microwave Theory and Techniques 46.10 (Oct. 1998, Part II [T-MTT] (Special Issue on New Developments in the Design of Microwave and Millimeter-Wave Oscillators)): 1589-1593.

This paper presents a design methodology for low phase-noise dielectric-resonator oscillators (DRO's) with applications examples at 4 GHz. Different oscillators topologies are investigated and, finally, three oscillators' configurations have been simulated, realized in discrete elements, and characterized. The best measured phase-noise magnitude is -133 dBc/Hz at 10-kHz offset frequency.



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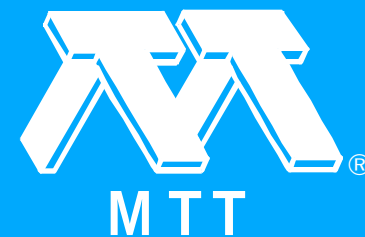
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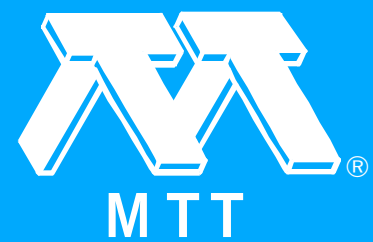
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Compact DC-60-GHz HJFET MMIC switches using ohmic electrode-sharing technology

H. Mizutani, N. Funabashi, M. Kuzuhara and Y. Takayama. "Compact DC-60-GHz HJFET MMIC switches using ohmic electrode-sharing technology." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1597-1603.

Compact DC-60-GHz heterojunction field-effect transistor (HJFET) monolithic-microwave integrated-circuit (MMIC) switches have been demonstrated for millimeter-wave communications and radar systems. To reduce the MMIC chip size, a novel ohmic electrode-sharing technology (OEST) has been developed for MMIC switches with series-shunt FET configuration. Four FET's of the series-shunt single-pole double-throw (SPDT) MMIC switch were integrated into an area of approximately 0.018 mm². The developed MMIC switches have a high power-handling capability with low insertion loss (IL) and high isolation (Iso) at millimeter-wave frequencies. From DC to 60 GHz, the single-pole single-throw (SPST) MMIC switch achieved the IL and Iso of better than 1.64 and 20.6 dB, respectively. At 40 GHz, the IL increases by 1 dB at the input power of 21 dBm. A novel large-signal FET model for the switch circuit is presented. The simulated power-transfer performance shows the excellent agreement with the measured one. The developed MMIC switches will contribute to the low-cost and high-performance millimeter-wave communications and radar systems.

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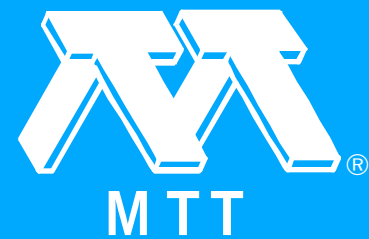
Low-frequency noise characterization of self-aligned AlGaAs-GaAs heterojunction bipolar transistors with a noise corner frequency below 3 kHz

J.-H. Shin, J. Kim, Y. Chung, J. Lee, Y. Suh, K.H. Ahn and B. Kim. "Low-frequency noise characterization of self-aligned AlGaAs-GaAs heterojunction bipolar transistors with a noise corner frequency below 3 kHz." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1604-1613.

To find dominant $1/f$ noise sources, generalized noise analyses have been performed for self-aligned AlGaAs/GaAs heterojunction bipolar transistors (HBT's). For shorted base-emitter condition, the resistance fluctuation $1/f$ noise is dominant, while for open base-emitter condition, the base-emitter current $1/f$ noise is dominant. The collector-emitter $1/f$ current noise, though generally considered an important noise source, is negligible. The resistance $1/f$ noise stems mainly from the emitter resistance fluctuation. Our noise-reduction work is focused on the reduction of the base-emitter current $1/f$ noise. We have investigated the base-emitter-current noise properties as a function of emitter-base structure and surface passivation condition. It is found that the surface-recombination $1/f$ noise can be significantly reduced by the heterojunction launcher of the abrupt junction with 30% aluminum mole fraction emitter. The depleted AlGaAs ledge surface passivation further suppresses the surface-recombination currents. Consequently, we have achieved a very low $1/f$ noise corner frequency of 2.8 kHz at the collector current density of 10 kA/cm². The dominant noise source of the HBT is not a surface-recombination current, but a bulk current noise. This is the lowest $1/f$ noise corner frequency among the III-V compound semiconductor transistors, and is comparable to those of low-noise Si bipolar junction transistors (BJTs).

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Two new measurement methods for explicit determination of complex permittivity

C. Wan, B. Nauwelaers, W. De Raedt and M. Van Rossum. "Two new measurement methods for explicit determination of complex permittivity." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1614-1619.

This paper presents two new measurement methods for explicit determination of complex permittivity. For the first time, these methods combine the explicit algorithm with a simplified yet accurate error-correction technique. The combination is made possible by the use of one sample of single length and another of double length. For low-loss materials, one of the methods is valid for any sample length and independent of sample positions, but needs a prior estimate of the permittivity, while the other requires no such estimate, but avoidance of the single length being multiples of half-wavelength in the sample. For high-loss materials, both methods may need the estimate. Advantages of each method can be taken if both methods are used simultaneously. Experimental results from the proposed methods show excellent agreement with those from a recent iterative method. Errors arising from small deviations from the double length are also analyzed and presented. The validity, explicitness, and simple error-correction capability make the new methods very useful.

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Abstracts

Performance and limitations of decomposition-based parameter extraction procedures for FET small-signal models

C. van Niekerk and P. Meyer. "Performance and limitations of decomposition-based parameter extraction procedures for FET small-signal models." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1620-1627.

A recently proposed optimizer-based parameter-extraction technique using adaptive decomposition is subjected to a systematic and rigorous evaluation. The technique is shown to be robust and accurate under varying starting conditions. A study of convergence performance based on decomposition theory and test results is presented. Robustness tests are used to show that commonly used statistical descriptions such as mean and standard deviation are inadequate for presenting these types of test data.



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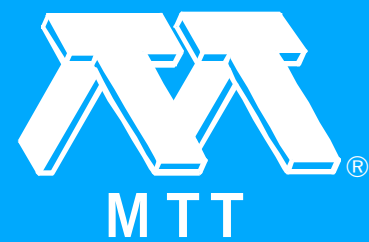
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Microwave signal rectification using artificial composite materials composed of diode-loaded electrically small dipole antennas

F. Auzanneau and R.W. Ziolkowski. "Microwave signal rectification using artificial composite materials composed of diode-loaded electrically small dipole antennas." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1628-1637.

The electromagnetic properties of composite materials composed of dipole or loop antennas (also called molecules) loaded with different linear passive electronic circuits are summarized. These molecules are extended to those molecules whose loads contain some basic nonlinear elements. Several examples are discussed. The simplest nonlinear load is the clamping circuit: a diode and a resistor are connected in series to an electrically small dipole antenna. This is generalized to a more complicated molecule based on a diode bridge. Numerical results generated with a finite-difference time-domain (FDTD) simulator demonstrate how an incident narrow-bandwidth pulse interacts with these materials and can be transformed into a baseband, rectified signal, or a signal containing selected harmonics of the fundamental frequency. Potential applications of these artificial material-based signal convertors include target identification and signal modulation.

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Abstracts

An accurate large-signal model of GaAs MESFET which accounts for charge conservation, dispersion, and self-heating

C.-J. Wei, Y.A. Tkachenko and D. Bartle. "An accurate large-signal model of GaAs MESFET which accounts for charge conservation, dispersion, and self-heating." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1638-1644.

A comprehensive large-signal model of a GaAs MESFET is presented to account for charge conservation and effects of dispersion and self-heating. An improved set of capacitance and charge equations, along with an enhanced Triquint Own model (TOM)-like drain current model, is used for consistent small- and large-signal simulations. Charge conservation is satisfied by deriving the capacitance part of the model from charge equations. Transconductance and output conductance dispersion is modeled by combination of a feedback network and a subcircuit, which describes the self-heating effect. An improved description of the near-pinchoff characteristics, high-voltage breakdown, and gain compression in the high-current region in the TOM is introduced. The new model accurately predicts the I-V, CV, bias-dependent S-parameter, waveform, power, and linearity characteristics of the MESFET.



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Theory and experiment of thin-film junction circulator

H. How, S.A. Oliver, S.W. McKnight, P.M. Zavracky, N.E. McGruer, C. Vittoria and R. Schmidt. "Theory and experiment of thin-film junction circulator." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1645-1653.

We have calculated the S-parameters and losses in ferrite-film-junction circulators using a new effective-field theory assuming TEM-like propagation. Conductivity loss dominates the dielectric and magnetic losses in Y-junction circulators fabricated on ferrite films with thicknesses less than 200 μm . It is plausible to fabricate Y-junction thin-film circulator at X-band with insertion loss less than 0.5 dB if the film thickness is larger than 100 μm . The quality of the conductor plane is important in reducing the overall insertion loss of the thin-film-junction circulator.





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Microwave tomography: a two-dimensional Newton iterative scheme

A.E. Souvorov, A.E. Bulyshev, S.Y. Semenov, R.H. Svenson, A.G. Nazarov, Y.E. Sizov and G.P. Tatsis. "Microwave tomography: a two-dimensional Newton iterative scheme." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1654-1659.

In this paper, a variant of the Newton method, which uses a fast solution of the direct problem and a dual mesh, is proposed. Computational and physical experiments with simple two-dimensional high-contrast phantoms are discussed, and a full-scaled image of a two-dimensional mathematical model of a human torso is obtained.

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A 155-GHz monolithic low-noise amplifier

H. Wang, R. Lai, Y.-L. Kok, T.-W. Huang, M.V. Aust, Y.C. Chen, P.H. Siegel, T. Gaier, R.J. Dengler and B.R. Allen. "A 155-GHz monolithic low-noise amplifier." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1660-1666.

This paper presents the design, fabrication, and test results of a three-stage 155-GHz monolithic low-noise amplifier (LNA) fabricated with the 0.1-/spl mu/m pseudomorphic (PM) InAlAs-InGaAs-InP HEMT technology. With this amplifier in a test fixture, a small-signal gain of 12 dB was measured at 155 GHz, and more than 10-dB gain from 151 to 156 GHz. When the amplifier was biased for a low noise figure (NF), an NF of 5.1 dB with an associated gain of 10.1 dB was achieved at 155 GHz. All the results above are referred to the monolithic millimetre-wave integrated circuit (MIMIC) chip with the input and output waveguide-to-microstrip line transition losses corrected.

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Rectangularly driven class-A harmonic-control amplifier

B. Ingruber, J. Baumgartner, D. Smely, M. Wachutka, G. Magerl and F.A. Petz.

"Rectangularly driven class-A harmonic-control amplifier." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1667-1672.

A rectangularly driven class-A harmonic-control amplifier (rHCA) is studied, which combines the advantage of high device drain efficiency ($\eta_{D, \text{spl}}$) of a switched-type amplifier with the advantage of high gain (G) of class-A operation, thus maximizing its power-added efficiency (PAE). In this rHCA, harmonics are controlled such that drain-to-source voltage becomes half-sinusoidal. This reduces the necessary supply voltage without degrading output power. In comparison with a class-F amplifier using the same transistor, the realization of such an rHCA has demonstrated 0.4-dB larger output power, 3.8-dB increased gain, 4% higher PAE, and 22% lower drain supply voltage at 1.62 GHz.

Improved impedance-pattern generation for automatic noise-parameter determination

S. Van den Bosch and L. Martens. "Improved impedance-pattern generation for automatic noise-parameter determination." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1673-1678.

The correlation between the impedance pattern for automatic noise-parameter determination and the accuracy of extracted parameters is investigated using a statistical approach. Selection criteria for near-optimal patterns are given, and a new method is proposed for automatic generation of these patterns. Simulations prove this method outperforms others using random or cross-shaped patterns.



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A new extraction method for the two-parameter FET temperature noise model

M. Garcia, J. Stenarson, K. Yhland, H. Zirath and I. Angelov. "A new extraction method for the two-parameter FET temperature noise model." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1679-1685.

This paper presents a direct extraction method for the associated noise temperatures $T_{\text{sub } d/}$ and $T_{\text{sub } g/}$ in the field-effect transistor (FET) temperature noise model. The method is related to nodal analysis of circuits. $T_{\text{sub } d/}$ and $T_{\text{sub } g/}$ are extracted from the small-signal model parameters and the noise parameters of the device. It is also theoretically shown that there exist source admittances that cancel the thermal noise contribution at the output from either $T_{\text{sub } d/}$ or $T_{\text{sub } g/}$ in the model. Finally, a commercially available GaAs pseudomorphic high electron-mobility transistor (pHEMT) is measured and modeled for a wide range of bias points. Comparisons between measured and modeled noise parameters are presented in the 2-26 GHz frequency range.

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Modeling of interaction of electromagnetic fields from a cellular telephone with hearing aids (Nov. 1998, Part I [T-MTT])

M. Okoniewski and M.A. Stuchly. "Modeling of interaction of electromagnetic fields from a cellular telephone with hearing aids (Nov. 1998, Part I [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1686-1693.

The new generation of cellular telephones and other personal communication services (PCSs) poses new problems and challenges in interactions with the human body. Among them is electromagnetic interference (EMI) with medical devices, particularly for systems using time-division multiple access (TDMA). Hearing aids are among the devices affected by the pulse modulation in the audio range associated with the TDMA systems. While EMI in this case does not generally pose a health risk, it constitutes a considerable annoyance, which may prevent the hearing-aid wearers from using some of the new communication devices. Also, just proximity to the devices used by others or the base station may result in signals sufficient to interfere with proper perception of sounds. We have evaluated the electric and magnetic fields in the ear canal at 900 MHz for a typical monopole antenna on a typical handset, an equivalent dipole, and a plane wave. Special care was taken to properly represent the anatomy of the ear, including its canal. The finite-difference time-domain (FDTD) method was used to compute the electric and magnetic fields in the ear canal and around the ear. The fields from the exposure sources in various realistic placements of the hearing aid were compared. The results presented are of importance and use in developing performance standards and practical testing methods for various types of hearing aids.





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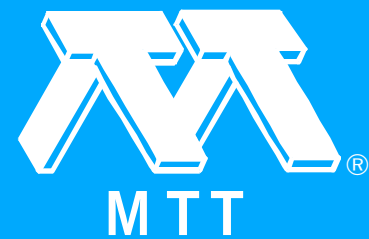
Calibration of electric coaxial near-field probes and applications

Y. Gao, A. Lauer, Q. Ren and I. Wolff. "Calibration of electric coaxial near-field probes and applications." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1694-1703.

A new calibration technique for application to near-field probes has been developed. For this, a simple electric coaxial near-field probe for application in the 0.05-20-GHz band has been developed, theoretically analyzed, and calibrated using a known field. By using the finite-difference time-domain (FDTD) method, this field probe is theoretically analyzed to determine its most sensitive probe segment. Taking the amplitude of the normal electric field at this segment as a known field, the probe is calibrated by defining a performance factor (PF), which is the ratio of the known field amplitude to the probe signal amplitude. Comparing the calculated results with measured results, the agreement is good. Additionally, the measurements are experimentally characterized with respect to the influence of the distance between the probe and the device-under-test (DUT), the influence of the input signal on the probe, and the spatial resolution. Two measurement examples are demonstrated, which investigate the mode and field distribution within passive coplanar microwave components.

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Nonlinear inversion in TE scattering

B.J. Kooij and P.M. van den Berg. "Nonlinear inversion in TE scattering." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1704-1712.

A method for reconstructing the complex permittivity of a bounded inhomogeneous object from measured scattered-field data is presented. This paper extends the method previously developed for the TM case to the more complicated TE case. In the TM case, the electric-field integral equation involves an integral operator whose integrand was simply a product of the background Green's function, contrast, and field. In the TE case, the magnetic field is polarized along the axis of an inhomogeneous cylinder of arbitrary cross section and the corresponding integral equation contains derivatives of both the background Green's function and the field. The nonlinear inversion based upon the modified-gradient method as presented in the literature is applied to the magnetic-field equation. However, the integral equation can also be formulated as an electric-field integral equation for the two transversal components of the electric field. Again, the integrand is a product of the background Green's function, contrast, and electric-field vector. The derivatives are operative outside the integral. In this paper, the latter formulation will be taken as a point of departure to develop a nonlinear inversion scheme using the modified-gradient method.

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Integral equation modeling of cylindrically periodic scatterers in the interior of a cylindrical waveguide

H.T. Anastassiou, J.L. Volakis and D.S. Filipovic. "Integral equation modeling of cylindrically periodic scatterers in the interior of a cylindrical waveguide." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1713-1720.

We examine the scattering from cylindrically periodic engine-like structures using integral-equation methods. The periodic scatterer is enclosed in a cylindrical waveguide, and the primary goal of this paper is to show that this type of geometry affords substantial computational reductions by exploiting the periodicity of the blade structure and characteristics of the modal scattering matrix of the engine-like termination. Also, as a result of the periodic waveguide termination, a limited number of modes are excited by a given incoming mode, and this is exploited for a further reduction of the storage requirements of the modal scattering matrix.

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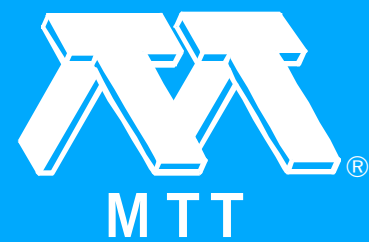
Analysis and development of millimeter-wave waveguide-junction circulator with a ferrite sphere

E.K.-N. Yung, R.S. Chen, K. Wu and D.X. Wang. "Analysis and development of millimeter-wave waveguide-junction circulator with a ferrite sphere." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1721-1734.

This paper presents a class of new easy-to-fabricate ferrite-sphere-based waveguide Y-junction circulators for potentially low-cost millimeter-wave applications. A new three-dimensional modeling strategy using a self-inconsistent mixed-coordinates-based modal field-matching procedure is developed to characterize electrical performance of the proposed circulator. It is found that the circulating mechanism of the ferrite-sphere post is different from its full-height ferrite counterpart in that the new structure operates in a turnstile fashion with resonant characteristics, while the conventional device operates on a transmission cavity model. Extensive comparable studies between the new and conventional circulators are made to show that the electrical behaviors of the new structure are also distinct and radial power-density profiles are not stationary, as in the case of the full-height ferrite post circulator for different geometrical parameters. Results obtained by the analysis technique are compared with the available results for a full/partial-height ferrite circulator, showing an excellent agreement. Our calculated and measured results are also presented for W-band circulators with the proposed ferrite-sphere technique, indicating some interesting characteristics such as the frequency offset behavior of the isolation and reflection curves. In addition, radial power-density profiles are plotted inside and outside the ferrite sphere to illustrate its intrinsic circulating mechanism, as well as its difference, as compared to its full-height ferrite structure.

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Application of the AWE method with the 3-D TVFEM to model spectral responses of passive microwave components

X.-M. Zhang and J.-F. Lee. "Application of the AWE method with the 3-D TVFEM to model spectral responses of passive microwave components." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1735-1741.

This paper describes an efficient algorithm to evaluate the spectral response of passive microwave devices. The method is based on the combination of the tangential-vector finite-element method (TVFEM) for modeling three-dimensional (3-D) microwave passive components and the asymptotic waveform evaluation (AWE) technique for efficiently computing the spectral responses. Unlike previous AWE approaches, which use direct matrix factorization to solve for the moments, we employ a preconditioned conjugate gradient (PCG) method. It is observed that the iterative PCG solver converges much faster by solving only the additional components of the higher moments outside the span of previous moments. Moreover, this paper discusses the effect of shifting the expansion frequency from the real frequency axis to the lower half of the complex frequency plane. Through several numerical examples, a waveguide with an obstacle inside, mitered 90/spl deg/ E- and H-plane waveguide bend, microstrip low-pass filter, and microstrip patch antenna, we show that shifting reduces the pollution due to dominant resonant modes and, consequently, results in a much wider convergence range for the moment-matching AWE technique.





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Generalized-scattering-matrix modeling of waveguide circuits using FDTD field simulations

T. Shibata and T. Itoh. "Generalized-scattering-matrix modeling of waveguide circuits using FDTD field simulations." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1742-1751.

This paper presents a hybrid-analysis method for metal waveguide structures. The method is based on the generalized-scattering-matrix approach. The whole structure is divided into several components, each of which is characterized independently. Some components are analyzed using the finite-difference time-domain (FDTD) method, while the others are characterized analytically. For the FDTD simulations, we introduce a new technique for efficient and rigorous calculation of the scattering parameters. This hybrid method inherits the universality of the FDTD method and enables us to analyze larger and more complex structures using limited computer resources compared to the single FDTD analysis of a whole structure. A few results are given as examples to illustrate the validity of the method.

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Numerical validations of a nonlinear PML scheme for absorption of nonlinear electromagnetic waves

J. Xu, J.-G. Ma and Z. Chen. "Numerical validations of a nonlinear PML scheme for absorption of nonlinear electromagnetic waves." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1752-1758.

There have been several algorithms which extend the finite-difference time-domain (FDTD) solution of Maxwell's equations to nonlinear electromagnetic problems. Relative to other methods, FDTD achieves robustness by directly solving for the fundamental quantities, electric field E , and magnetic field A in space and time, rather than performing asymptotic analyses or assuming paraxial propagation and nonphysical envelope functions. As a result, the FDTD method is almost completely general and can account for any type of electromagnetic problems. As in linear cases, for a practical simulation, nonlinear FDTD modeling also requires the development of absorbing boundary conditions (ABCs) to effectively absorb the nonlinear electromagnetic waves for open nonlinear structures. In this paper, based on the Berenger's perfectly matched layer (PML), a nonlinear PML (nPML) absorbing scheme is presented and then implemented in the transmission-line matrix (TLM)-based FDTD method. Numerical results are given to demonstrate the effectiveness of the nPML proposed.



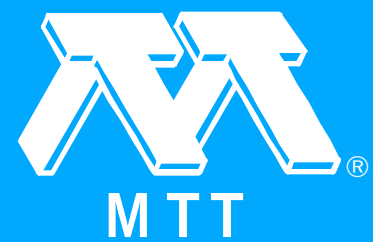
A high-resolution interpolation at arbitrary interfaces for the FDTD method

J. Nadobny, D. Sullivan, P. Wust, M. Seebass, P. Deuffhard and R. Felix. "A high-resolution interpolation at arbitrary interfaces for the FDTD method." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1759-1766.

In recent years, the finite-difference time-domain (FDTD) method has found numerous applications in the field of computational electromagnetics. One of the strengths of the method is the fact that no elaborate grid generation specifying the content of the problem is necessary- the medium is specified by assigning parameters to the regularly spaced cubes. However, this can be a weakness, especially when the interfaces between neighboring media are curved or "sloped" and do not exactly fit the cubic lattice. Since the E- and H-fields are only calculated at the regular intervals, sharp field discontinuities at the interfaces are often missed.

Furthermore, the averaging of the material properties often leads to significant errors. In this paper, a post-processing method is presented, which approximates the correct field behavior at the interfaces by interpolating between the FDTD calculated values, splitting them into the components normal and tangential to the interfaces, and then enforcing the interface conditions for each of these components separately.





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Leakage and resonance characteristics of radiating cylindrical dielectric structure suitable for use as a feeder for high-efficient omnidirectional/sectorial antenna

S. Qi and K. Wu. "Leakage and resonance characteristics of radiating cylindrical dielectric structure suitable for use as a feeder for high-efficient omnidirectional/sectorial antenna." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1767-1773.

A class of new radiating cylindrical dielectric structures are proposed for use as a feeder for high-efficient omnidirectional/sectorial slotted arrays that are suitable for high-frequency wireless systems. A simple and efficient model on a scheme of the method of lines is developed and used for analysis of these composite cylindrical dielectric elements that have various rectangular and trapezoidal cross sections. Good agreement between calculated and measured results is observed, which validates the proposed modeling technique. Leakage and resonance characteristics are presented, and they reveal some interesting features for design of new beamforming networks or circuits using the new structure. Results and discussion are focused on the properties of low-order leaky resonant modes. Influences of various parameters of the structure on leakage loss and resonant frequency are shown in detail for design purposes.





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Propagation characteristics of the slotline first higher order mode

Jyh-Wen Sheen and Yu-De Lin. "Propagation characteristics of the slotline first higher order mode." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1774-1781.

The propagation characteristics of the slotline first higher order mode are presented in detail in this paper. It is found that the attenuation constants and the radiation band of this first higher order mode are larger than those of the microstripline first higher order mode. Dependence of the propagation characteristics on structural parameters and the effect of finite-conductor planes are analyzed. The propagation characteristics of the surface-wave-like modes are also discussed. In order to avoid inadvertent excitation of these surface-wave-like modes in antenna applications, the current and field distributions of the slotline first higher order mode and the surface-wave-like modes are compared and discussed. Excitation of the slotline first higher order mode was conducted by feeding the slotline with a coplanar waveguide and microstrip line. Experimental results show good agreement with our numerical results, and also confirm the existence of the slotline first higher order mode.

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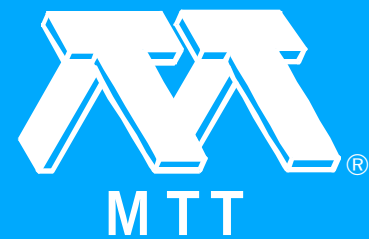
A new uniplanar broad-band singly balanced diode mixer

P.-C. Hsu, C. Nguyen and M. Kintis. "A new uniplanar broad-band singly balanced diode mixer." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1782-1784.

A new type of completely uniplanar broad-band singly balanced diode mixer, which utilizes a coplanar waveguide (CPW) and slot line as the main transmission lines, is presented. With the radio frequency (RF) swept from 7.1 to 10.5 GHz and the local oscillator (LO) of 3.5 dBm at 7 GHz, the mixer exhibits a conversion loss from 6 to 10 dB. The LO-to-RF isolation is better than 20 dB, and the LO-to-intermediate frequency (IF) and RF-to-IF isolations are more than 36 dB. The mixer also exhibits good return losses at all three ports. It has several desirable features such as simplicity, wide bandwidth, good interport isolations, easy mounting of solid-state devices, and no via-hole ground connections. The uniplanar nature of this mixer makes it very suitable for low-cost microwave and millimeter-wave integrated circuits.

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A two-channel optical downconverter for phase detection

P.D. Biernacki, L.T. Nichols, D.G. Enders, K.J. Williams and R.D. Esman. "A two-channel optical downconverter for phase detection." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1784-1787.

Experimental results for a two-channel optical downconverter link operating from 2 to 18 GHz are presented. Using low-noise preamplifiers results in a noise figure (NF) of 8.5-14 dB over the frequency range of 2-18 GHz. For the first time, relative phase measurements between optically downconverted signals have been performed. An in-phase/quadrature phase-measurement technique indicates a phase precision of $\pm 2^\circ$ with as little as -60 dBm radio frequency (RF) received power. Comparing the optical microwave downconverter to an electrical microwave downconverter in terms of phase detection reveals similar performance between the two systems.

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Microwave noise parameters of pseudomorphic GaInAs HEMTs under optical illumination

L. Escotte, K. Grenier, J.G. Tartarin and J. Graffeuil. "Microwave noise parameters of pseudomorphic GaInAs HEMTs under optical illumination." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1788-1789.

The microwave behavior of pseudomorphic high electron-mobility transistors (pHEMTs) under optical illumination is investigated in this paper. The influence of light on the small-signal equivalent circuit is derived from scattering-parameter measurements. The evolution of the noise parameters versus gate-to-source voltage and their sensibility to illumination is also demonstrated.

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GaAs versus quartz FGC lines for MMIC applications

J. Papapolymerou, J. East and L.P.B. Katehi. "GaAs versus quartz FGC lines for MMIC applications." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1790-1793.

The performance of finite-ground coplanar (FGC) lines on GaAs and quartz for high-frequency monolithic-microwave integrated-circuit (MMIC) applications is experimentally investigated in this paper. The FGC lines on GaAs are covered with a thin layer of polyimide for passivation purposes. Permittivity and attenuation characteristics for these lines up to 118 GHz are presented and compared with the corresponding characteristics of FGC lines on a quartz substrate, which are commonly used for millimeter-wave applications. The impact of different characteristic impedance values in attenuation properties for both GaAs and quartz is also addressed. Results indicate that the loss on the lines does not depend on the substrate material, but rather on line geometry. All the lines tested show low-loss and low-dispersion characteristics.

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Abstracts

An alternative method for end-effect characterization in shorted slotlines

G. Duchamp, L. Casadebaig, S. Gauffre and J. Pistre. "An alternative method for end-effect characterization in shorted slotlines." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1793-1795.

In this paper, we propose an alternative method to characterize the end effects in shorted slotlines. Using a commercial software to model the transition, a simple mathematical expression of the end impedance, valid for a given substrate family and in a wide frequency domain, was achieved. Several dielectric substrates were considered and the obtained results were compared with experimental ones. A correct agreement was observed. This approach can also be useful in more complex simulations relative to multilayer structures.



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Toward an optimum design of NRD-guide and microstrip-line transition for hybrid-integration technology

A. Bacha and K. Wu. "Toward an optimum design of NRD-guide and microstrip-line transition for hybrid-integration technology." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1796-1800.

The newly proposed hybrid-integration technology of a nonradiative dielectric (NRD)-guide and planar structure offers an attractive alternative for designing microwave and millimeter-wave integrated circuits and systems. This paper presents an attempt with a transmission-line matrix (TLM) analysis toward accurate design and optimization of the NRD/microstrip-line transitions for the proposed scheme. Electrical performance of the transitions is studied with respect to various parametric effects such as the influence of coupling slot size, NRD and microstrip-line open-ends, as well as dielectric permittivity. Experiments with the designed transitions are made to validate our TLM analysis, as well as to demonstrate good performance. Calculated and measured results suggest that such a hybrid integration have a promising future as high-frequency building blocks.

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Abstracts

On the efficient implementation of SDA for boxed strip-like and slot-like structures

G. Cano, F. Medina and M. Horno. "On the efficient implementation of SDA for boxed strip-like and slot-like structures." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1801-1806.

This paper reports on an enhanced implementation of the spectral-domain analysis (SDA) of boxed multistrip or multislot transmission lines embedded in a layered medium, including biaxial materials. Very high numerical efficiency is attained by a suitable basis and mixed SDA and spatial-domain technique to calculate the entries of the Galerkin matrix. Convergence properties of SDA are drastically improved, making it competitive with other analytical techniques [such as regular singular integral equation (RSIE)]. The method allows quick and accurate computation of current/field distributions.



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Construction of the absorbing boundary conditions for the FDTD method with transfer functions

J. Zhou and W. Hong. "Construction of the absorbing boundary conditions for the FDTD method with transfer functions." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1807-1809.

The absorbing boundary conditions (ABCs) are essential to terminate the computational space when the finite-difference time-domain (FDTD) method is applied to analyze electromagnetic (EM) problems. With the ABCs, the fields on the truncated boundaries are evaluated by the interior fields. In this paper, the relationship between the fields on the terminated boundaries and the interior fields is expressed as the transfer functions in the Z-domain. The proper transfer functions are determined from the radiation condition or the transmission condition. Simplifying these transfer functions into rational functions, we obtain different schemes of the ABCs. In this paper, both the transfer functions and coefficients of the final ABCs are derived and expressed as recurrence formulas for the convenience of programming. This method has the property of simplicity and flexibility. The ABCs obtained by this method show good absorbing performance and numerical stability in the practical applications.





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Edge-element formulation of three-dimensional structures

J. Tan, G. Pan and B.K. Gilbert. "Edge-element formulation of three-dimensional structures." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part I [T-MTT]): 1809-1812.

A three-dimensional (3-D) asymmetrical functional is developed and implemented as a hybrid-vector edge-element method. The equivalent frequency-dependent circuit parameters are then extracted from the field solutions. Laboratory measurements and data comparison with previous published results strongly support the newly developed theoretical work.

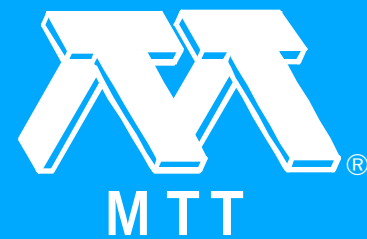
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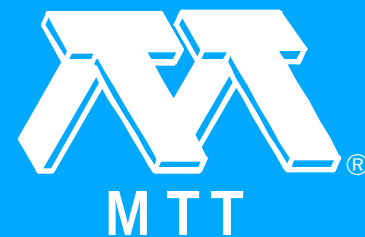
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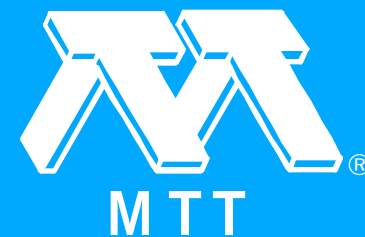
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Foreword (Nov. 1998, Part II [T-MTT])

J.F. Harvey and E.R. Brown. "Foreword (Nov. 1998, Part II [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part II [T-MTT] (Special Issue on Innovative Integration Techniques for Microwave and Millimeter-Wave Circuits)): 1817-1820.



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Micromachining for terahertz applications

V.M. Lubecke, K. Mizuno and G.M. Rebeiz. "Micromachining for terahertz applications." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part II [T-MTT] (Special Issue on Innovative Integration Techniques for Microwave and Millimeter-Wave Circuits)): 1821-1831.

An overview of recent progress in the research and development of micromachined antennas, transmission lines, waveguides structures, and planar movable components for terahertz frequencies is presented. Micromachining is shown to provide a low-cost alternative to conventional (and very expensive) machined-waveguide technology, resulting in antennas with excellent radiation patterns, low-loss tuners, and three-dimensional (3-D) micromachined structures suitable for terahertz applications. Fabrication procedures for a variety of micromachined waveguide and planar structures are described here, along with measured terahertz performance. Applications of micromachining techniques for terahertz systems include focal-plane imaging arrays requiring a large number of elements and low-cost receivers for commercial and industrial applications such as pollution monitoring.

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Abstracts

Microtechnology in the development of three-dimensional circuits

K.J. Herrick, J.G. Yook and L.P.B. Katehi. "Microtechnology in the development of three-dimensional circuits." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part II [T-MTT] (Special Issue on Innovative Integration Techniques for Microwave and Millimeter-Wave Circuits)): 1832-1844.

With today's cost-conscious industry, low cost, high-performance, and high-profit microwave-circuit technologies are essential. To increase density and reduce size and cost, the integration of analog and digital circuits on one single chip is considered the most viable solution. In reducing the size of the overall system, high-density integration (HDI) and packaging have become critical components in circuit design. This paper reviews and evaluates state-of-the-art planar transmission lines and vertical interconnects for use in high-density multilayer circuits for silicon- and SiGe-based monolithic high-frequency circuits. Packaging issues associated with parasitics are discussed and examples of multilayer three-dimensional systems utilizing micromachining are presented.



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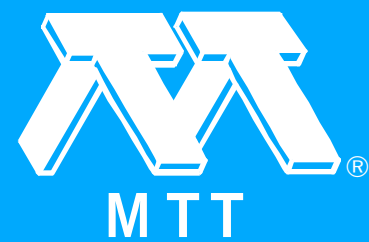
A 10-60-GHz micromachined directional coupler

S.V. Robertson, A.R. Brown, L.P.B. Katehi and G.M. Rebeiz. "A 10-60-GHz micromachined directional coupler." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part II [T-MTT] (Special Issue on Innovative Integration Techniques for Microwave and Millimeter-Wave Circuits)): 1845-1849.

A 20-dB directional coupler has been designed and fabricated on a thin dielectric membrane using micromachining techniques. The fabrication process is compatible with monolithic microwave integrated-circuit (MMIC) techniques, and the coupler can be integrated into a planar-circuit layout. Design of the asymmetric tapered coupled-line coupler relies on simple quasi-static models and ideal transmission-line theory. The use of membrane technology results in less than 0.5-dB insertion loss in the coupler from 10 to 60 GHz. In addition, a micromachined packaging technique creates a shielded circuit, which is extremely compact and lightweight.

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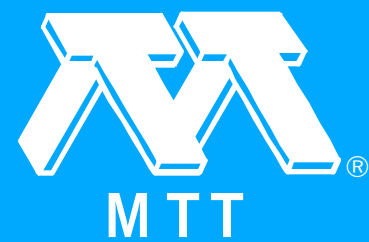
Integration of air-gap transmission lines on doped silicon substrates using glass microbump bonding techniques

J.C.P. Chuang and S.M. El-Ghazaly. "Integration of air-gap transmission lines on doped silicon substrates using glass microbump bonding techniques." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part II [T-MTT] (Special Issue on Innovative Integration Techniques for Microwave and Millimeter-Wave Circuits)): 1850-1855.

Air-gap transmission-line structures have been fabricated and integrated on doped silicon substrates using glass microbump bonding (GMBB) techniques. The air-gap transmission lines have the advantages of low losses and low dispersion compared to conventional uniplanar transmission lines on semiconductor substrate. This bonding technique provides an alternative approach for both monolithic microwave integrated circuits (MMICs) and optoelectronic integrated circuits (OEICs) on silicon substrates. To demonstrate the potential of air-gap structures, several transmission-line configurations are fabricated and tested. The measured data are compared with simulation results. The results confirm the air-gap structures low-loss capabilities. To further explore the advantage of this bonding technique, several spiral inductors are fabricated in air-gap configurations. Their measured characteristics demonstrate the low dispersion potential of this technology. Finally, the integration of air-gap interconnects for OEICs on silicon CMOS circuitry is also proposed.

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Optimized irregular structures for spatial- and temporal-field transformation

T. ul Haq, K.J. Webb and N.C. Gallagher. "Optimized irregular structures for spatial- and temporal-field transformation." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part II [T-MTT] (Special Issue on Innovative Integration Techniques for Microwave and Millimeter-Wave Circuits)): 1856-1867.

In a bounded region such as a waveguide, a mode is an eigensolution of the electromagnetic-wave equation with particular boundary conditions imposed. Conversion from one mode to another through a mode converter could be accomplished by using a scatterer located within the waveguide. Generalizing to an arbitrary domain, either within a waveguide or in unbounded media, a field transformer converts one spatial field to another as a function of frequency. Mode-control elements usually employ periodic structures and a special case of this mode conversion is filtering (amplitude and phase control) with the same input and output mode. We have developed a new kind of field transformer which uses aperiodic structures. Specific designs are arrived at through numerical optimization of a cost function representing the mode transformation. Rather than effecting field transformations using a series of small geometry perturbations, our concept forcefully changes the field using an optimized structure. The optimization process allows consideration of a number of electrical and mechanical issues, such as efficiency, bandwidth, size, and amenability to manufacture. We present designs for microwave mode converters using our optimized irregular structure concept and compare them with those achieved using a periodic coupled-mode concept. These designs show dramatic improvements in performance and physical size, while incorporating a dimensional constraint and sensitivity analysis that provides for ease in fabrication.

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RF-MEMS switches for reconfigurable integrated circuits

E.R. Brown. "RF-MEMS switches for reconfigurable integrated circuits." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part II [T-MTT] (Special Issue on Innovative Integration Techniques for Microwave and Millimeter-Wave Circuits)): 1868-1880.

This paper deals with a relatively new area of radio-frequency (RF) technology based on microelectro-mechanical systems (MEMS). RF MEMS provides a class of new devices and components which display superior high-frequency performance relative to conventional (usually semiconductor) devices, and which enable new system capabilities. In addition, MEMS devices are designed and fabricated by techniques similar to those of very large-scale integration, and can be manufactured by traditional batch-processing methods. In this paper, the only device addressed is the electrostatic microswitch - perhaps the paradigm RF-MEMS device. Through its superior performance characteristics, the microswitch is being developed in a number of existing circuits and systems, including radio front-ends, capacitor banks, and time-delay networks. The superior performance combined with ultra-low-power dissipation and large-scale integration should enable new system functionality as well. Two possibilities addressed here are quasi-optical beam steering and electrically reconfigurable antennas.



Distributed MEMS true-time delay phase shifters and wide-band switches

N.S. Barker and G.M. Rebeiz. "Distributed MEMS true-time delay phase shifters and wide-band switches." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part II [T-MTT] (Special Issue on Innovative Integration Techniques for Microwave and Millimeter-Wave Circuits)): 1881-1890.

Wide-band switches and true-time delay (TTD) phase shifters have been developed using distributed microelectromechanical system (MEMS) transmission lines for applications in phased-array and communication systems. The design consists of a coplanar waveguide (CPW) transmission line ($W=G=100$ /spl mu/m) fabricated on a 500 /spl mu/m quartz substrate with fixed-fixed beam MEMS bridge capacitors placed periodically over the transmission line, thus creating a slow-wave structure. A single analog control voltage applied to the center conductor of the CPW line can vary the phase velocity of the loaded line by pulling down on the MEMS bridges to increase the distributed capacitive loading. The resulting change in the phase velocity yields a TTD phase shift. Alternatively, the control voltage can be increased beyond the pull-down voltage of the MEMS bridges such that the capacitive loading greatly increases and shorts the line to ground. The measured results demonstrate 0-60 GHz TTD phase shifters with 2 dB loss/118/spl deg/ phase shift at 60 GHz (/spl sim/4.5-ps TTD) and 1.8 dB loss/84/spl deg/ phase shift at 40 GHz. Also, switches have been demonstrated with an isolation of better than 40 dB from 21 to 40 and 40 to 60 GHz. In addition, a transmission-line model has been developed, which results in very close agreement with the measured data for both the phase shifters and switches. The pull-down voltage is 10-23 V, depending on the residual stress in the MEMS bridge. To our knowledge, this paper presents the first wide-band TTD MEMS phase shifters and wide-band switches to date.



Abstracts

Progress in active integrated antennas and their applications

Y. Qian and T. Itoh. "Progress in active integrated antennas and their applications." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part II [T-MTT] (Special Issue on Innovative Integration Techniques for Microwave and Millimeter-Wave Circuits)): 1891-1900.

Active integrated antennas (AIAs) provide a new paradigm for designing modern microwave and millimeter-wave architecture with desirable features such as compactness, light weight, low cost, low profile, minimum power consumption, and multiple functionality. This paper reviews recent research and development related to this emerging technology with emphasis on its applications in high-efficiency radio-frequency (RF) front-end, millimeter-wave power combining, beam steering, and retrodirective arrays, as well as wireless sensors. Optical controlling techniques for AIA's are also described.



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Novel architectures for high-efficiency amplifiers for wireless applications

V. Radisic, Y. Qian and T. Itoh. "Novel architectures for high-efficiency amplifiers for wireless applications." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part II [T-MTT] (Special Issue on Innovative Integration Techniques for Microwave and Millimeter-Wave Circuits)): 1901-1909.

This paper presents three novel architectures for high-efficiency amplifiers relying on new harmonic-tuning techniques. These methods yield high-efficiency power amplifiers and reduce unwanted harmonic radiation from the transmitter front end. The first method uses the active integrated-antenna approach to perform harmonic tuning. The second method uses a nontraditional periodic microstrip filter, which allows broadband harmonic tuning. Finally, the third method combines the previous two approaches. Each technique is illustrated by a design example of a power amplifier integrated with an antenna. Guidelines for choosing the appropriate antenna structure and for designing the periodic structures are also presented. Another design issue is inclusion of the antenna and/or periodic structures into the amplifier simulation. To do this, a hybrid approach combining the finite-difference time-domain (FDTD) analysis and harmonic-balance simulation is employed.

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Microwave phase conjugation using antenna arrays

Yian Chang, H.R. Fetterman, I.L. Newberg and S.K. Panaretos. "Microwave phase conjugation using antenna arrays." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part II [T-MTT] (Special Issue on Innovative Integration Techniques for Microwave and Millimeter-Wave Circuits)): 1910-1919.

A technique has been developed and tested for achieving phase conjugation in the microwave and millimeter-wave regime. The effective nonlinearity required for this phase-conjugation process is provided by electronic mixing elements feeding an array of antennas. Using these balanced mixing circuits in conjunction with a one-dimensional array antenna, we have demonstrated two-dimensional free-space phase conjugation at 10.24 GHz. A critical factor of this technique is the delivery of a $2/\text{spl } \omega/$ pump signal to each array element with the same phase. Two types of interconnects, electrical and a more versatile optical technique, have been implemented to distribute the pump signal in our demonstrations. In both systems, two-dimensional free-space phase conjugation was observed and verified by directly measuring the electric-field amplitude and phase distribution under various conditions. The electric-field wave-fronts exhibited retro-directivity and the auto-correction characteristics of phase conjugation. Furthermore, these experiments have shown amplified conjugate-wave power up to ten times of that of the incoming wave. This amplifying ability demonstrates the potential of such arrays to be used in novel communications applications.



Abstracts

Injection- and phase-locking techniques for beam control [antenna arrays]

R.A. York and T. Itoh. "Injection- and phase-locking techniques for beam control [antenna arrays]." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part II [T-MTT] (Special Issue on Innovative Integration Techniques for Microwave and Millimeter-Wave Circuits)): 1920-1929.

Applications of millimeter-wave radar, imaging, and communication technology requires cost-effective implementation of intelligent scanning antenna systems. Injection-locking and phase-locked-loop (PLL) techniques can be used to achieve synchronous operation of a number of antenna array elements, and allow for the manipulation of the phase distribution without additional phase-shifting circuitry, suggesting a potential for low-cost beam-scanning systems. This paper describes a number of techniques, with an assessment of some remaining technical challenges for practical implementation.



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Novel beam-control techniques using dielectric-image-line-fed microstrip patch-antenna arrays for millimeter-wave applications

Ming-Yi Li and Kai Chang. "Novel beam-control techniques using dielectric-image-line-fed microstrip patch-antenna arrays for millimeter-wave applications." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part II [T-MTT] (Special Issue on Innovative Integration Techniques for Microwave and Millimeter-Wave Circuits)): 1930-1935.

This paper reports novel beam-control methods which have the potential of low cost and simplicity. The beam direction of the antenna array is controlled by changing the distance between the perturbed dielectric image line (DIL) and a movable reflector plate. A rigorous hybrid-mode theoretical analysis is developed for calculating the dispersion of propagation constants in DILs without or with the movable reflector plate and, then, for designing beam-control patch-antenna arrays. Experimental results of scanning angles agree well with theoretical predictions at Ka-band frequencies.

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Thin frequency-selective lattices integrated in novel compact MIC, MMIC, and PCA architectures

H. Contopanagos, Lijun Zhang and N.G. Alexopoulos. "Thin frequency-selective lattices integrated in novel compact MIC, MMIC, and PCA architectures." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part II [T-MTT] (Special Issue on Innovative Integration Techniques for Microwave and Millimeter-Wave Circuits)): 1936-1948.

We analyze and optimize the design of novel composite materials for ICs and printed circuit antenna (PCA) applications. We are using a variety of finite artificial lattices (FALs) carrying passive metallo-dielectric unit cells. We first examine and optimize these lattices as freestanding structures, regarding them as FSSs and space filters. We obtain several designs for appropriate metallo-dielectric unit cells, as well as stacking geometries for constructing thin laterally infinite artificial lattices. Further, we examine the action of the corresponding FAL within integrated architectures, emphasizing crosstalk suppression, circuit-coupling tailoring, and gain enhancement. We find very significant directive gain enhancements for compact packaged PCA applications. Finally, anomalous scaling of the resulting circuits and tunable designs are also presented.

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Element efficiency and noise in grid arrays

M.P. De Lisio, R.M. Weikle, II and D.B. Rutledge. "Element efficiency and noise in grid arrays." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part II [T-MTT] (Special Issue on Innovative Integration Techniques for Microwave and Millimeter-Wave Circuits)): 1949-1955.

The element efficiency of a phased array is the ratio of the radiated-to-available power of a single element, when only that element is excited. We relate this element efficiency to the output noise power generated by a quasi-optical grid amplifier array. Both electromagnetic and thermodynamic derivations are presented. These ideas are used to predict the total noise power and noise radiation pattern of grid arrays. The results are also extended to show that the output noise temperature of the entire array will be the same as the output noise temperature of a single element.

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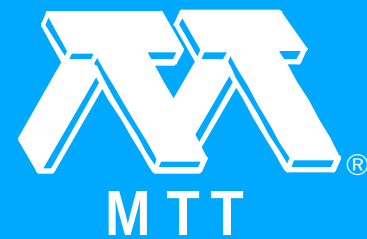


Abstracts

Properties of periodic arrays of symmetric complementary structures and their application to grid amplifiers

A. Moussessian, J.J. Rosenberg and D.B. Rutledge. "Properties of periodic arrays of symmetric complementary structures and their application to grid amplifiers." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part II [T-MTT] (Special Issue on Innovative Integration Techniques for Microwave and Millimeter-Wave Circuits)): 1956-1963.

Deschamps' theorem for n-terminal complementary structures is reviewed. An extension to Deschamps' theorem for a class of three-terminal bounded structures with one axis of symmetry is presented. It is shown that, for these structures, a simple relationship between the impedances of the odd mode of the original structure and the admittances of the even mode of the complementary structure exists, and that these modes are orthogonal. Using this, a self-complementary grid amplifier is designed and the measured results are presented.



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Quasi-optical transmit/receive front ends

Z. Popovic and A. Mortazawi. "Quasi-optical transmit/receive front ends." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part II [T-MTT] (Special Issue on Innovative Integration Techniques for Microwave and Millimeter-Wave Circuits)): 1964-1975.

Quasi-optical (QO) active circuits have originally received interest for power generation by large-scale power combining of solid-state devices at microwave and millimeter-wave frequencies. Here, we present an overview of QO components developed with functionality in mind, with an emphasis on bidirectional amplifier arrays for transmit/receive (T/R) front ends. We discuss possible advantages of the QO architecture for communications and radar. The following three QO bidirectional arrays are presented: 1) a nine-element X-band patch antenna array with different polarizations in T/R modes; 2) a 24-element X-band slot lens array with switches for the T/R paths; and 3) a 22-element K/spl alpha/-band patch lens array using monolithic microwave integrated circuits (MMICs).

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A terahertz grid frequency doubler (Nov. 1998, Part II [T-MTT])

A. Moussessian, M.C. Wanke, Yongjun Li, Jung-Chih Chiao, J.S. Allen, T.W. Crowe and D.B. Rutledge. "A terahertz grid frequency doubler (Nov. 1998, Part II [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part II [T-MTT] (Special Issue on Innovative Integration Techniques for Microwave and Millimeter-Wave Circuits)): 1976-1981.

We present a 144-element terahertz quasi-optical grid frequency doubler. The grid is a planar structure with bow-tie antennas as a unit cell, each loaded with a planar Schottky diode. The maximum output power measured for this grid is 24 mW at 1 THz for 3.1-/spl mu/s 500-GHz input pulses with a peak input power of 47 W. An efficiency of 0.17% for an input power of 6.3 W and output power of 10.8 mW is measured. To date, this is the largest recorded output power for a multiplier at terahertz frequencies. Input and output tuning curves are presented and an output pattern is measured and compared to theory.





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Voltage-controlled biphase attenuator and vector synthesizer for monolithic microwave signal processors

Y. Suzuki, T. Ohira and H. Ogawa. "Voltage-controlled biphase attenuator and vector synthesizer for monolithic microwave signal processors." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part II [T-MTT] (Special Issue on Innovative Integration Techniques for Microwave and Millimeter-Wave Circuits)): 1982-1985.

A GaAs monolithic voltage-controlled biphase attenuator and a vector synthesizer, which utilize remote-pinchoff cold field-effect transistors (RePOFETs), are newly developed for microwave signal-processor applications. Their features are very small circuit size, which permits dense integration, and high control linearity. Lumped-constant topologies and internal impedance optimization successfully reduce the sizes of the attenuator and vector synthesizer to just 0.5 and 2.1 mm/sup 2/ respectively. The control sensitivity deviation exhibited is within /spl plusmn/5% for over 50% of the full control range. The uniformity of the measured vector constellation is also improved by the RePOFETs.

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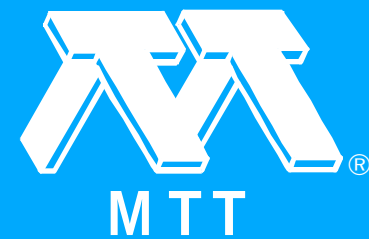
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Wide-band radiometry for remote sensing of oil films on water

E.R. Brown, O.B. McMahon, T.J. Murphy, G.G. Hogan, G.D. Daniels and G. Hover. "Wide-band radiometry for remote sensing of oil films on water." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 1989-1996.

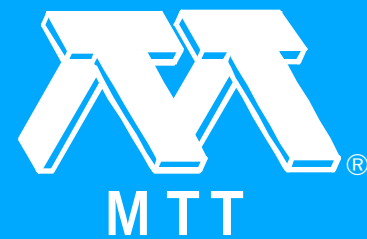
Total-power radiometry is applied over a wide-frequency band (26-40 GHz) to measure homogeneous and emulsified (40%:60% oil:water composition) oil films on water. The resulting brightness-temperature ($T_{\text{sub B}}$) spectra contain substantially more information about the film than the spot-frequency measurements of previous work. In thin homogeneous films (~ 3 mm or less), the $T_{\text{sub B}}$ spectra have the same monotonically increasing frequency dependence as the bare-water spectrum, but are distinguishable from the water by a positive $T_{\text{sub B}}$ offset. For thicker homogeneous films, oscillations in the $T_{\text{sub B}}$ spectra occur that have a period inversely related to the thickness of the film. For emulsified films, the $T_{\text{sub B}}$ offset is greater than that of a homogeneous film of the same thickness, and oscillations in $T_{\text{sub B}}$ occur, even for the thinnest (1 mm) emulsion tested. However, the amplitude of these oscillations is much smaller than for homogeneous films because of losses in the emulsion. Hence, the key result of this paper is that wide-band radiometry enables both the unambiguous determination of the thickness of homogeneous oil and the discrimination of homogeneous oil from emulsified films, at least in the range of thickness >1 mm.



A configuration-oriented SPICE model for multiconductor transmission lines in an inhomogeneous medium

A. Tripathi and V.K. Tripathi. "A configuration-oriented SPICE model for multiconductor transmission lines in an inhomogeneous medium." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 1997-2005.

A configuration-oriented SPICE model for multiple coupled lines in an inhomogeneous medium is presented in this paper. The circuit model consists of a network of uncoupled transmission lines and is readily modeled with simulation tools like LIBRA and SPICE, and provides an equivalent-circuit representation which is simple and topologically meaningful as compared to the model based on modal decomposition. This configuration-oriented model is derived by decomposing the immittance matrices associated with an n coupled-line $2n$ -port system. Time- and frequency-domain simulations of typical coupled-line multiports are included to exemplify the utility of the model. The model is useful for the simulation and design of general single and multilayer coupled-line components such as filters and couplers and investigation of signal integrity issues, including crosstalk in interconnects associated with high-speed digital- and mixed-signal electronic modules and packages.



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Tuning a bandpass filter by optical control of a negative-resistance circuit

Y. Yamamoto, Y. Imon, S. Mikumo and M. Katsuragi. "Tuning a bandpass filter by optical control of a negative-resistance circuit." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2006-2010.

A novel tunable active bandpass filter is presented in X-band. Basically, this is an end-coupled half-wavelength microstrip bandpass filter coupled by a high-Q value negative-resistance circuit, which is optically tunable. In this filter, one MESFET works both as a tuning element and negative resistance. To increase the tunability of the active MESFET circuit compared with the half-wavelength resonator, the port of the negative resistance is connected to the open stub through one side line in the quarter-wavelength coupler. Tuning range of 123 MHz is achieved by optical tuning. This optically tunable range of the active bandpass filter exceeds 1% of the center frequency.



A rectangular dielectric waveguide technique for determination of permittivity of materials at W-band

Z. Abbas, R.D. Pollard and R.W. Kelsall. "A rectangular dielectric waveguide technique for determination of permittivity of materials at W-band." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2011-2015.

The rectangular dielectric waveguide (RDWG) technique has been previously described for the determination of complex permittivity of a wide class of dielectric materials of various thicknesses and cross sections. This paper presents a unified RDWG technique for the determination of the dielectric constant of materials. Some measurement results are reported at W-band frequencies to demonstrate the usefulness of the RDWG technique where other techniques are usually constrained by the sample dimensions.



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Multitone frequency-domain simulation of nonlinear circuits in large- and small-signal regimes

N.B. De Carvalho and J.C. Pedro. "Multitone frequency-domain simulation of nonlinear circuits in large- and small-signal regimes." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2016-2024.

Computer simulation of general microwave nonlinear circuits excited by a large number of input tones is addressed. The algorithm, based on the spectral-balance method, uses novel index-vector and convolution-matrix generation techniques. That, in conjunction with a new nonlinear-device modeling approach (which directly takes into account the higher order derivatives of the I/V and Q/V characteristics), allowed the prediction of such complex behavior as spectral regrowth and noise-power ratio (NPR) tests of a class-B power amplifier or multitone intermodulation phenomena in a saturated multioctave amplifier.



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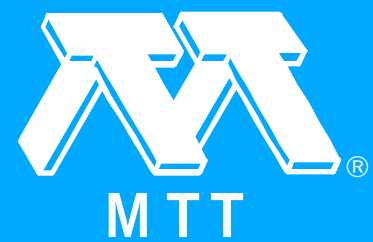
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Input impedance conditions for minimizing the noise figure of an analog optical link (Dec. 1998, Part I [T-MTT])

E.I. Ackerman, C. Cox, III, G. Betts, H. Roussell, F. O'Donnell and K. Ray. "Input impedance conditions for minimizing the noise figure of an analog optical link (Dec. 1998, Part I [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2025-2031.

We use an equivalent-circuit model to derive the minimum noise figure (NF) for an amplifierless optical analog link with a perfect lossless input impedance-matching circuit. This minimum, which is 3 dB, is called the lossless passive match limit. We contrast the link model with an analogous equivalent-circuit model for a transistor amplifier, which does not have the same limiting NF under this impedance-matching condition. It turns out that the link's 3-dB limit arises from the ohmic nature of the impedance of the device that modulates the light, and not from the electro-optic conversion processes in the link. In a prior experimental link, with near-perfect impedance matching, dissipative loss in our input circuit precluded achieving a measured NF of less than 4 dB. Investigation of the effects of input impedance mismatch indicates that mismatch can actually lower the NP to below 3 dB even when dissipative loss is present in the input circuit. We have used this mismatch effect to reduce the measured NF of our link to 2.5 dB at 130 MHz. We believe this is the first demonstration of amplifierless-link NF of less than 3 dB.

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A broad-band balanced HEMT frequency doubler in uniplanar technology

A.S. Yanev, B.N. Todorov and V.Z. Ranev. "A broad-band balanced HEMT frequency doubler in uniplanar technology." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2032-2034.

Design and performance of a simple balanced high electron-mobility transistor doubler in uniplanar technology are described. The uniplanar in-phase and out-of-phase T-junctions with 2-octave bandwidth and a hybrid ring coupler with more than octave bandwidth have also been developed and investigated as a part of the doubler circuits. Measurements show more than 3-dB conversion gain, effective fundamental- and odd-harmonics suppression (>25 dB) in octave bandwidth (output frequency from 6 to 12 GHz), and maximum conversion gain of 8.8 dB at 3-dBm-input power level. The uniplanar design and simplicity of the circuit itself make the proposed frequency doubler suitable for monolithic-microwave integrated-circuit fabrication in millimeter-wave range.





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Improved 240-GHz subharmonically pumped planar Schottky diode mixers for space-borne applications

I. Mehdi, S.M. Marazita, D.A. Humphrey, Trong-Huang Lee, R.J. Dengler, J.E. Oswald, A.J. Pease, S.C. Martin, W.L. Bishop, T.W. Crowe and P.H. Siegel. "Improved 240-GHz subharmonically pumped planar Schottky diode mixers for space-borne applications." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2036-2042.

Low-noise broad intermediate frequency (IF) band 240-GHz subharmonically pumped planar Schottky diode mixers for space-borne radiometers have been developed and characterized. The planar GaAs Schottky diodes are fully integrated with the RF/IF filter circuitry via the quartz-substrate upside-down integrated device (QUID) process resulting in a robust and easily handled package. A best double-sideband-mixer noise temperature of 490 K was achieved with 3 mW of local-oscillator power at 2-GHz IF. Over an IF band of 1.5-10 GHz, the noise temperature is below 1000 K. This state-of-the-art performance is attributed to lower parasitic capacitance devices and a low-loss waveguide circuit. Device fabrication technology and the resulting RF mixer performance obtained in the 200-250-GHz frequency range will be described.





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40-GHz/150-ns versatile pulsed measurement system for microwave transistor isothermal characterization

J.-P. Teyssier, P. Bouysse, Z. Ouarch, D. Barataud, T. Peyretailade and R. Quere. "40-GHz/150-ns versatile pulsed measurement system for microwave transistor isothermal characterization." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2043-2052.

A versatile pulsed I(V) and 40-GHz RF measurement system is described with all the know-how and methods to perform efficient, safe, and reliable nonlinear transistor measurements. Capability of discrimination between thermal and trapping effects with a pulse setup is demonstrated. Capture and emission constant times of trapping effects are measured. A method to electrically measure the thermal resistance and capacitance of transistors with a pulse setup is proposed.

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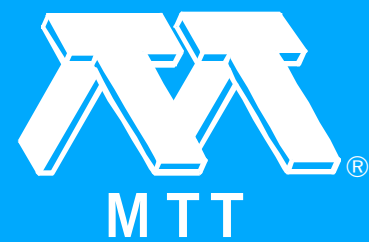
Design and experiments of a high-conversion-efficiency 5.8-GHz rectenna

J.O. McSpadden, Lu Fan and Kai Chang. "Design and experiments of a high-conversion-efficiency 5.8-GHz rectenna." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2053-2060.

A high-efficiency rectenna element has been designed and tested at 5.8 GHz for applications involving microwave-power transmission. The dipole antenna and filtering circuitry are printed on a thin duroid substrate. A silicon Schottky-barrier mixer diode with a low breakdown voltage is used as the rectifying device. The rectenna element is tested inside a waveguide simulator and achieves an RF-to-DC conversion efficiency of 82% at an input power level of 50 mW and 327 /spl Omega/ load. Closed-form equations are given for the diode efficiency and input impedance as a function of input RF power. Measured and calculated efficiency results are in good agreement. The antenna and circuit design are based on a full-wave electromagnetic simulator. Second harmonic power levels are 21 dB down from the fundamental input power.

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Miniature low-power submillimeter-wave spectrometer for remote sensing in the solar system

O. Boric-Lubrecke, R.F. Denning, M.A. Jansen and M.A. Frerking. "Miniature low-power submillimeter-wave spectrometer for remote sensing in the solar system." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2061-2067.

Mass and power for the next generation of NASA's heterodyne spectrometers must be greatly reduced to satisfy the constraints of future small-spacecraft missions. In this paper, we present a new receiver concept for remote sensing in the solar system, with greatly reduced mass, power, and size compared to instruments implemented in current missions. This spectrometer was originally proposed for operation in the vicinity of the 557-GHz emission from the H/sub 2/O ground-state transition. With the 557-GHz mixer and associated multiplier chain still under development, we prototyped a 220-GHz version of the instrument to verify the receiver concept, and experimentally demonstrated its functionality. The 220-GHz prototype Schottky-diode receiver requires less than 4.8 W, and has a mass of less than 1.1 kg-more than a factor of ten in mass and power reduction compared to current instruments. These significant savings, achieved through minimizing the number of receiver components, do not compromise the functionality necessary, e.g., for a surface-based Mars atmospheric sounding instrument. For the 557-GHz version, we anticipate that the total mass would be about the same as that of the millimeter-wave prototype, while required power would be reduced by about 1.5 W with the use of InP MMIC amplifiers.

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Abstracts

Automated characterization of HF power transistors by source-pull and multiharmonic load-pull measurements based on six-port techniques

G. Berghoff, E. Bergault, B. Huyart and L. Jallet. "Automated characterization of HF power transistors by source-pull and multiharmonic load-pull measurements based on six-port techniques." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2068-2073.

An original measurement system for nonlinear microwave power-transistor characterization using six-port reflectometers is presented. It allows independent active tuning of the output impedances at f_0 and $2f_0$ (multiharmonic load-pull) and variation of the source impedance at the input port at f_0 (source-pull). An appropriate search algorithm enables automatic optimization of the output impedances and leads to fast user-friendly operation of the system. Experimental results are shown for a commercial GaAs MESFET power transistor at $f_0=2$ GHz.



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SAR distribution and temperature increase in an anatomical model of the human eye exposed to the field radiated by the user antenna in a wireless LAN

P. Bernardi, M. Cavagnaro, S. Pisa and E. Piuzzi. "SAR distribution and temperature increase in an anatomical model of the human eye exposed to the field radiated by the user antenna in a wireless LAN." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part 1 [T-MTT]): 2074-2082.

Wireless personal communication is a rapidly expanding sector, particularly in the field of cellular mobile phones and wireless local area networks (WLAN's). In an indoor WLAN system, the user of the mobile terminal can find himself in close proximity to the radiating antenna. It is, therefore, important to consider possible health hazards due to this type of exposure. As the most considered adverse effects of the electromagnetic (EM) fields are of thermal nature, particularly with reference to the eye, in this paper, the authors have evaluated the temperature increase induced in a human eye exposed to WLAN-like fields. In particular, they have considered possible WLAN's operating in the range between 6-30 GHz, so that the incident field can be simulated via a plane wave. As a first step, the authors have computed the specific absorption rate (SAR) distribution in a human-eye anatomical model, developed from the "visible human" data set, by using the finite-difference time-domain (FDTD) numerical technique with a cell resolution of 0.5 mm. Starting from the calculated SAR values, the heating distribution has been derived through the bioheat equation, which has been solved using an explicit finite-difference scheme. Temperature increases of the order of 0.04/spl deg/C have been calculated in the eye lens with an incident power density of 1 mW/cm/sup 2/ at 6 GHz. Lower heating is obtained in the lens when the frequency increases. Finally, considerations about the exposure limits in the considered frequency range are made.



Relative-intensity-noise cancellation in bandpass external-modulation links

R. Helkey. "Relative-intensity-noise cancellation in bandpass external-modulation links." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2083-2091.

A new method of optically summing time-shifted complementary signals to cancel relative intensity noise (RIN) in narrow-band external-modulation optical links is proposed and demonstrated. Differential-link noise figure and dynamic-range improvement are compared to the conventional low-biased modulator configuration for suboctave applications. RIN suppression of 12 dB at 4 GHz is demonstrated.



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Modified transmission and reflection coefficients of nonuniform transmission lines and their applications

Te-Wen Pan and Ching-Wen Hsue. "Modified transmission and reflection coefficients of nonuniform transmission lines and their applications." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2092-2097.

By employing the ABCD transmission matrix of a transmission line, we formulate the reflection and transmission coefficients of a nonuniform line as polynomial ratios in Z-transforms. Such formulations reveal explicit relationships between transmission and reflection coefficients of a nonuniform line. These formulations, in conjunction with a reconstruction method, lead to the realization of nonuniform lines from either the reflection or transmission coefficients. Several examples are presented to illustrate the applications of modified transmission and reflection coefficients in practical circuits.

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Micromechanical tuning elements in a 620-GHz monolithic integrated circuit

V.M. Lubecke, W.R. McGrath, P.A. Stimson and D.B. Rutledge. "Micromechanical tuning elements in a 620-GHz monolithic integrated circuit." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2098-2103.

While monolithic integrated-circuit technology promises a practical means for realizing reliable reproducible planar millimeter and submillimeter-wave circuits, conventional planar circuits do not allow for critical post-fabrication optimization of performance. A 620-GHz quasi-optical monolithic detector circuit is used here to demonstrate the performance of two integrated micromechanical planar tuning elements. This is the first reported demonstration of integrated micromechanical tuning at submillimeter wavelengths. The tuning elements, called sliding planar backshorts (SPBs), are used to adjust the electrical length of planar transmission-line tuning stubs to vary the power delivered between a substrate-lens coupled planar antenna and a thin-film bismuth detector over a range of nearly 15 dB. The circuit performance agrees with theoretical calculations and microwave measurements of a -0.06-dB reflection coefficient made for a scale model of the integrated tuners. The demonstrated tuning range for the SPB tuners indicates that they can be valuable for characterizing components in developmental circuits and for optimizing the in-use performance of various millimeter and submillimeter-wave integrated circuits.



A W-band self-oscillating subharmonic MMIC mixer

M.J. Roberts, S. Iezekiel and C.M. Snowden. "A W-band self-oscillating subharmonic MMIC mixer." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2104-2108.

A novel 77 GHz subharmonically pumped self-oscillating mixer has been implemented using monolithic-microwave integrated-circuit (MMIC) technology. The microstrip mixer achieves mixing and doubling simultaneously using a single $4 \mu\text{m}/15 \mu\text{m}/0.15 \mu\text{m}$ gate-length pseudomorphic high electron-mobility transistor, eliminating the need for an external local oscillator. The total circuit size is $1 \text{ mm} \times 2 \text{ mm}$, including coplanar probing pads. The mixer exhibits a measured double-sideband (DSB) conversion loss of 11.0 dB at 77.6 GHz and an average measured DSB conversion loss of 15 dB from 70 to 85 GHz, which compares well with simulated results. To the authors' knowledge, this is the first demonstration of a subharmonically pumped MMIC self-oscillating mixer operating with state-of-the-art performance at W-band frequencies.





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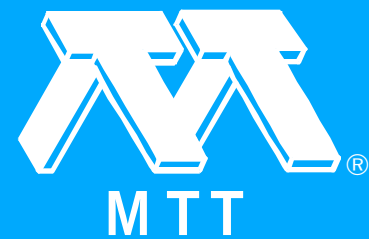
Broad-band microwave characterization of a tri-layer structure using a coaxial discontinuity with applications for magnetic liquids and films

N.-E. Belhadj-Tahar, O. Dubrunfaut and A. Fourier-Lamer. "Broad-band microwave characterization of a tri-layer structure using a coaxial discontinuity with applications for magnetic liquids and films." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2109-2116.

An analytic technique is described, which allows us to determine simultaneously complex permittivity ϵ and permeability μ of magnetic films or magnetic liquids. The cell is a gap in a coaxial line filled with three layers (for liquid samples, the two external layers are used as windows, and for films, the middle layer constitutes the substrate). Permittivity and permeability of the unknown layer(s) are computed from the S-parameters (S_{11} , S_{21}), which are measured in the gap, taking into account higher order modes excited at the discontinuity, ϵ and μ measured for ethanol and a ferrofluid (with an applied magnetic static field) are presented up to 18 GHz.

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Theory and experiment of a rectangular slot on a sphere

Kwok Wa Leung. "Theory and experiment of a rectangular slot on a sphere." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2117-2123.

A rectangular slot on a spherical cavity is studied theoretically and experimentally. The Green's functions interior and exterior to the cavity are found rigorously using the mode-matching method. An integral equation of magnetic current in the slot is formulated, which is solved using the moment method. The singularity problem in admittance calculations is tackled and the result is very computationally efficient. Both the slot and cavity resonances are examined. Moreover, the natural and forced resonances of the cavity are addressed. The effects of slot length, cavity size, excitation location, and cavity dielectric constant on the input impedance are discussed. Very good agreement between theory and experiment is obtained.

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Analysis of a partially sealed package for microstrip-line circuits

Hao-Hui Chen and Shyh-Jong Chung. "Analysis of a partially sealed package for microstrip-line circuits." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2124-2130.

A partially sealed package formed by two metal diaphragms with or without an absorber is proposed and analyzed for shielded microstrip-line circuits. The mode-matching method, method of lines, and finite-element method are mixed appropriately to investigate the package. For a specific analysis, an electric current filament and a microstrip-line gap are chosen to simulate, respectively, an active circuit element (CE) and a passive CE to be packaged. The suppression effect of the package on the spurious (higher order) modes and the influence on the dominant mode are fully studied by comparing the excitation and scattering characteristics of the CE's with and without the package.

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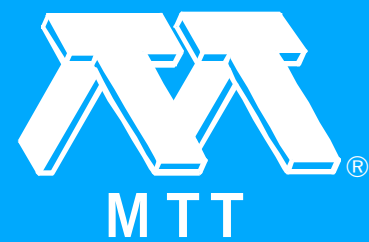


Divergent fields, charge, and capacitance in FDTD simulations

C.L. Wagner and J.B. Schneider. "Divergent fields, charge, and capacitance in FDTD simulations." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2131-2136.

Finite-difference time-domain (FDTD) grids are often described as being divergence-free in a source-free region of space. However, in the presence of a source, the continuity equation states that charges may be deposited in the grid, while Gauss's law dictates that the fields must diverge from any deposited charge. The FDTD method will accurately predict the (diverging) fields associated with charges deposited by a source embedded in the grid. However, the behavior of the charge differs from that of charge in the physical world, unless the FDTD implementation is explicitly modified to include charge dynamics. Indeed, the way in which charge behaves in an FDTD grid naturally leads to the definition of grid capacitance. This grid capacitance, though small, is an intrinsic property of the grid and is independent of the way in which energy is introduced. To account for this grid capacitance, one should use a slightly modified form of the lumped-element capacitor model currently used.





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Exploring new active materials for low-noise room-temperature microwave amplifiers and other devices

A. Blank, R. Kastner and H. Levanon. "Exploring new active materials for low-noise room-temperature microwave amplifiers and other devices." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2137-2144.

Newly discovered chemical systems, mainly the C₆₀ molecule (a molecule containing 60 carbon atoms) and porphyrin molecules (one of the basic building blocks of the hemoglobin and chlorophyll molecules) dissolved in organic solvents, have been considered as active microwave amplifying or absorbing materials. These effects are obtained under an external DC magnetic field as well as optical excitation. These materials are potentially important in certain applications in microwaves. In this paper, an attempt is made at evaluating this potential. To this end, the complex permeability of the dissolved C₆₀ molecules has been measured, under the aforementioned physical conditions, in three different experiments with the aid of three types of electron paramagnetic resonance (EPR) spectrometers, respectively. The permeability of the C₆₀ molecules, when dissolved in liquid toluene, has been found to have a negative imaginary part of about $\mu''/\mu' = -0.0055$ (i.e., attenuating for the $\exp(j\omega t)$ harmonic time dependence) over a bandwidth of 0.4 MHz around the center frequency, which is known as the Larmor frequency, and is determined by the external DC magnetic field. Alternatively, the same molecules, when dissolved in a nematic liquid crystal (LC), have either positive (amplifying) or negative (absorbing) μ''/μ' , with absolute value of about 0.005 over a bandwidth of 27 MHz. All measurements have been taken around the temperature of $T=253$ K. The lifetime of the phenomenon, during the time span that follows the laser optical excitation, is about 10 μ s. The applicability of those materials for solid state optically pumped maser amplifiers, which operate at room temperature with a very low-noise temperature or for other novel devices, is demonstrated in this paper.

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A frequency-varying method for simultaneous measurement of complex permittivity and permeability with an open-ended coaxial probe

Shoujun Wang, Maode Niu and Deming Xu. "A frequency-varying method for simultaneous measurement of complex permittivity and permeability with an open-ended coaxial probe." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2145-2147.

To measure the complex permittivity and permeability of materials simultaneously with an open-ended coaxial probe, one needs at least two independent reflections. Based on the fact that frequency is an independent variable for the probe's reflection coefficient, a new concept, namely the frequency-varying method (FVM), which achieves the independent reflections via changing frequency, has been proposed. Since the electromagnetic (EM) properties of materials themselves are functions of frequency, the FVM introduces interpolation techniques into the process of extracting EM parameters from multiple reflection coefficients. The successful experimental results on radar-absorbing coatings show the feasibility and good prospects of the FVM for characterizing EM properties of materials in situ. Compared with the thickness-varying method (TVM), which makes two measurements with two samples of different thicknesses, the FVM needs only one frequency-swept reflection measurement, thus simplifying and speeding up the measurement process, and improving accuracy and repeatability. Furthermore, the FVM has the ready capability to be extended to multiple-parameter measurements, and we may also find potential applications in other fields.

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Characterization of balanced transmission line by microwave techniques

P.D. Teal, N.L. Scott and R.G. Vaughan. "Characterization of balanced transmission line by microwave techniques." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2148-2151.

This paper presents a method of experimentally characterizing a balanced transmission line using microwave techniques. An unbalanced measurement instrument and the transmission line under test must be connected by a balun, and the effect of the balun must be removed from the measured data. Deembedding techniques are discussed briefly, and several baluns are evaluated. Two methods of performing the measurement are presented. The first uses a one-port measurement where known loads are measured from the end of various lengths of transmission line. The second uses two-port measurements with different transmission-line lengths, and is more effective for measurement of line loss. Experimental results are presented for 2 mm toughened plastic sheath (TPS) "twin and earth" power cable for the range of 0.3-300 MHz.

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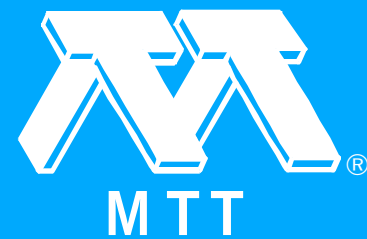


Abstracts

Crossed dipoles fed with a turnstile network

R.K. Zimmerman, Jr.. "Crossed dipoles fed with a turnstile network." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2151-2156.

A "turnstile network" is introduced which may be conveniently used for circular polarization synthesis. The network, outfitted with proper phasing stubs, forms a balanced quadrature hybrid; for an antenna with less than a perfect reflection coefficient, the reflected power will appear at an isolated port, which may be terminated, resulting in good polarization properties coupled with good input voltage standing-wave ratio. A crossed-dipole array is used as a test-bed to demonstrate the turnstile network.



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A simple method for blocking parasitic modes in a waveguide-packaged microstrip-line circuit

Hao-Hui Chen, Chun-Long Wang and Shyh-Jong Chung. "A simple method for blocking parasitic modes in a waveguide-packaged microstrip-line circuit." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2156-2159.

A simple structure formed by two metal patches symmetrically deposited at the two sides of the center microstrip is proposed and analyzed for blocking the higher order modes in a waveguide-packaged microstrip-line circuit. The variations (with the patch width) of the effective dielectric constants and field distributions of the modes in the packaged microstrip line with infinitely long side patches were first investigated using the two-dimensional (2-D) finite-element method (FEM) and the method of lines. The results suggested that there exists a range of patch widths at which the field distributions of the higher order modes are totally different from those of the microstrip line without side patches. The scattering of the patches as a function of the patch length and width was then studied using the three-dimensional (3-D) FEM with edge elements. It has been found that by simply choosing appropriate patch sizes, the parasitic higher order mode can be reflected without sacrificing the normal propagation of the dominant mode.

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Equivalent-circuit representation and explanation of attenuation poles of a dual-mode dielectric-resonator bandpass filter

I. Awai, A.C. Kundu and T. Yamashita. "Equivalent-circuit representation and explanation of attenuation poles of a dual-mode dielectric-resonator bandpass filter." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2159-2163.

A $\lambda/4$ rectangular-waveguide resonator of square cross section filled with high-permittivity ceramics has two degenerate lowest modes. A dual-mode bandpass filter based on this structure is studied, focusing on the attenuation poles at both sides of the passband. It is described how to achieve capacitive and inductive coupling between dominant modes of a resonator of square cross section. An equivalent-circuit model is proposed, including mode coupling, excitation from the external circuit, and direct coupling between input/output (I/O) electrodes. Equivalent-circuit parameters are measured and their validity is verified using simulated results. Appearance and annihilation of the attenuation poles are successfully explained by the proposed model, and attenuation pole frequencies are controlled by shifting the I/O electrode transversely.



Rapid summation of the Green's function for the rectangular waveguide

Myun-Joo Park and Sangwook Nam. "Rapid summation of the Green's function for the rectangular waveguide." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2164-2166.

A rapid calculation scheme is proposed for the potential Green's functions in the rectangular waveguide. The Ewald sum technique converts the slowly convergent Green's function series into the sum of two rapidly convergent series through the error-function transformation. The efficient numerical calculation method of the resultant expression is also presented.



Abstracts

FDTD improvement by dielectric subgrid resolution

G. Marrocco, M. Sabbadini and F. Bardati. "FDTD improvement by dielectric subgrid resolution." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2166-2169.

Material inhomogeneities are taken into account in the standard finite-difference time domain method by staircase modeling of medium boundaries. Resolution is, therefore, limited by Yee's cell sizes. In this paper, a new scheme is proposed, which improves material resolution without increasing the demand of computer resources.



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Fast and accurate analysis of waveguide filters by the coupled-integral-equations technique (Comments and Authors' Reply)

F. Arndt, P. Krauss, T. Sieverding, S. Amari, J. Bornemann and R. Vahldieck. "Fast and accurate analysis of waveguide filters by the coupled-integral-equations technique (Comments and Authors' Reply)." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part I [T-MTT]): 2170-2170.

For original paper see F. Arndt et al., *ibid.*, vol.45, pp.747-60 (1997). In the original paper, the authors analyzed a four-resonator H-plane filter with both the mode-matching technique (MMT) and a coupled-integral-equation technique (CIET). In this paper we applied the MMT utilizing all features described by them to the same filter and verified the total central processing unit (CPU) time. A reply by the original authors to our comment is included.



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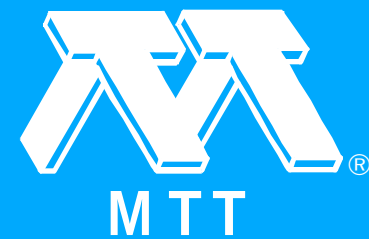
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"Inside Cover (Dec. 1998, Part II [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 0_5-0_6.



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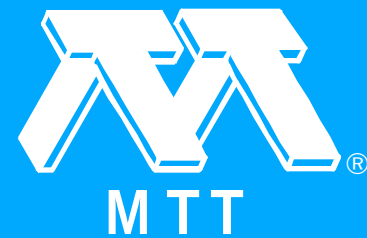
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Abstracts

Guest Editors' Overview (Dec. 1998, Part II [T-MTT])

C.R. Westgate, R.K. Gupta and S. Kiaei. "Guest Editors' Overview (Dec. 1998, Part II [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2180-2181.



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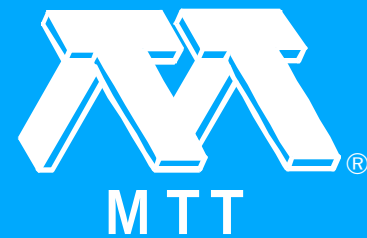
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The 1998 IEEE MTT-S International Microwave Symposium: Progress Through Microwaves (Dec. 1998, Part II [T-MTT])

S.N. Stitzer and R. Kaul. "The 1998 IEEE MTT-S International Microwave Symposium: Progress Through Microwaves (Dec. 1998, Part II [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2183-2186.



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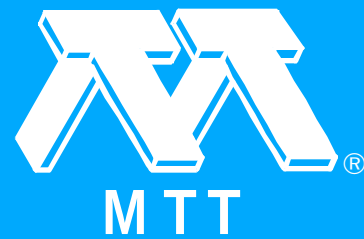
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Abstracts

The 1998 IMS Technical Program (Dec. 1998, Part II [T-MTT])

E.C. Niehenke and D.C. Webb. "The 1998 IMS Technical Program (Dec. 1998, Part II [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2187-2189.



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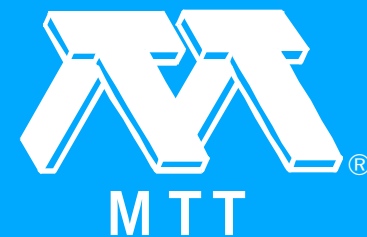
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Abstracts

1998 MTT-S Awards (Dec. 1998, Part II [T-MTT])

P.W. Staecker. "1998 MTT-S Awards (Dec. 1998, Part II [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2190-2195.



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Historical perspectives on commercial and nonmilitary government space applications of microwave systems in the Baltimore/Washington area

G. Hyde. "Historical perspectives on commercial and nonmilitary government space applications of microwave systems in the Baltimore/Washington area." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2196-2201.

The Baltimore/Washington area has made significant contributions to commercial and nonmilitary government space applications of microwaves. These cover a wide swath extending from R&D laboratory items, basically experimental/proof-of-concept, to space-qualified microwave hardware, subsystems, and systems that were launched and operated in space, to operational Earth terminal subsystems. Microwave efforts also included elements in the design of communications satellite systems, satellite payloads and hardware, and satellites for remote sensing, their payload and some hardware, and radiowave propagation on the slant (Earth-satellite) path. Unique contributions include the Applied Technology Satellite-6 (ATS-6), the discovery and characterization of gigahertz ionospheric scintillation, possibly the first electronically steerable phased array and the invention and implementation of the waveguide multimode filter, the first space-qualifiable monolithic-microwave integrated-circuit chips and subsystems, state-of-the-art altimeters, possibly the first Cesium clock for space and the first high Tc microwave filter.

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Abstracts

Record power-added-efficiency, low-voltage GOI (GaAs on insulator) MESFET technology for wireless applications

P. Parikh, J. Ibbetson, U. Mishra, D. Docter, Minh Le, K. Kiziloglu, D. Grider, J. Pusi, D. Widman, L. Kehias and T. Jenkins. "Record power-added-efficiency, low-voltage GOI (GaAs on insulator) MESFET technology for wireless applications." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2202-2207.

A record-high power-added efficiency (PAE) is obtained from a GaAs on insulator (GOI) MESFET. Al/sub 2/O/sub 3/ obtained by the wet oxidation of Al/sub 0.98/GaAs in steam is used as the insulating buffer layer. The insulating buffer results in elimination of buffer leakage and enhanced charge control. 0.35- μ m gate-length GOI MESFETs exhibiting a record PAE of 72% at a drain voltage of 3 V at 4 GHz are demonstrated.



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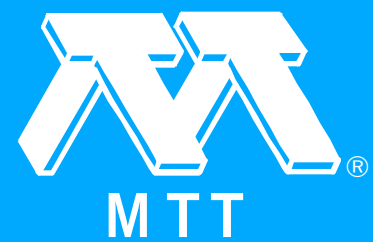
New applications of wirelessly interrogable passive SAW sensors (Dec. 1998, Part II [T-MTT])

A. Pohl and F. Seifert. "New applications of wirelessly interrogable passive SAW sensors (Dec. 1998, Part II [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2208-2212.

Applying passive wirelessly interrogable surface acoustic wave (SAW) sensors, many physical parameters can be measured. Up to now, all SAW sensor applications are performed by taking a snapshot of the sensor's response periodically and evaluating the measurand assumed to be quasi-stationary. Therefore, the upper limit for the rate of sampling of a mechanical affect to the sensor is the interrogation rate. Usually, it is in the range of some tenths of kilohertz or less, measurands with a periodicity of up to a few kilohertz can be sampled satisfactory. Even audible vibrations of machine parts can be monitored. Here, the behavior of the sensors for dynamic measurands is discussed, the mechanisms of interrogation limiting the permissible measurand's bandwidth are described, and error estimations are made. Advanced applications for the measurement of vibration and acceleration, for dynamic pressure measurement in mechanical engineering, e.g., for monitoring the tires of cars, are presented.

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A robust ultra-broad-band wireless communication system using SAW chirped delay lines

A. Springer, M. Huemer, L. Reindl, C.C.W. Ruppel, A. Pohl, F. Seifert, W. Gugler and R. Weigel. "A robust ultra-broad-band wireless communication system using SAW chirped delay lines." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2213-2219.

Design and performance of a low-cost wireless communication system for indoor and industrial environments are presented. The system is based on chirp-signal transmission to achieve a robust communication link. For the chirp expansion and compression, surface acoustic wave chirped delay lines fabricated from LiTaO/sub 3/-X112rotY are used. Center frequency, bandwidth, and chirp rate are 348.8 MHz, 80 MHz, and /spl plusmn/40 MHz//spl mu/s, respectively. An optimized square-root weighting was chosen to reduce the sidelobes of the compressed pulse to -42 dB compared to the correlation peak. The chirp filters have been deployed in a hardware demonstrator for data rates of up to 5 Mb/s. Limiting factors for the data rate according to simulations and measurements are mainly intersymbol interferences due to the time overlapping of consecutive symbols and, to a lower extent, the multipath propagation.





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L-band transmitter using Kahn EER technique

F.H. Raab, B.E. Sigmon, R.G. Myers and R.M. Jackson. "L-band transmitter using Kahn EER technique." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2220-2225.

This paper describes a 20-W peak-envelope power linear L-band transmitter based upon the Kahn envelope-elimination-and-restoration technique. A double envelope-feedback loop assures high linearity. The radio-frequency (RF) power amplifier employs a two-stage monolithic-microwave integrated-circuit driver amplifier and a 20-W power amplifier biased for class-AB operation. The class-S modulator includes a high-speed comparator and 1/2- μm heterojunction field-effect transistors in its output stage. A double envelope-feedback loop assures both high linearity and time-delay equalization for RF bandwidths to 150 kHz. With a two-tone signal, the transmitter achieves an efficiency of 56% at full power (41 dBm), and 35% at 18 dB into back-off. The third-order intermodulation distortions for a two-tone signal vary from -30 to -40 dBc over a 20-dB range of back-off. For quaternary phase-shift keying, the first and second adjacent-channel powers are -48 and -57 dBc.

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A high-power and high-efficiency monolithic power amplifier at 28 GHz for LMDS applications

M.K. Siddiqui, A.K. Sharma, L.G. Callejo and R. Lai. "A high-power and high-efficiency monolithic power amplifier at 28 GHz for LMDS applications." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2226-2232.

A high-power and high-efficiency monolithic power amplifier operating from 27.5 to 29.5 GHz is presented for local multipoint distribution service. Using 0.15- μm InGaAs/AlGaAs/GaAs pseudomorphic high electron-mobility transistor devices, the two-stage power amplifier on 4-mil GaAs substrate demonstrated greater than 16-dB small-signal gain, 32-dBm (1.6 W) power with 35% power-added efficiency. The amplifier attained peak output power of 33.9 dBm (2.4 W) and peak power-added efficiency of 37%. At the peak power level, the amplifier exhibited power densities in excess of 640 mW/mm, which is the highest output power density attained by Ka-band monolithic power amplifiers. At lower drain voltage, the amplifier attained 43% power-added efficiency with 30-dBm output power.

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Abstracts

A fast frequency-switching synthesizer with an integration circuit

H. Nosaka, T. Nakagawa and A. Yamagishi. "A fast frequency-switching synthesizer with an integration circuit." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2233-2239.

A new type of direct frequency synthesizer, which can complete frequency switching in less than a microsecond, is proposed. This yields low-spurious outputs by using a low-power analog integration circuit, whose operating principle is similar to a digital accumulator. Experimental results demonstrate successful frequency synthesizer operation.



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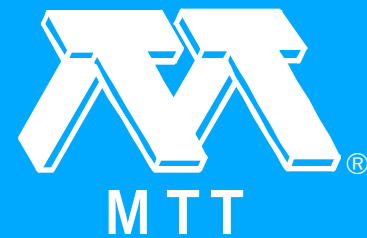


Abstracts

The distributed oscillator at 4 GHz (Dec. 1998, Part II [T-MTT])

L. Divina and Z. Skvor. "The distributed oscillator at 4 GHz (Dec. 1998, Part II [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2240-2243.

This paper describes the design and experimental verification of a tunable oscillator based on a microwave distributed amplifier. The oscillator met design expectations, being capable of continuous tuning over the range 1-3.5 GHz with good spectral purity.



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Distributed broad-band frequency translator and its use in a 1-3-GHz coherent reflectometer

P. Akkaraekthalin, S. Kee and D.W. Van Der Weide. "Distributed broad-band frequency translator and its use in a 1-3-GHz coherent reflectometer." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2244-2250.

We present the first frequency translator based on a nonlinear transmission line (NLTL) phase shifter and demonstrate its application in a coherent reflectometer, giving a performance comparable to a commercial network analyzer. Rather than forming shock waves on the NLTL with large signal excitation, we use its voltage-variable delay together with both amplitude and phase linearization to modulate the phase of a small 0.5-3.0-GHz microwave signal. The resultant single sideband modulator exhibits >45 dBc carrier and spurious suppression. This new approach has significant applications in both instrumentation and sensing, particularly because it offers a clear path toward complete integration of a coherent measurement system.

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Simulation of high-speed interconnects in a multilayered medium in the presence of incident field

I. Erdin, R. Khazaka and M.S. Nakhla. "Simulation of high-speed interconnects in a multilayered medium in the presence of incident field." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2251-2257.

Simulation of high-speed circuits and interconnects in the presence of incident electromagnetic interference is becoming an important step in the design cycle. An accurate and efficient method for the analysis of incident field coupling to traces in inhomogeneous medium is described. The method is based on the application of the physical optics technique. An interconnect circuit simulation stamp is derived. This stamp provides an easy link to current simulators and to recently developed model reduction techniques. In addition to accounting for the inhomogeneity of the medium, this method provides significant computational efficiency improvement over conventional approaches.

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Analytical model for electrical and thermal transients of self-heating semiconductor devices

Yu Zhu, J.K. Twynam, M. Yagura, M. Hasegawa, T. Hasegawa, Y. Eguchi, A. Yamada, E. Suematsu, K. Sakuno, H. Sato and N. Hashizume. "Analytical model for electrical and thermal transients of self-heating semiconductor devices." *1998 Transactions on Microwave Theory and Techniques* 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2258-2263.

Transients of self-heating semiconductor devices are theoretically investigated based on a feedback circuit model, which is composed of three sub-circuits describing the isothermal electrical characteristics, thermal impedance, and temperature dependence of the electrical characteristics of the devices, respectively. Analytical expressions of the frequency and transient responses have been derived for both the electrical and thermal characteristics of self-heating devices, yielding accurate methods to extract the thermal time constant in both the time and frequency domains. The model is verified by the transient electrical-response measurement of a GaInP/GaAs heterojunction bipolar transistor.

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Millimeter-wave characteristics of flip-chip interconnects for multichip modules

W. Heinrich, A. Jentzsch and G. Baumann. "Millimeter-wave characteristics of flip-chip interconnects for multichip modules." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2264-2268.

Electromagnetic simulation and measurement data of flip-chip transitions are presented. First-order effects are identified and design criteria for millimeter-wave multichip interconnects are derived. Results cover chip detuning and bump geometry as well as simplified modeling. In a coplanar environment, the flip-chip scheme provides interconnects with excellent low-reflective properties. For conductor-backed structures, parasitic modes occur leading to unwanted crosstalk. These effects dominate the behavior so that overall performance of the flip-chip scheme can be evaluated properly only in conjunction with the actual motherboard packaging setup.

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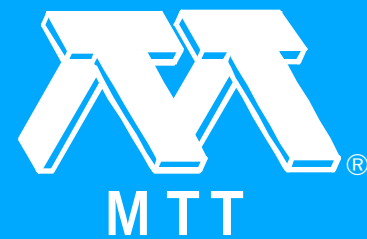


Abstracts

RF and mechanical characterization of flip-chip interconnects in CPW circuits with underfill (Dec. 1998, Part II [T-MTT])

Zhiping Feng, Wemge Zhang, Bingzhi Su, K.C. Gupta and Y.C. Lee. "RF and mechanical characterization of flip-chip interconnects in CPW circuits with underfill (Dec. 1998, Part II [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2269-2275.

RF characterization of flip-chip interconnects in coplanar waveguide (CPW) circuits with underfill is reported. The scattering-parameters have been measured up to 40 GHz for GaAs CPW through-line chips flip-chip mounted on an alumina substrate with and without an underfill epoxy. A lumped-element model of flip-chip interconnect has been developed for flip-chip assemblies with and without epoxy. Fatigue life of flip-chip assemblies has been computed for different chip sizes and substrates. The results show feasibility of using underfill encapsulant in microwave/millimeter-wave frequency range.



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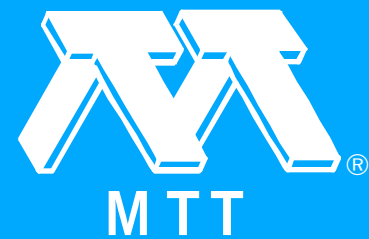
A flip-chip MMIC design with coplanar waveguide transmission line in the W-band

T. Hirose, K. Makiyama, K. Ono, T.M. Shimura, S. Aoki, Y. Ohashi, S. Yokokawa and Y. Watanabe. "A flip-chip MMIC design with coplanar waveguide transmission line in the W-band." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2276-2282.

This paper describes a design method for flip-chip monolithic millimeter-wave integrated circuits (MMICs) with a coplanar waveguide (CPW) transmission line for W-band applications. We proposed a test structure for obtaining accurate flip-chip CPW line models. We examined the transmission line characteristics of the CPW line using the test structure in the millimeter-wave range and modeled them. Using the CPW line models, we designed and fabricated both two- and three-stage amplifiers using 0.15- μm InGaP/InGaAs high electron-mobility transistor technology. The maximum power gain of the two-stage amplifier is 12 dB at 79 GHz. The three-stage amplifier has a maximum power gain of 16 dB at 77 GHz. The agreement of measured S-parameters with calculated results demonstrates that the proposed test structure is suitable for characterizing flip-chip CPW lines and provides very accurate models.

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Low-loss micromachined filters for millimeter-wave communication systems

P. Blondy, A.R. Brown, D. Cros and G.M. Rebeiz. "Low-loss micromachined filters for millimeter-wave communication systems." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2283-2288.

High-performance planar micromachined filters at 37 and 60 GHz are presented. The filters consist of a 3.5% bandwidth two-pole Chebyshev filter with transmission zeros at 37 GHz, 2.7% and 4.3% bandwidth four- and five-pole Chebyshev filters at 60 GHz, and an 8% bandwidth elliptic filter at 60 GHz. Silicon micromachining techniques combined with micropackaging have been applied to allow for very high-Q resonators resulting in low-loss filters. The 37-GHz two-pole filter exhibits a 2.3-dB port-to-port insertion loss. The 2.7% and 4.3% four- and five-pole Chebyshev filters at 60 GHz exhibit 2.8- and 3.4-dB insertion loss, and the 8% elliptic filter exhibits a 1.5-dB insertion loss. These values show a large reduction of insertion loss compared to conventional planar techniques, and can be used for planar low-cost millimeter-wave wireless communication systems.

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Spatial power combining of Gunn diodes using an overmoded-waveguide resonator at millimeter wavelengths

Jongsuck Bae, T. Unou, T. Fujii and K. Mizuno. "Spatial power combining of Gunn diodes using an overmoded-waveguide resonator at millimeter wavelengths." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2289-2294.

A millimeter-wave oscillator which incorporates an overmoded-waveguide resonator with an array of TE/sub 10/-mode waveguides containing Gunn diodes, has been developed as a means for achieving highly efficient spatial power combining. This oscillator makes use of mode conversion of radiation power from Gunn diodes in the waveguide array to the overmoded-waveguide resonator to produce high power at millimeter wavelengths. An efficiency of about 83% and an output power of 1.5 W (continuous wave) at 61.4 GHz, has been achieved with a 3/spl times/3 waveguide Gunn diode array.

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A fully distributed heterostructure-barrier varactor nonlinear transmission-line frequency multiplier and pulse sharpener

Ming Li, K. Krishnamurthi and R.G. Harrison. "A fully distributed heterostructure-barrier varactor nonlinear transmission-line frequency multiplier and pulse sharpener." 1998 *Transactions on Microwave Theory and Techniques* 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2295-2301.

The discrete symmetric heterostructure-barrier varactor (HBV) was previously developed as an unbiased frequency-tripling device that needed no second-harmonic idler circuit. Other work investigated nonlinear transmission lines (NLTs) employing discrete varactors attached to linear guiding structures. Fully distributed Schottky-varactor NLTs were excessively lossy. This paper explores NLTs based on fully distributed HBV structures. Using both a modified finite-difference time-domain method and numerical integration, it is shown that such NLT's can provide efficient tripling over a wider input bandwidth than is possible with fixed-tuned triplers. It is also demonstrated that the nonlinearity is strong enough for the NLT to act as a pulse-sharpening device.

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Abstracts

80-GHz distributed amplifiers with transferred-substrate heterojunction bipolar transistors

B. Agarwal, Q. Lee, D. Mensa, R. Pulella, J. Guthrie and M.J.W. Rodwell. "80-GHz distributed amplifiers with transferred-substrate heterojunction bipolar transistors." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2302-2307.

We report distributed amplifiers with 80 GHz bandwidth and 6.7 dB mid-band gain. These amplifiers were fabricated in the transferred-substrate heterojunction bipolar transistor integrated circuit technology. Transferred-substrate HBT's have very high $f_{\text{sub max}}$ (>400 GHz) and have yielded distributed amplifiers with record gain-bandwidth product.



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A W-band dielectric-lens-based integrated monopulse radar receiver (Dec. 1998, Part II [T-MTT])

S. Raman, N.S. Barker and G.M. Rebeiz. "A W-band dielectric-lens-based integrated monopulse radar receiver (Dec. 1998, Part II [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2308-2316.

An integrated monopulse radar receiver has been developed for tracking applications at W-band frequencies. The receiver is based on dielectric-lens-supported, coplanar-waveguide-fed slot-ring antennas integrated with $\times 2$ uniplanar subharmonic mixers. The slot-ring antenna is capable of supporting two orthogonal modes offering the possibility of dual/multiple receive polarizations. The design center frequency is 94 GHz and the IF bandwidth is 2-4 GHz. The measured DSB conversion losses of the individual receiver channels range from 14.4 to 14.7 dB at an LO frequency of 45.0 GHz and an IF of 1.4 GHz. This includes the lens reflection and absorption losses, backside radiation, RF feedline loss, mixer conversion loss, and IF distribution loss. Excellent monopulse patterns are achieved with better than 45 dB difference pattern nulls using IF monopulse processing. This translates to submilliradian angular accuracy for a 24 mm aperture. Better than 25 dB nulls are possible over a 600 MHz bandwidth. The receiver is robust with respect to RF frequency.

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Fiber-optic remoting of an ultrahigh dynamic range radar

J.E. Roman, L.T. Nichols, K.J. Williams, R.D. Esman, G.C. Tavik, M. Livingston and M.G. Parent. "Fiber-optic remoting of an ultrahigh dynamic range radar." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2317-2323.

We demonstrate, for the first time, fiber-optic remoting of an X-band radar with ultrahigh dynamic range, and show that photonic components can meet the stringent phase noise requirements for remoting modern radars. Fiber optic links were designed and built to remote the antenna and transmitter of the AN/SPQ-9B Advanced Development Model radar. The remoting links tested successfully in both transmit and receive configurations without significantly degrading the measured, postintegration, 87 dB signal-to-noise ratio of the radar. The results show the potential of photonic technology to remote the transmitter/receiver modules of active array radars.

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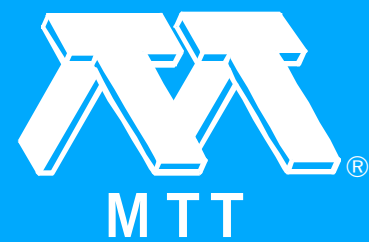
Grid oscillators with selective-feedback mirrors

Qi Sun, J.B. Horiuchi, S.R. Haynes, K.W. Miyashiro and W.A. Shiroma. "Grid oscillators with selective-feedback mirrors." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2324-2329.

Analytical and experimental results are presented that demonstrate the advantages of replacing the metal mirror of a C-band transistor-grid oscillator with two types of selective-feedback mirrors. The first mirror is a two-dimensional photonic crystal, whose frequency-, polarization-, and reflectivity-dependent characteristics result in higher radiated power, lower cross polarization, and improved locking. The second is a diode-loaded grating functioning as an electronically tunable mirror, which allows the oscillator to be amplitude-modulated.

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Absolute potential measurements inside microwave digital IC's using a micromachined photoconductive sampling probe

G. David, Tae-Yeoul Yun, M.H. Crites, J.F. Whitaker, T.R. Weatherford, K. Jobe, S. Meyer, M.J. Bustamante, B. Goyette, S. Thomas, III and K.R. Elliott. "Absolute potential measurements inside microwave digital IC's using a micromachined photoconductive sampling probe." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2330-2337.

A measurement system for internal node testing of integrated circuits using a micromachined photoconductive sampling probe is described and characterized. Special emphasis is placed upon the system performance, demonstrating how absolute voltage measurements are achieved in a DC-to-MM-wave bandwidth. The feasibility of the setup is illustrated using an InP heterojunction bipolar transistor frequency divider. Detailed waveforms at different circuit nodes and the corresponding propagation delays from within this circuit at operating frequencies up to 10 GHz are presented. The results demonstrate for the first time the use of photoconductive probes for calibration-free, absolute-voltage, DC-coupled potential measurements in high-frequency and high-speed integrated circuits.

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Electrooptic mapping of near-field distributions in integrated microwave circuits

K. Yang, G. David, S.V. Robertson, J.F. Whitaker and L.P.B. Katehi. "Electrooptic mapping of near-field distributions in integrated microwave circuits." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2338-2343.

A field mapping system based on external electrooptic sampling has been developed in order to determine the vectorial components of the electric near-field distribution within microwave integrated circuits. The capabilities of the setup are demonstrated by two-dimensional measurements of normal and tangential fields in a coplanar microwave distribution network at frequencies up to 15 GHz. Results obtained on a functioning power-distribution network, as well as on two nonfunctioning networks, show the ability of the technique to interrogate internal circuit operation and to isolate faults through investigation of the field distributions.

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Characterizing the gate-to-source nonlinear capacitor role on GaAs FET IMD performance

J.A. Garcia, A.M. Sanchez, J.C. Pedro, N.B. De Carvalho, A.T. Puente and J.L. Garcia.
"Characterizing the gate-to-source nonlinear capacitor role on GaAs FET IMD performance."
1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT]
(1998 Symposium Issue)): 2344-2355.

This paper discusses, in a mathematical form and supported by a complete special experimental characterization, the gate-to-source nonlinear capacitor contribution on small-signal intermodulation distortion (IMD) as well as other nonlinear related phenomena such as the onset of phase distortion and gain compression in GaAs FET devices. A simplified one-sided version of our previously proposed test setup and its corresponding characterization formulation are shown to conform a direct technique to extract the second- and third-order coefficients for the $C_{gs}(V_{gs})$ Taylor-series expansion. The extracted terms let us evaluate some of the most widely employed equations for this reactive nonlinearity according to their capability of reproducing its small-signal nonlinear distortion contribution. They are also shown to be responsible for some previously detected differences on IMD behavior at high frequencies and for significant variations on the load selection criteria for high carrier-to-intermodulation ratio and high output-power tradeoffs.

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Efficient transient simulation of embedded subnetworks characterized by S-parameters in the presence of nonlinear elements

R. Achar and M.S. Nakhla. "Efficient transient simulation of embedded subnetworks characterized by S-parameters in the presence of nonlinear elements." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2356-2363.

This paper presents an efficient technique for transient simulation of linear subnetworks characterized by S-parameters in the presence of nonlinear components. The proposed method is based on the recently developed model-reduction technique, complex frequency hopping. A new algorithm for computing the moments of S-parameter-based subnetworks is presented. The proposed method is suitable for simulating large number of S-parameter-based subnetworks in a general circuit environment consisting of lumped/distributed elements and nonlinear devices.

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Abstracts

Multidimensional Cauchy method and adaptive sampling for an accurate microwave circuit modeling

S.F. Peik, R.R. Mansour and Y.L. Chow. "Multidimensional Cauchy method and adaptive sampling for an accurate microwave circuit modeling." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2364-2371.

This paper presents an effective generic approach for computer-aided design of microwave circuits. We extend the one-dimensional Cauchy method for frequency-response interpolation to a multidimensional Cauchy interpolation, with respect to both frequency and physical dimensions. This paper also demonstrates the feasibility of applying adaptive sampling to the multidimensional rational-function expansion. Three examples, including optimization and Monte Carlo analysis, have been given to verify the validity of the proposed approach.



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Novel third-order distortion generator with residual IM2 suppression capabilities

Wei Huang and R.E. Saad. "Novel third-order distortion generator with residual IM2 suppression capabilities." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2372-2382.

Commonly used diode-based third-order distortion generators produce residual second-order distortion signals due to the unmatched statistical characteristics of the diodes. In this paper, a novel circuit technique is presented by which, in theory, the suppression of undesirable residual second-order distortion is achieved. A theoretical analysis of the proposed novel circuit topologies is carried out using Volterra series analysis. The residual second-order intermodulation distortions (IM2) of conventional antiparallel and bridge configurations are compared with the modified versions presented in the paper. Simulated results show that the modified antiparallel configuration possess a maximum residual IM2 46 dB lower than the one produced by the conventional configuration. The modified bridge configuration has a maximum residual IM2 36 dB lower than the one of the conventional configuration. A sensitivity analysis of the modified configurations is also presented. Experimental results indicate that 20 dB cancellation is achievable.

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Element extraction of GaAs dual-gate MESFET small-signal equivalent circuit

Wei-Kung Deng and Tah-Hsiung Chu. "Element extraction of GaAs dual-gate MESFET small-signal equivalent circuit." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2383-2390.

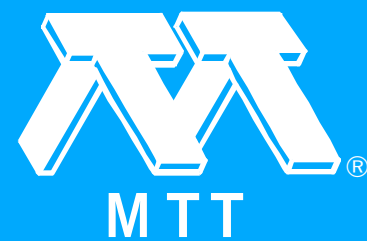
A procedure for the extraction of intrinsic and extrinsic elements of dual-gate MESFET (DGMESFET) small-signal equivalent circuit is described in this paper. All the elements to be used as the initial values for the optimization calculation are extracted from dc and RF measurements with analytical formula. The elements of extrinsic series resistance are determined by considering the distributed channel resistance under the regions of two gates with the use of the "end resistance measurement" method. The elements of extrinsic capacitance and inductance are extracted by three-port Y-matrix and Z-matrix calculation from cold measurements. The intrinsic elements of DGMESFET, which is biased properly to be two decoupled single-gate MESFET's, are directly extracted from hot measurements. The extracted element values are then optimized to fit the resulting equivalent circuit to the measured three-port S-matrix. The developed procedure gives a practical and accurate approach for DGMESFET characterization.



A hierarchical neural network approach to the development of a library of neural models for microwave design

Fang Wang, V.K. Devabhaktuni and Qi-Jun Zhang. "A hierarchical neural network approach to the development of a library of neural models for microwave design." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2391-2403.

Neural networks recently gained attention as a fast and flexible vehicle for microwave modeling, simulation, and optimization. This paper addresses a new task in this area, namely, the development of libraries of neural models for passive and active components, a task, with a potential significance to many microwave simulators. However, developing libraries of neural models is very costly due to massive data generation and repeated neural network training. A new hierarchical neural network approach is presented in this paper, allowing both microwave functional knowledge and library inherent structural knowledge to be incorporated into neural models. The library models are developed through a set of base neural models, which capture the basic characteristics common to the entire library, and high-level neural modules which map the information from base models to the library model outputs. The proposed method substantially reduces the cost of library development through reduced need for data collection and shortened time of training. The technique is demonstrated through transmission line and FET library examples.



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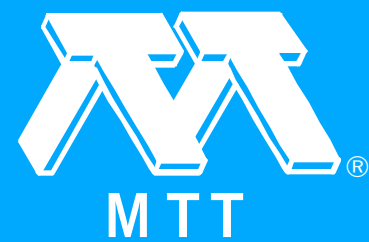
Modeling of couplings between double-ridge waveguide and dielectric-loaded resonator

Chi Wang and K.A. Zaki. "Modeling of couplings between double-ridge waveguide and dielectric-loaded resonator." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2404-2411.

Full-wave modeling of the coupling structure between a double-ridge waveguide and dielectric-loaded resonator in a rectangular cavity through an iris is presented. Eigenmodes of the double-ridge waveguide, and the discontinuities of the structures are obtained by rigorous mode-matching method. By applying the cascading procedure, the reflection coefficients of the coupling structure can be obtained. From the phase variation of the reflection coefficient and circuit theory, resonant frequency and input/output coupling of the structure are accurately determined. An equivalent circuit model of the resonant structure is established. The computed results are compared with those obtained by other methods and shown to be in good agreement, which verifies the theory.

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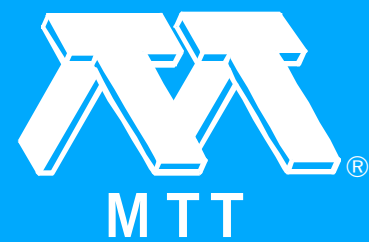
A trust region aggressive space mapping algorithm for EM optimization (Dec. 1998, Part II [T-MTT])

M.H. Bakr, J.W. Bandler, R.M. Biernacki, Shao Hua Chen and K. Madsen. "A trust region aggressive space mapping algorithm for EM optimization (Dec. 1998, Part II [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2412-2425.

A robust new algorithm for electromagnetic (EM) optimization of microwave circuits is presented. The algorithm (TRASM) integrates a trust region methodology with the aggressive space mapping (ASM). The trust region ensures that each iteration results in improved alignment between the coarse and fine models needed to execute ASM. The parameter extraction step is a crucial part of the ASM technique. The nonuniqueness of this step may result in the divergence of the technique. To improve the uniqueness of the extraction phase, we developed a recursive multipoint parameter extraction. This suggested step exploits all the available EM simulations for improving the uniqueness of parameter extraction. The new algorithm was successfully used to design a number of microwave circuits. Examples include the EM optimization of a double-folded stub filter and of a high-temperature superconducting (HTS) filter using Sonnet's em. The proposed algorithm was also used to design two-section, three-section, and seven-section waveguide transformers exploiting Maxwell Eminence. The design of a three-section waveguide transformer with rounded corners was carried out using HP HFSS. We show how the mapping can be used to carry out Monte Carlo analysis using only coarse model simulations.

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Suppression of the parasitic modes in CPW discontinuities using MCM-D technology-application to a novel 3-dB power splitter

E.A. Soliman, P. Pieters, E. Beyne and G.A.E. Vandenbosch. "Suppression of the parasitic modes in CPW discontinuities using MCM-D technology-application to a novel 3-dB power splitter." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2426-2430.

In this paper, a new method for the suppression of the parasitic modes in the coplanar waveguide (CPW)-based microwave circuits is presented. The proposed method replaces the costly and mechanically unstable air-bridges, It uses tunnels (bridges) running below (above) the CPW and isolated from it using a thin film layer. This method is convenient for MCM-D technology in which thin films are deposited over the substrate to support the required interconnects. The method is applied to the band reject filter presented in an earlier paper by Rittweger et al. (1991) and compared with the case of air-bridges. The effects of the tunnel parameters on the filter performance are presented and discussed. The new suppression mechanism is also applied on a novel 3-dB power splitter. Experimental and theoretical results of the new power splitter are presented and compared. The agreement between theory and measurements ensures the efficiency of the proposed suppression mechanism.

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Abstracts

A fully integrated multiconductor model for TLM (Dec. 1998, Part II [T-MTT])

A.J. Włodarczyk, V. Trenkic, R.A. Scaramuzza and C. Christopoulos. "A fully integrated multiconductor model for TLM (Dec. 1998, Part II [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2431-2437.

A fully integrated model of coupling between the electromagnetic field and multiconductor cabling is developed using the transmission-line matrix (TLM) method. In this model, the multiconductor cables are represented by multiconductor transmission lines which connect to the general TLM mesh. A basic TLM model of straight multiconductor lines is developed first, followed by the derivation of a general multiconductor junction model suitable for describing more complex configurations. Sample numerical results are presented to confirm validity and efficiency of the model.



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Development of a "laminated waveguide"

H. Uchimura, T. Takenoshita and M. Fujii. "Development of a "laminated waveguide"." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2438-2443.

A waveguide of new structure has been developed for millimeter-wave applications. The dielectric waveguide is constructed with sidewalls consisting of lined via-holes and edges of metallized planes. This structure can be manufactured by lamination techniques, so we refer to the waveguide as a "laminated waveguide". The laminated waveguide can be embedded in a substrate and is able to be wired in three dimensions. The transmission characteristics are evaluated using a glass-ceramic substrate of dielectric constant, $\epsilon_r=5$, and loss, $\tan \delta=0.0008$. Insertion loss per unit length of the guide is estimated to be less than 0.5 dB/cm at 83 GHz. Furthermore, it was confirmed that the laminated waveguide is suitable to feeding lines for a small sized plane array antenna. By electromagnetic simulation, it has been confirmed that fundamental structures, such as bends, branches, power dividers, and interconnections between upper and lower layers can be realized with sufficient performances.

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Fast-wave resonance by space-wave leaky mode carrying dominant-mode-like currents

C.K.C. Tzuang and Ching-Chyuan Lin. "Fast-wave resonance by space-wave leaky mode carrying dominant-mode-like currents." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2444-2449.

By closely examining the resonant phenomena of a suspended, flat wire resonator, this paper speculates on the existence of the fast-wave mode causing the anomalous resonance that cannot possibly be explained by the well-known bound mode. This is followed by proposing a guiding structure model that allows the assessment of the effects of ground plane and sidewalls (external objects) on the guiding properties. The numerical accuracy of the full-wave spectral-domain approach method for the electrically large model is validated by performing the rigorous convergence study. A series of measurements on the resonator are conducted for the same guiding structure of various lengths, confirming that the anomalous resonance is indeed caused by a fast-wave in the form of a space-wave type leaky mode which also exhibits almost identical modal currents to those of the bound mode.

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Characteristics and design consideration of leaky-wave NRD-guides for use as millimeter-wave antenna

S.J. Xu, Xiang-Yin Zeng, Ke Wu and Kwai-Man Luk. "Characteristics and design consideration of leaky-wave NRD-guides for use as millimeter-wave antenna." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2450-2456.

Leaky-wave characteristics of a class of nonradiative dielectric (NRD)-guides with various shapes of trapezoidal cross section are systematically studied for their potential applications in low-cost millimeter-wave antennas. A numerical technique is applied to model these irregular structures. The technique is formulated by effectively combining a multimode network theory with a mode-matching method. Our emphasis in this work is on the investigation of parametric effects in connection with the trapezoidal dimensions on leakage properties of the NRD-guide. Extensive results are presented to derive some useful guidelines for the design considerations of new types of NRD-guide leaky-wave antennas.

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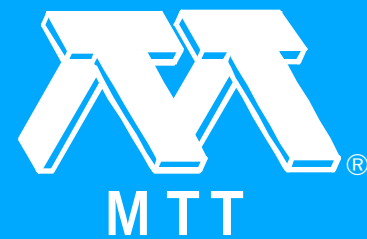


Abstracts

Surface-wave coupling of active antennas for homodyne sensor systems (Dec. 1998, Part II [T-MTT])

R.H. Rasshofer and E.M. Biebl. "Surface-wave coupling of active antennas for homodyne sensor systems (Dec. 1998, Part II [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2457-2462.

In this paper, we present a novel method for significantly enhancing the performance of low-cost millimeter-wave sensor systems based on active integrated antennas. Our method uses the planar active antenna's parasitic surface-wave field as a local oscillator signal for a mixing rectenna. Compared to a self-mixing active 67-GHz antenna, the surface-wave coupled rectenna receiver shows a considerably improved minimum detectable signal (10 dB lower) and the possibility for high-quality homodyne in-phase/quadrature signal detection.



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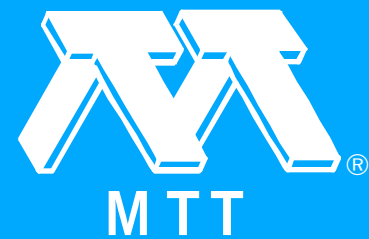
Multiresolution analysis similar to the FDTD method: derivation and application

M. Fujii and W.J.R. Hoefer. "Multiresolution analysis similar to the FDTD method: derivation and application." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2463-2475.

A three-dimensional (3-D) multiresolution analysis procedure similar to the finite-difference time-domain (FDTD) method is derived using a complete set of three-dimensional orthonormal bases of Haar scaling and wavelet functions. The expansion of the electric and the magnetic fields in these basis functions leads to the time iterative difference approximation of Maxwell's equations that is similar to the FDTD method. This technique effectively models realistic microwave passive components by virtue of its multiresolution property; the computational time is reduced approximately by half compared to the FDTD method. The proposed technique is validated by analyzing several 3-D rectangular resonators with inhomogeneous dielectric loading. It is also applied to the analyses of microwave passive devices with open boundaries such as microstrip low-pass filters and spiral inductors to extract their S-parameters and field distributions. The results of the proposed technique agree well with those of the traditional FDTD method.

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Characterization of near- and far-field radiation from ultrafast electronic systems

K.A. Remley, A. Weisshaar, S.M. Goodnick and V.K. Tripathi. "Characterization of near- and far-field radiation from ultrafast electronic systems." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2476-2483.

Accurate and computationally efficient characterization of near- and far-field radiation from a class of microwave, millimeter wave, and ultrafast systems is presented. A numerical technique is utilized which combines the finite-difference time domain method with a spatial transformation, the Kirchhoff surface integral. Included in the analysis are inhomogeneous material parameters, small feature size relative to wavelengths of interest, and the wide-band nature of the radiation. Based on simulation results, a simple model of the radiation from an inhomogeneous structure is developed. Finally, the technique is applied to accurately characterize the radiation from a photoconducting structure.

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Optimization of noise performance for various topologies of planar microwave active filters using noise wave techniques

H. Ezzedine, L. Billonnet, B. Jarry and P. Guillon. "Optimization of noise performance for various topologies of planar microwave active filters using noise wave techniques." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2484-2492.

In this paper, two types of microwave active filters are studied. First we show how, using a noise wave formalism, the noise factor of three topologies of active recursive filters can be effectively minimized by using appropriate unbalanced power dividers/combiners and an amplifier. A comparison between the different topologies is given. Simulations and practical results are presented and validate our approach. In a second part, the noise wave formalism is applied to $\lambda/2$ microstrip active filters. We show how the appropriate choice of coupling between lines and resonators can achieve low-noise filters. Simulations and practical results are also presented.

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High-Q TE01 mode DR filters for PCS wireless base stations

Ji-Fuh Liang and W.D. Blair. "High-Q TE01 mode DR filters for PCS wireless base stations." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2493-2500.

This paper presents the state of the art of high-Q TE01 mode DR cavity filters for PCS wireless base station applications. In order to have TE01 mode filter to be competitive with other high-Q cavity technologies, employment of nonadjacent coupling to implement advanced filter features and easy filter machining and integration are essential. The quadruplet and trisections are regarded as basic blocks to implement symmetric and asymmetric transmission zeros in filter stop band. The relative alignment of the magnetic mode field across the coupled adjacent cavities is analyzed to identify the sign of nonadjacent coupling. A direct cascading of a wide band combine filter to a TE01 mode dielectric resonator (DR) filter is proposed to suppress the spurious response of the DR cavity filter. This approach simplifies the integration between the DR filter and the spurious suppression device and has been proved to be very cost effective. Experimental eight- and six-pole quasi-elliptic function filters show the typical performances. To take advantage of the special property of magnetic mode field alignment across the adjacent cavities, a five-pole canonical asymmetric filter with three transmission zeros in low side is implemented. We believe this filter is a new design for high-Q cavity filter, while a three-pole elliptic function filter is new for DR filter technology.

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Dielectric combline resonators and filters (Dec. 1998, Part II [T-MTT])

Chi Wang, K.A. Zaki, A.E. Atia and T.G. Dolan. "Dielectric combline resonators and filters (Dec. 1998, Part II [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2501-2506.

The dielectric combline resonator combines the merits of the metallic combline and dielectric loaded resonator. By replacing the inner conductor of the conventional combline resonator by a high E_r dielectric rod, higher unloaded Q can be expected. Resonant frequency, unloaded Q, and coupling coefficient of the resonator are obtained by a rigorous mode-matching method. An eight-pole elliptic-function dielectric combline resonator filter was designed and tested. Measured frequency responses verify the theory.



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Simplified design technique for high-performance microstrip multisection couplers

D.K.Y. Lau, S.P. Marsh, L.E. Davis and R. Sloan. "Simplified design technique for high-performance microstrip multisection couplers." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2507-2513.

A new design technique has been developed which improves the design of a microstrip multisection coupler by a simplified version of the nonuniform coupler method. The technique achieves the performance of a smooth, discontinuity free, nonuniform coupler with a sectional breakdown of the coupling along the structure that can be simply and quickly optimized in a commercial simulator such as Libra. The design is further improved by the use of the "saw-tooth" odd- and even-mode equalization technique, and the effectiveness of this is verified experimentally. The measured results demonstrate an improved performance over the multisection coupler in terms of coupling performance and bandwidth, while the size and the fabrication tolerance are better than the nonuniform line coupler.

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A new design procedure for single-layer and two-layer three-line baluns

Choonsik Cho and K.C. Gupta. "A new design procedure for single-layer and two-layer three-line baluns." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2514-2519.

This paper describes a design procedure for a class of three-line baluns. It is shown that the three-line balun can be considered as a combination of two identical couplers. Thus, the method developed here uses the design of couplers with an appropriate coupling factor for designing this class of baluns. The derivation leads to the normal mode parameters for the three coupled lines. Physical dimensions are obtained from these parameters. This procedure has been implemented for two-layer configurations and verified by comparison with results from a full-wave electromagnetic simulation and experimental measurement.

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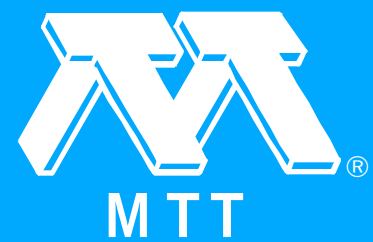
A novel vector network analyzer (Dec. 1998, Part II [T-MTT])

K. Hoffmann and Z. Skvor. "A novel vector network analyzer (Dec. 1998, Part II [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2520-2523.

A calibration procedure for a perturbation two-port vector network analyzer is presented. It consists of a variable perturbation two-port placed between a device-under-test and a scalar network analyzer. A measured vector reflection coefficient is determined on the basis of amplitude-only measurements. A full correction of systematic errors is possible. The new principle was experimentally confirmed in the frequency band up to 14 GHz. The results enable prediction of an add-on for scalar analyzers, enabling vector measurements.

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Microwave measurements of surface impedance of high- T_c superconductors using two modes in a dielectric rod resonator

Y. Kobayashi and H. Yoshikawa. "Microwave measurements of surface impedance of high- T_c superconductors using two modes in a dielectric rod resonator." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2524-2530.

A novel technique using two resonant modes in a dielectric rod resonator, the TE_{021} and TE_{012} modes, is proposed to measure the surface impedance $Z_s = R_s + jX_s$, where R_s is the surface resistance and X_s is the surface reactance of high- T_c superconductors at microwave frequency. The temperature dependence of Z_s can be obtained from only one time measurement as a function of temperature, although the conventional two-resonator method needs to repeat the measurement for temperature twice. The high precision in the R_s measurement is comparable to the conventional two-resonator method using two ceramic rod resonators. The excellent repeatability in the X_s measurement is superior to that of the two-resonator method.

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Time-domain envelope measurement technique with application to wideband power amplifier modeling

C.J. Clark, G. Chrisikos, M.S. Muha, A.A. Moulthrop and C.P. Silva. "Time-domain envelope measurement technique with application to wideband power amplifier modeling." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2531-2540.

This paper presents a new time-domain measurement technique for repetitive microwave signals that is applied to modeling wideband power amplifiers. The measurement technique concept consists of recording the microwave signal after conversion to baseband using a calibrated downconverter, which improves measurement accuracy compared to measurements at the carrier frequency. The modeling section describes how such time-domain measurements can be used to model wideband signal effects in nonlinear power amplifiers. The commonly used memory-less envelope model is limited to use on narrowband signals. A new model is developed which includes a filter before the memory-less nonlinearity to capture the memory effects associated with wideband signals. It is demonstrated that the accuracy of wideband signal simulations can be improved by optimizing the model parameters based on time-domain measurements of wideband signals.



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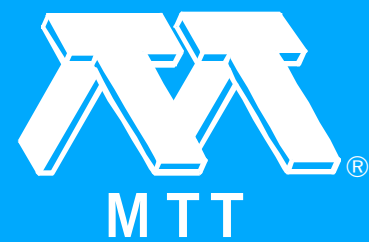
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A 44-GHz high IP3 InP-HBT amplifier with practical current reuse biasing

K.W. Kobayashi, M. Nishimoto, L.T. Tran, Huei Wang, J.C. Cowles, T.R. Block, J.H. Elliott, B.R. Allen, A.K. Oki and D.C. Streit. "A 44-GHz high IP3 InP-HBT amplifier with practical current reuse biasing." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2541-2552.

This paper will discuss the practical design of an InP-based heterojunction bipolar transistor (HBT) Q-band high IP3 monolithic microwave integrated circuit (MMIC) amplifier. The amplifier features a novel "double-balanced" design approach that incorporates a practical "current reuse" biasing scheme. The current reuse biasing results in a 40% reduction in current consumption through a standard 5-V supply and simplifies the MMIC's system integration while the double-balanced design produces wide-band IP3, gain, and excellent out-of-band return loss performance required for practical applications. The three-stage MMIC amplifier achieves 15.4 dB of gain, 28.3 dBm of IP3, and a P/sub sat/ of 16.2 dBm at 44 GHz. An output-stage IP3/P/sub dc/ ratio linearity-figure-of-merit of 5.3 is obtained and is believed to be among the best reported for an InP-HBT amplifier operating at Q-band frequencies. The IP3 performance was optimized using load-pull simulations based on a custom HBT IP3 model. Different device cell configurations such as the common-emitter, common-base, and cascode were also considered. The common emitter amplifier results of this paper demonstrate the promising linearity performance of InP-HBT's and its practical bias and integration capability which is attractive for Q-band receiver applications.

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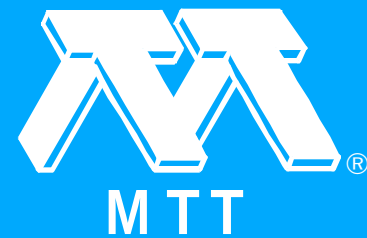


Abstracts

112-GHz, 157-GHz, and 180-GHz InP HEMT traveling-wave amplifiers

B. Agarwal, A.E. Schmitz, J.J. Brown, M. Matloubian, M.G. Case, M. Le, M. Lui and M.J.W. Rodwell. "112-GHz, 157-GHz, and 180-GHz InP HEMT traveling-wave amplifiers." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2553-2559.

We report traveling-wave amplifiers having 1-112 GHz bandwidth with 7 dB gain, and 1-157 GHz bandwidth with 5 dB gain. A third amplifier exhibited 5 dB gain and a 180 GHz high-frequency cutoff. The amplifiers were fabricated in a 0.1- μm gate length InGaAs/InAlAs HEMT MIMIC technology. The use of gate-line capacitive-division, cascode gain cells and low-loss elevated coplanar waveguide lines have yielded record bandwidth broad-band amplifiers.



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Low-cost GaAs pHEMT MMIC's for millimeter-wave sensor applications

H.J. Siweris, A. Werthof, H. Tischer, U. Schaper, A. Schafer, L. Verweyen, T. Grave, G. Bock, M. Schlechtweg and W. Kellner. "Low-cost GaAs pHEMT MMIC's for millimeter-wave sensor applications." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2560-2567.

A set of coplanar monolithic microwave integrated circuits for millimeter-wave sensor applications is described. It consists of a highly integrated transceiver chip, a voltage controlled oscillator, a harmonic mixer, and a general-purpose medium-power amplifier. The circuits operate in the 76-77 GHz frequency range and have been fabricated by a production oriented GaAs pHEMT technology. The transceiver chip combines a transmitter with 9-dBm output power and a receiver with an overall conversion gain of 1 dB. The voltage-controlled oscillator is tunable over a 0.8 GHz bandwidth. It includes a buffer amplifier and generates an output power of 10 dBm. The harmonic mixer achieves 18 dB conversion loss when mixing with the fifth harmonic of the LO signal. The two-stage MPA delivers 13 dBm of output power along with a gain of 7.5 dB. The chip set is suited for the cost effective realization of automotive radar systems as well as various sensors for industrial applications.

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A high-performance Si-bipolar RF receiver for digital satellite radio

G. Calì, G. Cantone, P. Filoramo, G. Sirna, P. Vita and G. Palmisano. "A high-performance Si-bipolar RF receiver for digital satellite radio." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2568-2576.

An integrated low voltage RF receiver for digital satellite radio is presented. It contains all the basic building blocks from the low noise amplifier (LNA) to the baseband buffer and two phase-locked loops (PLLs) which provide the RF and the intermediate frequency (IF) local oscillator signals. Innovative solutions for critical blocks such as the LNA, the IF buffer, the voltage controlled oscillator (VCO), etc., as well as new arrangements for bias circuits have been adopted which greatly increase circuit performance. Moreover, 2.4 V regulated power supplies with power down capability have also been included. The receiver needs a small number of external components that are principally the RF image filter and the surface acoustic wave (SAW) channel filter. It achieves a maximum gain of 120 dB and a noise figure of 5 dB. The internal regulators are set to 2.4 V and ensure correct operation with an external power supply varying from 2.7 to 5.5 V. The receiver was integrated in a high performance 20 GHz silicon bipolar technology. Its die size is 18 mm² and it needs a quiescent current of 75 mA.





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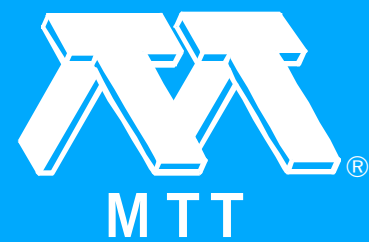
Q-enhanced LC bandpass filters for integrated wireless applications

W.B. Kuhn, N.K. Yanduru and A.S. Wyszynski. "Q-enhanced LC bandpass filters for integrated wireless applications." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2577-2586.

Q-enhanced LC filter technology offers an alternative to the use of direct conversion techniques for implementing fully integrated receivers. Design and performance issues for QE LC filters are discussed and a fully integrated 850 MHz, two-pole, bandpass filter with an 18 MHz 3 dB bandwidth is reported. The prototype design is implemented in a standard 0.8 μ m CMOS process and achieves a rejection of over 50 dB at 100 MHz offset, an in-band dynamic range of 75 (90) dB when used in a system with a 1 MHz (30 kHz) final IF bandwidth, and a third-order intercept point that exceeds +25 dBm at an 80 MHz offset from the passband center,.

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Micromachined electro-mechanically tunable capacitors and their applications to RFIC's

A. Dec and K. Suyama. "Micromachined electro-mechanically tunable capacitors and their applications to RFIC's." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2587-2596.

Micromachined electro-mechanically tunable capacitors with two and three parallel plates are presented. Experimental devices have been fabricated using a standard polysilicon surface micromachining process. The two-plate tunable capacitor has a measured nominal capacitance of 2.05 pF, a Q-factor of 20 at 1 GHz, and achieves a tuning range of 1.5:1. The three-plate version has a nominal capacitance of 4.0 pF, a Q-factor of 15.4 at 1 GHz, and a tuning range of 1.87:1. The tuning ranges achieved here are near theoretical limits. Effects due to various physical phenomena such as temperature, gravity, and shock are examined in detail. An RF voltage-controlled oscillator with an integrated inductor and a micromachined tunable capacitor is also demonstrated. The active circuit and the inductor have been fabricated in a 0.5 μm CMOS process. The voltage-controlled oscillator has been assembled by bonding together the CMOS and the micromachined parts. The 1.35 GHz voltage-controlled oscillator has a phase noise of -98.5 dBc/Hz at a 100 kHz offset from the carrier.

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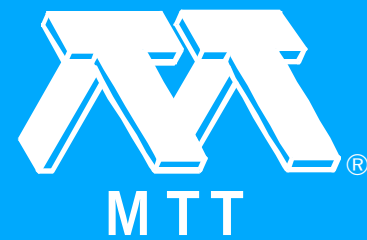


Abstracts

Novel active differential phase splitters in RFIC for wireless applications (Dec. 1998, Part II [T-MTT])

Huainan Ma, Sher Jiun Fang, Fujiang Lin and H. Nakamura. "Novel active differential phase splitters in RFIC for wireless applications (Dec. 1998, Part II [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2597-2603.

Two novel active differential phase splitters have been designed and fabricated in a GaAs MESFET process. The new circuits employ a concept of feedback to adjust gain and phase unbalance separately and accurately. The active phase splitters feature simplicity, low power supply, and wide-band performance. The circuits can provide ± 1 dB and $\pm 180^\circ$ differential signals within 4 GHz bandwidth, well covering the frequency range currently used for dual-band commercial wireless communications. In narrow-band application, more accurate balanced differential signals can be achieved by external tuning.



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K/Ka-band low-noise embedded transmission line (ETL) MMIC amplifiers (Dec. 1998, Part II [T-MTT])

Hua-Quen Tserng, L.C. Witkowski, A.A. Ketterson, P. Saunier and T. Jones. "K/Ka-band low-noise embedded transmission line (ETL) MMIC amplifiers (Dec. 1998, Part II [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2604-2610.

The design, fabrication, and performance of producible, high-performance K and Ka-band pHEMT low-noise MMIC amplifiers using the embedded transmission line (ETL) circuit concept with top-side grounding are reported. A state-of-the-art noise figure of 1.2 dB with 25-dB gain is achieved at 31 GHz. These amplifiers can be implemented in low-cost, ultra-compact receiver modules for emerging spaceborne phased-array communication applications.



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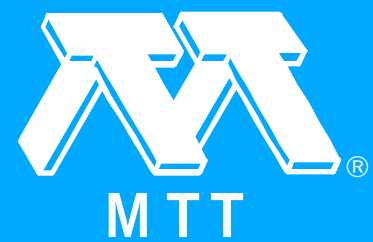
Direct multilevel carrier modulation using millimeter-wave balanced vector modulators

A.E. Ashtiani, Sueng-Il Nam, A. d'Espona, S. Lucyszyn and I.D. Robertson. "Direct multilevel carrier modulation using millimeter-wave balanced vector modulators." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2611-2619.

The importance of being able to design affordable, high-performance, millimeter-wave transmitters for digital communications and radar applications is increasing. To this end, two monolithic millimeter-wave vector modulators have been realized at 38 and 60 GHz for use in direct multilevel carrier modulation. It is shown that, by employing balanced biphase amplitude modulator elements, accurate constellations are achieved with broad-band operation from 20 to 40 GHz and 55 to 65 GHz. Modulations of 16- and 256-QAM have been demonstrated, both at 38 and 60 GHz, using this technique. Each balanced biphase amplitude modulator uses a pair of reflection-type attenuators operated in push-pull mode. This study investigates the suitability of this topology for use as a full biphase amplitude modulator for multilevel digital modulation schemes. It is found that the technique is very robust and the resulting analog vector modulator can be a very important component for many future millimeter-wave applications.

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Characterization and applications of on-wafer diode noise sources

L.P. Dunleavy, J. Randa, D.K. Walker, R. Billinger and J. Rice. "Characterization and applications of on-wafer diode noise sources." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2620-2628.

A set of wafer-probable diode noise source transfer standards are characterized using on-wafer noise-temperature methods developed at the National Institute of Standards and Technology (NIST), Boulder, CO. We review the methods for accurate measurement and prediction of on-wafer noise temperature of off-wafer and on-wafer noise source standards. In analogy with the excess noise ratio (ENR) for hot noise temperatures, we introduce a representation for cold noise temperatures called the cold noise ratio (CNR), which is expressed in decibels. The ENR and CNR noise source representations share the property that the difference between off-wafer and on-wafer values may be approximated by the probe loss. We present measurements of the on-wafer ENR and reflection-coefficient information for a preliminary set of on-wafer diode transfer standards at frequencies from 8 to 12 GHz. Such transfer standards could be used in interlaboratory comparisons, as a noise calibration verification tool, as direct calibration artifacts, or as the basis for a new "noise-source probe" conceptualized here.

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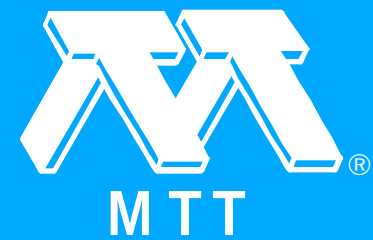
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*"Information for Authors Submitting Manuscripts in Electronic Form (Jan. 1998 [MGWL])."
1998 Microwave and Guided Wave Letters 8.1 (Jan. 1998 [MGWL]): 0_3-0_3.*



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Field interpolation across discontinuities in FDTD

G. Marrocco, F. Bardati and M. Sabbadini. "Field interpolation across discontinuities in FDTD." 1998 Microwave and Guided Wave Letters 8.1 (Jan. 1998 [MGWL]): 1-3.

Primary field quantities and their derivatives, like power flux density or surface equivalent currents, are usually required in practical applications of finite-difference time domain (FDTD). The data obtained from the FDTD algorithm are therefore interpolated to provide the whole set of the electrical and magnetic field components at each grid node to evaluate them. In the presence of a material discontinuity, however, the linear interpolation, having the accuracy of the FDTD algorithm at points where the field is continuous, will fail for the components which are orthogonal to the interface. A dielectric interpolator is presented for these cases which retains accuracy by preserving the correct field discontinuities.





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10-Gb/s pulse-shaping distributed-based transversal filter front-end for optical soliton receivers

P. Monteiro, A. Borjak, F. da Rocha, J. O'Reilly and I. Darwazeh. "10-Gb/s pulse-shaping distributed-based transversal filter front-end for optical soliton receivers." 1998 Microwave and Guided Wave Letters 8.1 (Jan. 1998 [MGWL]): 4-6.

The design and performance of a microwave filter as a signal processor for a 10-Gb/s soliton receiver are described. The work reports, for the first time, a versatile transversal active filtering structure, implemented as a monolithic microwave integrated circuit (MMIC) and featuring an accurate, yet straightforward, response tuning facility based on DC bias variation and allowing for optimization of the received eye patterns and therefore error-rate minimization. Tests are reported for 10-Gb/s input optical solitons, showing the efficacy of receiver output eye shape variation using the techniques described.

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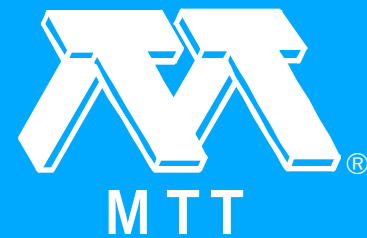


Abstracts

Application of the Arnoldi method in FEM analysis of waveguides

J. Mielewski and M. Mrozowski. "Application of the Arnoldi method in FEM analysis of waveguides." 1998 Microwave and Guided Wave Letters 8.1 (Jan. 1998 [MGWL]): 7-9.

The authors present the application of the Arnoldi method to the solution of generalized nonsymmetric sparse eigen-problems which arise in the waveguide analysis involving the finite element method. To assess the efficiency of the Arnoldi method, the solution time is compared against the time required by the subspace iteration algorithm. It is found that the Arnoldi method converges much faster and gives significant CPU time savings.



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Best combination between power density, efficiency, and gain at V-band with an InP-based PHEMT structure

S. Piotrowicz, C. Gaquiere, B. Bonte, E. Bourcier, D. Theron, X. Wallart and Y. Crosnier. "Best combination between power density, efficiency, and gain at V-band with an InP-based PHEMT structure." 1998 Microwave and Guided Wave Letters 8.1 (Jan. 1998 [MGWL]): 10-12.

In this work we report on the state-of-the-art combination at V-band between simultaneously power density (370 mW/mm), power-added efficiency (28.3%), and power gain (5.2 dB) of InP pseudomorphic HEMTs biased at a low drain voltage of 2 V. The performance of these double delta-doped pseudomorphic AlInAs-GaInAs HEMTs on InP with an original strain compensated channel was measured at 60 GHz. This demonstrates a good potentiality for low-voltage applications in order to reduce the power supply of systems.

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Broad-band power amplifier using dielectric photonic bandgap structure

V. Radisic, Y. Qian and T. Itoh. "Broad-band power amplifier using dielectric photonic bandgap structure." 1998 Microwave and Guided Wave Letters 8.1 (Jan. 1998 [MGWL]): 13-14.

Two class AB GaAs field-effect transistor (FET) power amplifiers have been designed and fabricated in the 4.4-4.8 GHz range. In the first case, a dielectric PBG line was incorporated in the design to tune the second harmonic. In the second case, a 50- Ω line is used with no harmonic tuning. The PBG structure allows broad-band harmonic tuning and is inexpensive to fabricate. A 5% improvement in power-added efficiency was achieved at the design frequency of 4.5 GHz, in both simulation and measurement.

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Extension of Berenger's PML absorbing boundary conditions to arbitrary anisotropic magnetic media

A.P. Zhao and A.V. Raisanen. "Extension of Berenger's PML absorbing boundary conditions to arbitrary anisotropic magnetic media." 1998 Microwave and Guided Wave Letters 8.1 (Jan. 1998 [MGWL]): 15-17.

To simply and effectively absorb waves propagating in arbitrary anisotropic magnetic media, a material independent perfectly matched layer (MIPML) absorber is proposed. Within this MIPML absorber, conductivities σ^E and σ^B (instead of σ^E and σ^H) are used. This results in that electric field E and magnetic flux density B are directly absorbed by the proposed absorber, whereas magnetic field H is simultaneously absorbed through the relation of B and H . It is shown that, with the help of this MIPML absorber, Berenger's PML can be simply and successfully extended to arbitrary anisotropic magnetic media.

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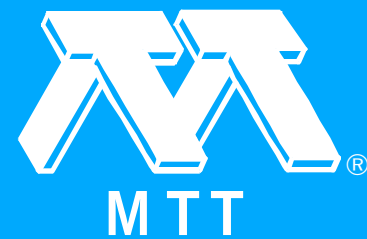


Abstracts

An accurate algorithm for nonuniform fast Fourier transforms (NUFFT's)

Q.H. Liu and N. Nguyen. "An accurate algorithm for nonuniform fast Fourier transforms (NUFFT's)." 1998 Microwave and Guided Wave Letters 8.1 (Jan. 1998 [MGWL]): 18-20.

Based on the (m, N, q) -regular Fourier matrix, a new algorithm is proposed for fast Fourier transform (FFT) of nonuniform (unequally spaced) data. Numerical results show that the accuracy of this algorithm is much better than previously reported results with the same computation complexity of $O(N \log \sqrt{N})$. Numerical examples are shown for the applications in computational electromagnetics.



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Chaos prediction in an MMIC frequency divider in millimetric band

A. Suarez, J. Morales and R. Quere. "Chaos prediction in an MMIC frequency divider in millimetric band." 1998 Microwave and Guided Wave Letters 8.1 (Jan. 1998 [MGWL]): 21-23.

A technique is proposed for the analysis of possible quasi-periodic routes to chaos in microwave circuits. This is based on the systematic application of a Nyquist stability analysis along the solution paths in self-oscillating mixer operation, as a function of a relevant parameter. The steady quasi-periodic solutions, with two fundamental frequencies, are determined from the harmonic balance method. The stability analysis allows the detection of possible asynchronous instabilities, leading to a three-fundamental quasi-periodic solution, from which the transition to chaotic behavior will occur. This technique has allowed the theoretical prediction of the onset of chaos that was experimentally observed in a monolithic microwave integrated circuit (MMIC) frequency divider by two in the millimetric band.





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Efficient power combining with D-band (110-170 GHz) InP Gunn devices in fundamental-mode operation

H. Eisele and G.I. Haddad. "Efficient power combining with D-band (110-170 GHz) InP Gunn devices in fundamental-mode operation." 1998 Microwave and Guided Wave Letters 8.1 (Jan. 1998 [MGWL]): 24-26.

D-band InP Gunn devices on diamond heat sinks with an $n^+n^-n^+$ structure and a graded doping profile in the active region were tested as free-running oscillators in individual resonant-cap full-height waveguide cavities. Subsequently, matched oscillators were power-combined in an in-line dual-cavity configuration. Combined radio frequency (RF) power levels of more than 300 mW at 106 GHz, 130 mW at 136 GHz, and more than 100 mW at 152 GHz were achieved. These RF power levels are the highest reported to date from either single or power-combined Gunn devices at W-band and D-band frequencies. They correspond to combining efficiencies of more than 80%, 86%, and more than 100% as well as overall DC-to-RF conversion efficiencies of 1.95%, 1.25%, and 0.90%, respectively. Similar to oscillators with single devices, these power-combined Gunn device oscillators exhibit good tunability and a phase noise of well below -100 dBc/Hz, measured at a frequency off the carrier of 500 kHz.

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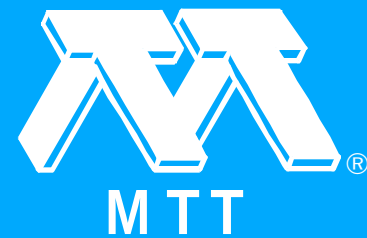


Abstracts

High-pass lumped-element transmission lines

D.R. Webster, G.-R. Ataei and D.G. Haigh. "High-pass lumped-element transmission lines." 1998 Microwave and Guided Wave Letters 8.1 (Jan. 1998 [MGWL]): 27-29.

In this work the high-pass lumped-element transmission line is shown to have a number of useful advantages over the classic low-pass line including DC isolation between sections, lower loss per section, and a much higher maximum frequency of operation, far beyond the natural self-resonant frequencies of the passive components used.



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An optimized anisotropic PML for the analysis of microwave circuits

A.C. Polycarpou and C.A. Balanis. "An optimized anisotropic PML for the analysis of microwave circuits." 1998 Microwave and Guided Wave Letters 8.1 (Jan. 1998 [MGWL]): 30-32.

The anisotropic perfectly matched layer (PML) is implemented in the finite-element method (FEM) to evaluate the S-parameters of microwave integrated circuits (MIC's). The PML region, which terminates the mesh over a range of frequencies, may exhibit either a uniform or nonuniform conductivity profile σ/ρ . The performance of the PML is strongly dependent on the choice of σ/ρ as well as the mesh density inside the absorber. This observation is demonstrated numerically using a two-dimensional (2-D) finite-element analysis. The anisotropic PML is subsequently used in modeling three-dimensional (3-D) microwave integrated circuits. The accuracy and overall performance of the absorber is evaluated by computing the S-parameters of a low-pass filter.

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Feedforward embedding circulator enhancement in transmit/receive applications

S.L. Karode and V.F. Fusco. "Feedforward embedding circulator enhancement in transmit/receive applications." 1998 Microwave and Guided Wave Letters 8.1 (Jan. 1998 [MGWL]): 33-34.

In this work, a feedforward embedding technique is presented to improve the isolation of a circulator. The circuit configuration is particularly suitable for transmit/receive applications where the received signal is extremely weak compared to the transmitted signal and where a mismatch at the antenna may exist. It is demonstrated that the isolation of a circulator can be improved by an additional 30 dB by using a feedforward embedding method. Test performance of a commercial 1-GHz circulator with and without the feedforward network is shown.

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Photonic microwave characteristics and modeling of an Al/sub 0.3/Ga/sub 0.7/As/GaAs/In/sub 0.13/Ga/sub 0.87/As double heterostructure pseudomorphic HEMT

S.H. Song, D.M. Kim, H.J. Kim, S.H. Kim, K.N. Kang and M.I. Nathan. "Photonic microwave characteristics and modeling of an Al/sub 0.3/Ga/sub 0.7/As/GaAs/In/sub 0.13/Ga/sub 0.87/As double heterostructure pseudomorphic HEMT." 1998 Microwave and Guided Wave Letters 8.1 (Jan. 1998 [MGWL]): 35-37.

Electrical characteristics of a photonicallly controlled n-channel Al/sub 0.3/Ga/sub 0.7/As/GaAs/In/sub 0.13/Ga/sub 0.87/As double heterostructure pseudomorphic HEMT (PHEMT) is reported. Experimental results show a high optical sensitivity in the drain saturation current, the transconductance f_{T} , and f_{max} at the optical power density $P_{opt}/=78 \text{ mW/cm}^2$. We also proposed a new optoelectronic equivalent circuit model, which has photonicallly generated gate capacitances ($C_{gs,opt}$ and $C_{gd,opt}$) and transconductance ($g_{m,opt}$), for accurate description of DC and microwave performance of PHEMT's under optical control, and verified the accuracy of the proposed model with measured and extracted scattering parameters from the equivalent photonic microwave model.

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Coplanar integrated mixers for 77-GHz automotive applications

L. Verweyen, H. Massler, M. Neumann, U. Schaper and W.H. Haydl. "Coplanar integrated mixers for 77-GHz automotive applications." 1998 Microwave and Guided Wave Letters 8.1 (Jan. 1998 [MGWL]): 38-40.

For integration in receivers at 77 GHz, three passive mixers, a balanced diode mixer, a single ended and a balanced resistive mixer, as well as an active single-ended gate mixer have been realized in coplanar 0.15- μm PM-HEMT technology on GaAs. The passive mixers achieved conversion losses of about 9 dB. The resistive mixers required an LO power of only 3 dBm and the diode mixer 10 dBm for optimum conversion. The gate mixer obtained a conversion gain of 1 dB for an LO power of 6 dBm, but showed higher sensitivity to the IF load.

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Electromagnetic analysis for microwave FET modeling

E. Larique, S. Mons, D. Baillargeat, S. Verdeyme, M. Aubourg, P. Guillon and R. Quere.
"Electromagnetic analysis for microwave FET modeling." 1998 Microwave and Guided Wave Letters 8.1 (Jan. 1998 [MGWL]): 41-43.

This letter presents a technique to analyze complex microwave devices. An electromagnetic three-dimensional (3-D) software is applied to characterize the distributed part of the structure. It is coupled to a circuit simulator to introduce the contribution on the electrical response of the localized passive or active elements contained in the device. The link between the two parts is made thanks to a new type of access, "the localized access". We have applied this method to the study of a field effect transistor and good agreements are observed between simulations and measurements from 1 to 30 GHz.

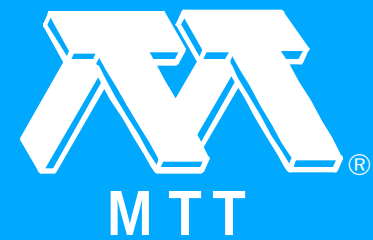
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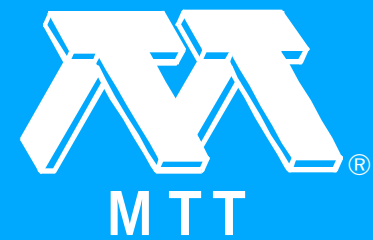
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Input admittance of a coaxial-line-driven cylindrical cavity with a center dielectric rod

R.B. Keam and J.R. Holdem. "Input admittance of a coaxial-line-driven cylindrical cavity with a center dielectric rod." 1998 Microwave and Guided Wave Letters 8.2 (Feb. 1998 [MGWL]): 49-51.

An expression for the input admittance of a coaxially driven cylindrical cavity is presented. Two cases are presented: first, where the coaxial-line transition is located on one of the flat walls of an empty cavity, and secondly where there is a dielectric rod located coaxially between the two flat walls of the cavity. A comparison between the theory and measurements is presented which shows that the model is capable of yielding a high level of accuracy.

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Abstracts

Generalized material-independent PML absorbers for the FDTD simulation of electromagnetic waves in arbitrary anisotropic dielectric and magnetic media

A.P. Zhao, J. Juntunen and A.V. Raisanen. "Generalized material-independent PML absorbers for the FDTD simulation of electromagnetic waves in arbitrary anisotropic dielectric and magnetic media." 1998 Microwave and Guided Wave Letters 8.2 (Feb. 1998 [MGWL]): 52-54.

To simply and effectively absorb waves propagating in anisotropic materials consisting of both arbitrary permittivity and permeability tensors, generalized material-independent perfectly matched layer (GMIPML) absorbers are proposed. Within the GMIPML absorbers, electric displacement D and flux density B are directly absorbed, whereas electric field E and magnetic field H are simultaneously absorbed through the relations between E and D as well as H and B . The proposed GMIPML absorber is validated by analyzing two-dimensional (2-D) hybrid waves.



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Comparative study of the PML and C-COM mesh-truncation techniques

O.M. Ramahi and J.B. Schneider. "Comparative study of the PML and C-COM mesh-truncation techniques." 1998 Microwave and Guided Wave Letters 8.2 (Feb. 1998 [MGWL]): 55-57.

The recently developed concurrent complementary operators method (C-COM) for mesh truncation of finite-difference time-domain (FDTD) problems has been shown to produce a substantial improvement in differential equation-based absorbing boundary conditions (ABCs). In this letter, the C-COM and the perfectly matched layer (PML) approaches are compared using two-dimensional problems. Two representative geometries are considered that address the absorption of evanescent waves and waves traveling at near-grazing incidence. It is found that the C-COM yields significant improvements over the PML solution for these geometries.

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A simple error correction method for two-port transmission parameter measurement

C. Wan, B. Nauwelaers and W. De Raedt. "A simple error correction method for two-port transmission parameter measurement." 1998 Microwave and Guided Wave Letters 8.2 (Feb. 1998 [MGWL]): 58-59.

This letter presents a simple error correction method for two-port transmission parameter measurement. The method requires measuring only two nonreflecting transmission lines instead of a complete set of calibration standards (at least three) for error correction, it does not need an explicit solution of error coefficients. These two features make it simpler than any other methods. Error-corrected measurement results of a CPW discontinuity using the new method and the TRL method are in good agreement. The new method is useful in characterizing well-matched two-port devices or those whose reflection parameters are of little interest.

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Spatial power-combining using CPW-fed bowtie antennas

L.Q. Sun and R.M. Weikle, II. "Spatial power-combining using CPW-fed bowtie antennas." 1998 Microwave and Guided Wave Letters 8.2 (Feb. 1998 [MGWL]): 60-62.

A new quasi-optical power-combiner geometry consisting of an array of bowtie antennas fed by coplanar waveguide is presented. The bowtie structure provides space to accommodate planar tuning structures as well as multiple devices. An oscillator circuit that includes a heterojunction field-effect transistor (HFET) and coplanar resonator is embedded in one arm of each antenna. Experimental results for a 4/spl times/4 array are provided and an equivalent circuit model used for the array design is described.

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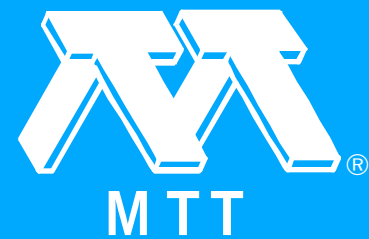
Single- and dual-feedback transimpedance amplifiers implemented by SiGe HBT technology

*J.-S. Rieh, O. Qasaimeh, L.H. Lu, K. Yang, L.P.B. Katehi, P. Bhattacharya and E.T. Croke.
"Single- and dual-feedback transimpedance amplifiers implemented by SiGe HBT technology."
1998 Microwave and Guided Wave Letters 8.2 (Feb. 1998 [MGWL]): 63-65.*

Monolithically integrated SiGe/Si heterojunction bipolar transistor (HBT) transimpedance amplifiers, with single- and dual-feedback configurations, have been designed, fabricated, and characterized. The single-feedback amplifier showed transimpedance gain and bandwidth of 45.2 dB/spl Omega/ and 3.2 GHz, respectively. The dual-feedback version exhibits improved gain and bandwidth of 47.4 dB/spl Omega/ and 3.3 GHz, respectively. Their performance characteristics are excellent in terms of their application in communication systems.

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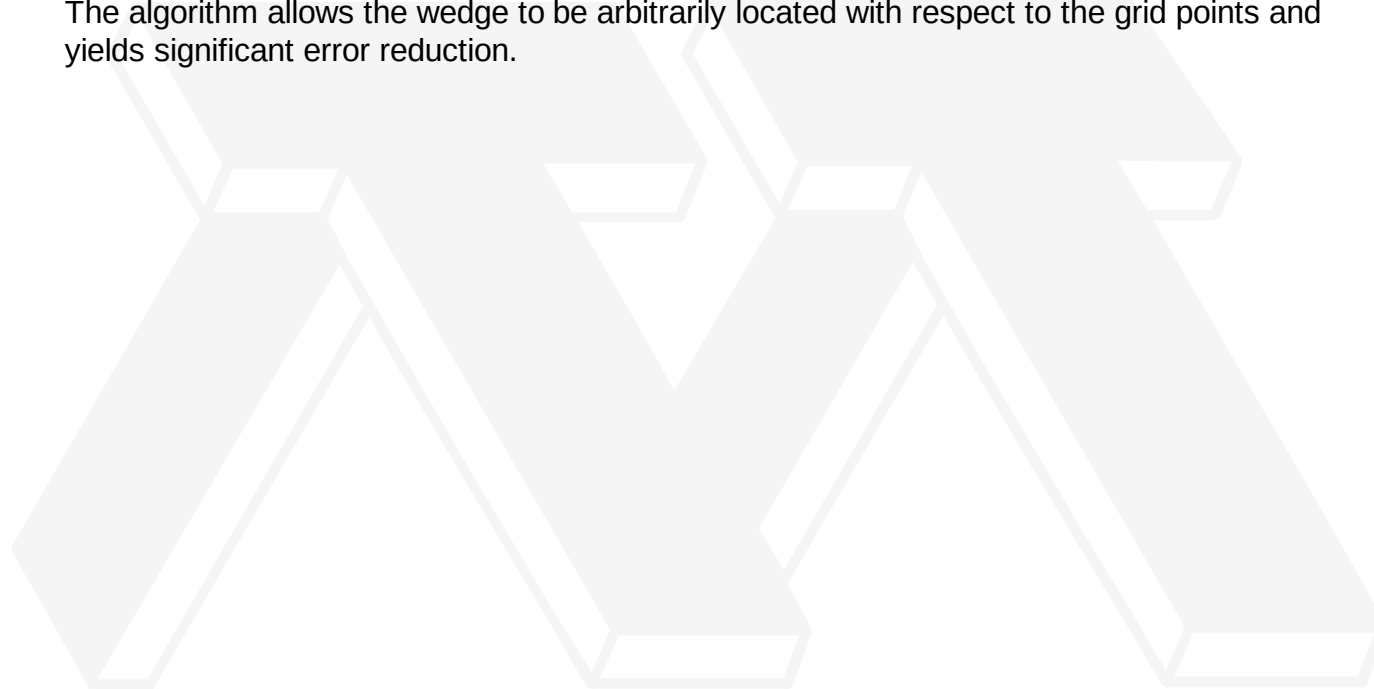
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A conductive wedge in Yee's mesh

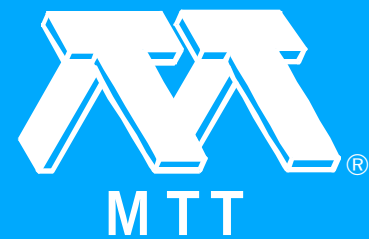
P. Przybyszewski and M. Mrozowski. "A conductive wedge in Yee's mesh." 1998 Microwave and Guided Wave Letters 8.2 (Feb. 1998 [MGWL]): 66-68.

The authors present a correction of the finite-difference (FD) methods employing Yee's mesh, improving the accuracy when conductive edge corners are present in the analyzed structure. The algorithm allows the wedge to be arbitrarily located with respect to the grid points and yields significant error reduction.



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Novel 2-D photonic bandgap structure for microstrip lines

V. Radisic, Y. Qian, R. Coccioli and T. Itoh. "Novel 2-D photonic bandgap structure for microstrip lines." 1998 Microwave and Guided Wave Letters 8.2 (Feb. 1998 [MGWL]): 69-71.

A new two-dimensional (2-D) photonic bandgap (PBG) structure for microstrip lines is proposed, in which a periodic 2-D pattern consisting of circles is etched in the ground plane of microstrip line. No drilling through the substrate is required. Three PBG circuits were fabricated with different circle radii to determine the optimum dimensions, as well as a PBG circuit with the compensated right-angle microstrip bend. Measurements show that deep and wide stopbands can be achieved using this method.

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Novel fast multiline analysis of parasitic effects in CPW inductors for MMICs

I. Huynen. "Novel fast multiline analysis of parasitic effects in CPW inductors for MMICs." 1998 Microwave and Guided Wave Letters 8.2 (Feb. 1998 [MGWL]): 72-74.

The author presents a novel multiline modeling of monolithic microwave integrated circuit (MMIC) spiral inductors in coplanar waveguide (CPW) technology. Starting from transmission line parameters calculated for only single lines and pairs of lines, a distributed equivalent circuit is established for each section of multicoupled lines in the structure. It readily yields the S-parameters of the section. An adequate interconnection of sections having different topologies results in the S-matrix of the device. Our technique is wideband, fast, and fully scalable. It predicts on-line the effect of the underpass and of spurious propagation along the coplanar waveguide (CPW) grounding. It is shown that a significant frequency shift is due to the combination of those two effects. Results are validated by measurements on SOI inductors, up to the second self-resonance frequency.

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Accurate modeling of thin conducting layers in FDTD

S. Van den Berghe, F. Olyslager and D. De Zutter. "Accurate modeling of thin conducting layers in FDTD." 1998 Microwave and Guided Wave Letters 8.2 (Feb. 1998 [MGWL]): 75-77.

In recent papers the surface impedance condition is proposed to incorporate the effect of high conductivity of a material. This condition only takes the reflection at materials into account; the transmission through very thin layers is not considered. In this work, we introduce a similar approach to model both reflection and transmission when confronted with a thin layer of good, but not perfectly, conducting material.

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Abstracts

A K-band tunable microstrip bandpass filter using a thin-film conductor/ferroelectric/dielectric multilayer configuration

G. Subramanyam, F. Van Keuls and F.A. Miranda. "A K-band tunable microstrip bandpass filter using a thin-film conductor/ferroelectric/dielectric multilayer configuration." 1998 Microwave and Guided Wave Letters 8.2 (Feb. 1998 [MGWL]): 78-80.

We report on a gold/strontium titanate (Au-SrTiO/sub 3/) thin-film K-band tunable bandpass filter on a lanthanum aluminate substrate. The two-pole filter has a center frequency of 19 GHz and a 4% bandwidth. Tunability is achieved through the nonlinear temperature dependence and the DC electric field dependence of the relative dielectric constant of SrTiO/sub 3/. A center frequency shift of 0.85 GHz was obtained at 400 V DC bias and 77 K without degrading the insertion loss of the filter.



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A millimeter-wave quasi-optical amplifier array using inclined-plane horn antennas

C.E. Saavedra, W. Wright, K.Y. Hur and R.C. Compton. "A millimeter-wave quasi-optical amplifier array using inclined-plane horn antennas." 1998 Microwave and Guided Wave Letters 8.2 (Feb. 1998 [MGWL]): 81-83.

A novel millimeter-wave quasi-optical amplifier array architecture is presented. The amplifier array consists of a horn antenna that tapers down to a parallel-plate waveguide. Stacked between the parallel-plates is a microstrip power divider circuit which feeds the active elements. At the output there is a similar power-combining circuit and transition to free space. Measurements on the active array show a maximum gain of 7.25 dB at 43.25 GHz and a bandwidth of 5.75 GHz.





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Wide-bandwidth Ku-band monolithic analog frequency divider

S. Desgrez, M. Gayral, O. Llopis, J.-C. Cayrou, J.-L. Cazaux and J.-F. Sautereau. "Wide-bandwidth Ku-band monolithic analog frequency divider." 1998 Microwave and Guided Wave Letters 8.2 (Feb. 1998 [MGWL]): 84-86.

A new analog frequency divider configuration using a resistive field-effect transistor (FET) mixer with a series feedback is proposed. With this configuration, a large synchronization bandwidth of almost 30% has been achieved using an original CAD technique. This bandwidth has been effectively measured on a Ku-band monolithic microwave integrated circuit (MMIC) circuit together with an ultra-low power consumption. Moreover, the processed circuit using a standard 0.2- μm PHEMT technology (Philips-PML) is very compact (1.5 mm/sup 2/).

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Revisiting characteristic impedance and its definition of microstrip line with a self-calibrated 3-D MoM scheme

L. Zhu and K. Wu. "Revisiting characteristic impedance and its definition of microstrip line with a self-calibrated 3-D MoM scheme." 1998 Microwave and Guided Wave Letters 8.2 (Feb. 1998 [MGWL]): 87-89.

Characteristic impedance and its definition are revisited and discussed for microstrip line with a self-calibrated three-dimensional (3-D) method of moments (MoM). This 3-D MoM accommodates a scheme called short-open calibration (SOC) so that potential parasitic effects brought by the impressed voltage excitation and other relevant factors can be effectively removed. In this way, the characteristic impedance can be accurately defined through a relationship between equivalent voltage and current on the two sides of a microstrip line having a finite length. Simulated results are compared with the Jansen's two-dimensional (2-D) and Rautio's 3-D definition.

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Time-domain transmission matrix of lossy transmission lines

J.-F. Mao and O. Wing. "Time-domain transmission matrix of lossy transmission lines." 1998 Microwave and Guided Wave Letters 8.2 (Feb. 1998 [MGWL]): 90-92.

In this work the time-domain transmission matrix T of lossy transmission lines is numerically derived by the method of characteristics without employing any convolution and Fourier transform, and some interesting properties about the matrix are given. The transmission lines can be uniform or nonuniform. Transmission line parameters are explicit in the matrix, which makes it very useful in some practical applications.

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Abstracts

Time-domain (FE/FDTD) technique for solving complex electromagnetic problems

A. Monorchio and R. Mittra. "Time-domain (FE/FDTD) technique for solving complex electromagnetic problems." 1998 Microwave and Guided Wave Letters 8.2 (Feb. 1998 [MGWL]): 93-95.

A hybrid finite element finite-difference time-domain (FE/FDTD) technique for solving complex electromagnetic problems is presented. The method combines the computational simplicity of the structured FDTD scheme with the versatility as well as flexibility of the finite-element method (FEM) and enables us to accurately model curved geometries and those with fine features. Numerical results that illustrate the accuracy of the method are included.



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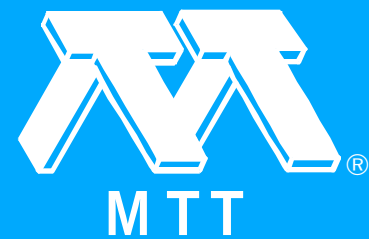
An isolated-open pattern to de-embed pad parasitics [CMOSFETs]

Chung-Hwan Kim, Cheon Soo Kim, Hyun Kyu Yu and Kee Soo Nam. "An isolated-open pattern to de-embed pad parasitics [CMOSFETs]." 1998 Microwave and Guided Wave Letters 8.2 (Feb. 1998 [MGWL]): 96-98.

To meet radio frequency (RF) performance required in large market of wireless applications, CMOS transistors having a small unit gate width are preferred. To correctly estimate RF performance, parasitics of the on-wafer pads and interconnection metal lines should be de-embedded as in the advanced bipolar transistors. However, cutoff frequencies of small-size MOSFETs de-embedded by the conventional on-wafer dummy structures result in large overestimation. A new open pattern is proposed to solve the problem. The meaning and justification of the new de-embedding pattern are discussed.

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Differential formulation of on-surface measured equation of invariance for 2-D conducting scatterings

Y.W. Liu, K.K. Mei and K.N. Yung. "Differential formulation of on-surface measured equation of invariance for 2-D conducting scatterings." 1998 Microwave and Guided Wave Letters 8.2 (Feb. 1998 [MGWL]): 99-101.

In this letter formulations of on-surface measured equation of invariance (OSMEI) method for two-dimensional (2-D) conducting scatterings are derived from scalar wave equations rather than integral equations. At the same time, the MEI equations for TM and TE cases are proved to be same. As long as one of the MEI equations of the above two cases is found, the MEI equation of another case is automatically given. A great advantage of the OSMEI method over the conventional boundary integration or differential equation method is that the OSMEI can solve conducting scattering problems efficiently. Examples of conducting circular and rectangular cylinder scatterings for both TM and TE case show that results of the OSMEI are in excellent agreement with those of the method of moments (MoM).

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Abstracts

Direct extraction of a distributed nonlinear FET model from pulsed I-V/pulsed S-parameter measurements

B. Mallet-Guy, Z. Ouarch, M. Prigent, R. Quere and J. Obregon. "Direct extraction of a distributed nonlinear FET model from pulsed I-V/pulsed S-parameter measurements." 1998 Microwave and Guided Wave Letters 8.2 (Feb. 1998 [MGWL]): 102-104.

In this work, a method for the direct extraction of a field-effect transistor (FET) distributed model is presented. This technique makes use of both pulsed I-V and pulsed S-parameter measurements. Results given are very efficient, especially in terms of time computation and uniqueness. Using this method, the distributed model provides a reliable mean of describing the FET's distributive nature.



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*"Information for Authors Submitting Manuscripts in Electronic Form (Mar. 1998 [MGWL])."
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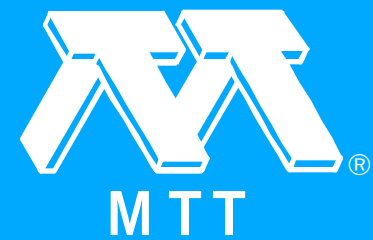
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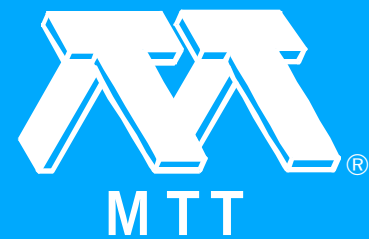
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A fast technique for analysis of waveguides

P. Przybyszewski, J. Mielewski and M. Mrozowski. "A fast technique for analysis of waveguides." 1998 Microwave and Guided Wave Letters 8.3 (Mar. 1998 [MGWL]): 109-111.

The authors present a new technique for fast calculation of dispersion characteristics in inhomogeneously loaded waveguides. The method calculates an approximate value of propagation constant at a desired frequency based on more accurate computations of the field distribution and propagation constant at a few selected frequency points. Numerical tests show that the relative error in propagation constant below 0.05% can easily be obtained throughout a very wide frequency band for a dominant mode using accurate data calculated at as few as four frequency points.

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High-speed monolithic millimeter-wave switch array

F. Jiang, W. Berk, Z.-T. Chen, S. Duncan, X.-H. Qin, D.W. Tu, W.-M. Zhang, C.W. Domier and N.C. Luhmann, Jr.. "High-speed monolithic millimeter-wave switch array." 1998 Microwave and Guided Wave Letters 8.3 (Mar. 1998 [MGWL]): 112-114.

A quasi-optical planar grid switch array comprised of hundreds of Schottky varactor diodes embedded within an overmoded waveguide is capable of generating switching times of 100-500 ps in the millimeter-wave region with Watt-level power-handling capabilities. A proof-of-principle high-speed V band switch array has been constructed with excellent agreement between theory and experiment. Less than 1.6-dB insertion loss and >16-dB on/off contrast ratio are measured at 61.5 GHz. The switch rise/fall time is <127 ps. An instantaneous bandwidth >7 GHz (contrast ratio >15 dB) has also been measured.



Nonleaky conductor-backed coplanar waveguide-fed rectangular microstrip patch antenna

D.R. Jahagirdar and R.D. Stewart. "Nonleaky conductor-backed coplanar waveguide-fed rectangular microstrip patch antenna." 1998 Microwave and Guided Wave Letters 8.3 (Mar. 1998 [MGWL]): 115-117.

A new arrangement for exciting microstrip patch antennas is presented here that allows easier integration with monolithic microwave integrated circuits (MMIC's). The non-leaky conductor-backed coplanar waveguide (NL-CBCPW) is described with emphasis on avoiding the leakage of power. This structure is utilized for feeding a rectangular patch through an aperture in the back plane. The full-wave analysis of this arrangement was carried out using the moment method in the spectral domain. The theoretical and measured results of such a patch are given.



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A simplified normalization FDTD formula and its application to VIP combline bandpass filters

C.-D. Zhao. "A simplified normalization FDTD formula and its application to VIP combline bandpass filters." 1998 Microwave and Guided Wave Letters 8.3 (Mar. 1998 [MGWL]): 118-120.

In this work new studies on the normalized finite-difference time-domain (FDTD) formula show that its time-domain iteration is done with an expanded dimension. A simple formula is derived to show the resulting variations in the frequency domain. A practical application to the vertical installed planar (VIP) BPF is given, a novel improvement to which includes applying planar fins and fine through-holes to reduce the requirement on an ideal ground circuit. The excellent properties of the modified combline BPF have been shown by the FDTD design as well as the measured ones.

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Abstracts

Linear high-efficiency microwave power amplifiers using bandpass delta-sigma modulators

A. Jayaraman, P.F. Chen, G. Hanington, L. Larson and P. Asbeck. "Linear high-efficiency microwave power amplifiers using bandpass delta-sigma modulators." 1998 Microwave and Guided Wave Letters 8.3 (Mar. 1998 [MGWL]): 121-123.

A novel amplifier configuration is described, in which a bandpass delta-sigma modulator is used to produce a two-level (digital) signal representing an analog radio frequency (RF) input. Subsequently, a switching-mode amplifier and bandpass filter are used to amplify the signal and remove unwanted spectral components. This configuration has the potential of achieving high efficiency (typical of switching mode amplifiers) together with high linearity. A simulated implementation with GaAs heterojunction bipolar transistors (HBT) is shown.



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Efficient calculation of the Green's function for the rectangular cavity

Myun-Joo Park, Jongkuk Park and Sangwook Nam. "Efficient calculation of the Green's function for the rectangular cavity." 1998 Microwave and Guided Wave Letters 8.3 (Mar. 1998 [MGWL]): 124-126.

An efficient method is developed for the rapid and accurate calculation of the potential Green's function in the rectangular cavity. The proposed method is based on the Ewald sum technique and converts the slowly convergent cavity Green's function into the sum of two exponentially convergent series. The transformed series achieves fast convergence with only a small number of terms in the calculation.

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Hierarchical tangential vector finite elements for tetrahedra

L.S. Andersen and J.L. Volakis. "Hierarchical tangential vector finite elements for tetrahedra." 1998 Microwave and Guided Wave Letters 8.3 (Mar. 1998 [MGWL]): 127-129.

Tangential vector finite elements (TVFES) overcome most of the shortcomings of node-based finite elements for electromagnetic simulations. Hierarchical TVFES are of considerable practical interest since they allow use of effective selective field expansions where different order TVFES are combined within a computational domain. For a tetrahedral element, this letter proposes a set of hierarchical mixed-order TVFES up to and including order 2.5 that differ from previously presented TVFES. The hierarchical mixed-order TVFES are constructed as the three-dimensional equivalent of hierarchical mixed-order TVFES for a triangular element. They can be formulated for higher orders than 2.5, and the generalization to curved tetrahedral elements is straightforward.

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Network equivalence of port discontinuity related to source plane in a deterministic 3-D method of moments

L. Zhu and K. Wu. "Network equivalence of port discontinuity related to source plane in a deterministic 3-D method of moments." 1998 Microwave and Guided Wave Letters 8.3 (Mar. 1998 [MGWL]): 130-132.

Port discontinuity in a deterministic three-dimensional (3-D) method of moments (MoM) algorithm using the impressed voltage excitation is accurately modeled in terms of its equivalent circuit network. This is done through the application of a newly developed scheme called the short-open calibration (SOC) technique. The resulting network equivalence can be explicitly formulated by the use of an analytical procedure. It is observed from our predicted results that the port discontinuity can be reasonably equivalent to a lumped shunt capacitance at low frequency while at high frequency it should be modeled as a dispersive circuit network.

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Abstracts

A high-efficiency traveling-wave power amplifier topology using improved power-combining techniques

E.S. Shapiro, J. Xu, A.S. Nagra, F. Williams, Jr., U.K. Mishra and R.A. York. "A high-efficiency traveling-wave power amplifier topology using improved power-combining techniques." 1998 Microwave and Guided Wave Letters 8.3 (Mar. 1998 [MGWL]): 133-135.

Traditional distributed amplification techniques have allowed for high gain and bandwidth at the expense of low efficiency. The decreased efficiency is primarily due to the existence of an actively loaded artificial transmission line as the output, resulting in backward wave propagation. Using the same traditional input line distributed techniques to achieve high bandwidth, this research has explored a delay line and corporate combining output topology which improves the travelling-wave amplifier's (TWAs) efficiency at large signal by elimination of the backward waves. The broad-band output combiner transforms the amplifier load impedance to that of an optimum load for each device, thus realizing a traveling-wave power amplifier. The results for a 1-9-GHz hybrid circuit are presented.



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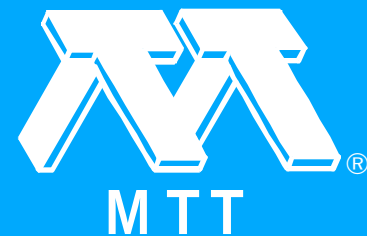


Abstracts

Low-power silicon BJT LNA for 1.9 GHz

J.J. Kucera and U. Lott. "Low-power silicon BJT LNA for 1.9 GHz." 1998 Microwave and Guided Wave Letters 8.3 (Mar. 1998 [MGWL]): 136-137.

A two-stage 1.9-GHz monolithic low-noise amplifier (LNA) with a measured noise figure of 2.3 dB and an associated gain of 15 dB was fabricated in a standard silicon bipolar transistor array. It dissipates 5.2 mW from a 3-V supply including the bias circuitry. Input return loss and isolation are -9 and -20 dB, respectively.



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A new hybrid FDTD-BIE approach to model electromagnetic scattering problems

H. Rogier, F. Olyslager and D. De Zutter. "A new hybrid FDTD-BIE approach to model electromagnetic scattering problems." 1998 Microwave and Guided Wave Letters 8.3 (Mar. 1998 [MGWL]): 138-140.

A new hybrid finite-difference time-domain boundary integral equation (FDTD-BIE) method is proposed. The geometry under consideration is decomposed into several subregions. For some of the bounded subregions the FDTD technique is used to construct an interaction matrix, relating virtual electric and magnetic currents at the boundary of the subregion, for several frequencies at the same time. The remaining bounded and unbounded subregions are described by a boundary integral equation technique. An example is given to validate the new technique.



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Modeling of lumped-element coplanar-stripline low-pass filter

Shau-Gang Mao, Hwann-Kaeo Chiou and Chun Hsiung Chen. "Modeling of lumped-element coplanar-stripline low-pass filter." 1998 Microwave and Guided Wave Letters 8.3 (Mar. 1998 [MGWL]): 141-143.

A novel coplanar-stripline low-pass filter using lumped-element spiral inductors and interdigital capacitors is proposed. To characterize this filter, a simple CAD equivalent-circuit model is established. The elements of this model, which consist of transmission lines, resistances, inductances, and capacitances, can all be handled by the closed-form formulas; hence this model is suitable for CAD application. In this study, results based on CAD model, full-wave simulation, and measurement are presented, and good agreement among these results validates the usefulness of the proposed CAD model. Being compact and uniplanar in structure, this coplanar-stripline low-pass filter is useful in the implementation of monolithic microwave integrated circuits (MMIC's).

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Abstracts

A novel CPW DC-blocking topology with improved matching at W-band

I. Huynen and G. Dambrine. "A novel CPW DC-blocking topology with improved matching at W-band." 1998 Microwave and Guided Wave Letters 8.4 (Apr. 1998 [MGWL]): 149-151.

This work presents the design of a new wide-band DC-blocking filter in coplanar waveguide (CPW) technology. Compared with the well-known coplanar open-end series stub, the matching of the new filter is theoretically shown to be improved from -10 to -20 dB over the whole W-band. The calculation is made by combining coupled line theory with a simple variational calculation of modal parameters. Measurements carried out in the W-band show very good agreement with the theory.



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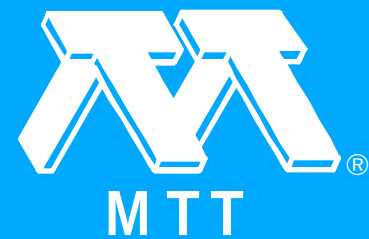
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An improved FDTD model for the feeding gap of a thin-wire antenna

S. Watanabe and M. Taki. "An improved FDTD model for the feeding gap of a thin-wire antenna." 1998 Microwave and Guided Wave Letters 8.4 (Apr. 1998 [MGWL]): 152-154.

In calculations using the finite-difference time-domain (FDTD) method, the feeding gap of a thin-wire antenna is often modeled by a so-called "one-cell gap" which lets the feeding gap to be one interval of Yee's lattice. This is often inconsistent with the actual situation and it causes error in FDTD calculation results. This work shows that the error due to the one-cell gap model is strongly dependent on the cell size, and we present an improved FDTD model which assumes an infinitesimally narrow feeding gap. We show that the antenna input impedance calculated with the new gap model is barely affected by the cell size and agrees well with the method of moments (MoM) calculation results for an infinitesimal gap. Furthermore, we clarify the dependence of error of a one-cell gap on the cell size on the basis of the proposed model.

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Fast algorithm for scattering from planar arrays of conducting patches

L. Gurel and Weng Cho Chew. "Fast algorithm for scattering from planar arrays of conducting patches." 1998 Microwave and Guided Wave Letters 8.4 (Apr. 1998 [MGWL]): 155-157.

A direct (noniterative) algorithm for the solution of the electromagnetic scattering from three-dimensional planar arrays of conducting patches is developed. For an N -unknown problem, the computational complexity of this new solution technique is shown to be $O(N/\sup 2/\log/\sup 2/N)$, which is considerably lower than the $O(N/\sup 3/)$ computational complexity of the conventional direct solution techniques. The advantages of the reduction in the computational complexity is pronounced in the solution of large electromagnetics problems, such as scattering from large and finite arrays of patches, synthesis and analysis of finite-sized frequency selective surfaces (FSSs), and radiation and scattering from large phased-array antennas, to name a few.

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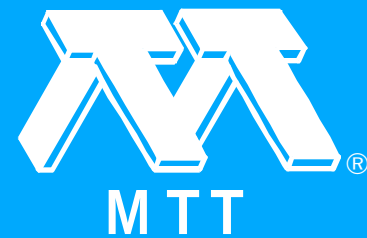


Abstracts

Micromachined micropackaged filter banks

A.R. Brown and G.M. Rebeiz. "Micromachined micropackaged filter banks." 1998 Microwave and Guided Wave Letters 8.4 (Apr. 1998 [MGWL]): 158-160.

A micromachined, micropackaged filter bank at X/Ku-band is presented. The filters are integrated on a silicon substrate, and the micropackaging provides high isolation between the adjacent filters in the overlapping frequency region. This technology allows for the low-cost integration of switched filter banks on the same substrate for satellite communication systems, base-stations, and wide-band radar applications.



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A low-power monolithic GaAs FET bandpass filter based on negative resistance technique

Yong-ho Cho, Song-cheol Hong and Young-se Kwon. "A low-power monolithic GaAs FET bandpass filter based on negative resistance technique." 1998 Microwave and Guided Wave Letters 8.4 (Apr. 1998 [MGWL]): 161-163.

This paper describes a monolithic GaAs FET active bandpass filter utilizing negative resistance elements. The negative resistance element was realized with a common-drain FET with series inductive feedback and the measured output impedance characteristics are given. The fabricated monolithic fourth-order filter showed an insertion loss of 0.7 dB at 4.85 GHz and a 3-dB bandwidth of 50 MHz with a DC power consumption of 7.5 mW.

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Accurate distributed inductance of spiral resonators

Z.M. Hejazi, P.S. Excell and Z. Jiang. "Accurate distributed inductance of spiral resonators." 1998 Microwave and Guided Wave Letters 8.4 (Apr. 1998 [MGWL]): 164-166.

A simple procedure for calculation of the distributed inductance of spiral resonators and micro-inductors is derived, including all possible mutual inductances. It is applicable for spiral configurations from rectangular to smooth circular. Using this procedure and an accurate formula for distributed capacitance of a spiral resonator, the resonant frequency was accurately predicted. If the surface resistance of the conductors is known, the unloaded quality factor of any spiral resonator can also be calculated.

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Finite-element electromagnetic characterization of parasitics in multifinger thermally shunted HBTs

F. Dhondt, J. Barrette, N. Haese, P.A. Rolland and S.L. Delage. "Finite-element electromagnetic characterization of parasitics in multifinger thermally shunted HBTs." 1998 Microwave and Guided Wave Letters 8.4 (Apr. 1998 [MGWL]): 167-169.

This work describes a methodology to extract parasitic capacitances and evaluate losses in multifinger thermally shunted heterojunction bipolar transistors (HBTs) using three dimensional (3-D) electromagnetic modeling. This method is based on the partitioning of the structure into zones of propagation, which simplifies the analysis of the computed scattering matrices. The approach is validated using on-wafer measurements of open-circuit test structures. This work also addresses the impact of changes in device topology on parasitic coupling capacitance and association efficiency.

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Period doubling route to chaos in SiGe IMPATT diodes

A. Suarez, A. Mediavilla and J.F. Luy. "Period doubling route to chaos in SiGe IMPATT diodes." 1998 Microwave and Guided Wave Letters 8.4 (Apr. 1998 [MGWL]): 170-172.

An instantaneous electric model for a SiGe IMPATT diode is calculated here from the physical quantities provided by the foundry. The model is used for the nonlinear simulation of IMPATT-based circuits, which are prone to instability. In this work, a bifurcation analysis is carried out in order to determine their dynamical response, as a function of any suitable parameter. The technique has been applied to the equivalent circuit of the reflection measurement system, from which the IMPATT immittance variation curves are usually determined. The bifurcation analysis allowed the detection of a period doubling route to chaos, in good agreement with the experimental observations.

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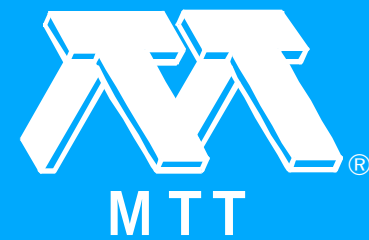
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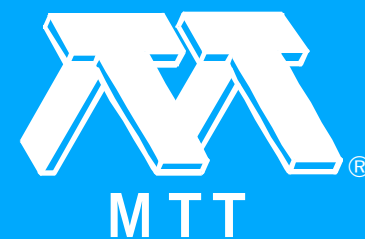
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Frequency detector with power combiner dividers

H. Gruchala and A. Rutkowski. "Frequency detector with power combiner dividers." 1998 Microwave and Guided Wave Letters 8.5 (May 1998 [MGWL]): 179-181.

The author describes a microwave frequency detector made in microstrip technique. The system consists of two power dividers and three transmission lines. Ratio of amplitudes of output signals determines frequency of input signal. Despite simple structure, the frequency detector has very attractive parameters. Practically made the detectors worked in S in Ku frequency band.

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A hybrid nonlinear delay line-based broad-band phased antenna array system

R.P. Hsia, W.-M. Zhang, C.W. Domier and N.C. Luhmann, Jr.. "A hybrid nonlinear delay line-based broad-band phased antenna array system." 1998 Microwave and Guided Wave Letters 8.5 (May 1998 [MGWL]): 182-184.

Nonlinear delay line (NDL) technology has been utilized to implement a proof-of-principle, broadband, 8-channel, linear, hybrid NDL-based phased antenna array (PAA) system. The hybrid NDLs provide up to 267 ps analog, variable true time delay (TTD) with <5-dB measured insertion loss. A PAA system incorporating wide-band feed, transition, and antenna elements has been developed for broad-band (4-18 GHz), electronically controlled beam steering. The current system has demonstrated up to $\pm 180^\circ$ beam steering from 4 to 5 GHz, and $\pm 6^\circ$ at 6 GHz in good agreement with theoretical predictions; monolithic implementations have been designed to provide $\pm 19^\circ$ beam steering at frequencies up to 18 GHz and are currently being fabricated. This system provides a wide-band, low-cost, high-precision alternative to conventional PAA technologies.

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Membrane-supported coplanar waveguides for MMIC and sensor application

A. Dehe, H. Klingbeil, C. Weil and H.L. Hartnagel. "Membrane-supported coplanar waveguides for MMIC and sensor application." 1998 Microwave and Guided Wave Letters 8.5 (May 1998 [MGWL]): 185-187.

Membrane-supported coplanar waveguides (CPWs) are needed for low-dispersive and low-loss millimeter- and submillimeter waves as well as for power sensor applications. The authors demonstrate CPWs on polyimide membranes micromachined on gallium arsenide (GaAs) that meet the requirements of a typical microwave monolithic integrated circuit (MMIC) process. The influence of the design parameters is simulated by finite difference in frequency domain (FDFD), in excellent agreement with the experiment. For a membrane CPW with ground to ground spacing of only 50 μm and characteristic impedance of 115 Ω , relative effective dielectric constants near 1.02 and attenuation of 0.14 dB/mm at 25 GHz have been achieved.

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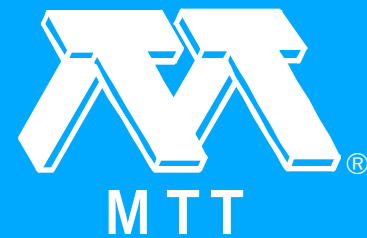


Abstracts

An effective PML for the absorption of evanescent waves in waveguides

J.-P. Berenger. "An effective PML for the absorption of evanescent waves in waveguides." 1998 Microwave and Guided Wave Letters 8.5 (May 1998 [MGWL]): 188-190.

As emphasized by several authors in literature, the evanescent modes are not absorbed by usual perfectly matched layers (PMLs) terminating waveguiding structures. The purpose of this work is to present a new version of the PML that allows a substantial absorption of such waves to be achieved.



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Abstracts

A new beam-scanning technique by controlling the coupling angle in a coupled oscillator array

Jae-Ho Hwang and Noh-Hoon Myung. "A new beam-scanning technique by controlling the coupling angle in a coupled oscillator array." 1998 Microwave and Guided Wave Letters 8.5 (May 1998 [MGWL]): 191-193.

The authors present a new technique for electronic beam scanning of a coupled oscillator array. A constant phase progression in a coupled oscillator array is achieved by controlling the coupling phase of the outermost coupling circuits only, while that of the innermost coupling circuits is zero and all free-running frequencies of the oscillators are the same. Analytical solution of nonlinear phase dynamic equations changes periodically as a piecewise-linear function of coupling phase only. The theory developed here is verified using a four-element oscillator array operating at 6.16 GHz. The full scan range is measured to be -17° to 18° off broadside. This scan range is very close to the theoretically achievable scan range of -19.2° to 19.2° for this array.



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A low phase-error 44-GHz HEMT attenuator

L. Sjogren, D. Ingram, M. Biedenbender, R. Lai, B. Allen and K. Hubbard. "A low phase-error 44-GHz HEMT attenuator." 1998 Microwave and Guided Wave Letters 8.5 (May 1998 [MGWL]): 194-195.

Radio frequency (RF) subsystems for emerging millimeter-wave applications require monolithic microwave integrated circuit (MMIC) attenuators with constant phase over the attenuation range. In this work, we present the results for a 44 GHz stepped attenuator implemented in high electron mobility transistor (HEMT) MMIC technology. Use of a switched-path topology provides a high attenuation range (>30 dB) with good phase flatness (<7/spl deg/ p-p) and return loss (>14.5 dB) over the attenuation range. The same design topology should be well suited for other frequencies throughout the upper microwave and lower millimeter-wave range.

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Efficient transient compression using an all-silicon nonlinear transmission line

M. Birk, H. Kibbel, C. Warns, A. Trasser and H. Schumacher. "Efficient transient compression using an all-silicon nonlinear transmission line." 1998 Microwave and Guided Wave Letters 8.5 (May 1998 [MGWL]): 196-198.

Nonlinear transmission lines (NLTLs) have so far only been fabricated on GaAs. Here, an NLTL was monolithically integrated on a 2000-/spl Omega/spl middot/cm silicon substrate, demonstrating the applicability of the NLTL concept to silicon millimeter-wave integrated circuits (SIMMWICs). The fall time of 74 ps of a 4-GHz sinewave was compressed to 32 ps at the output of the NLTL, in accordance with theory. This is the first working NLTL on silicon to our knowledge.

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LSE-mode balun for hybrid integration of NRD-guide and microstrip line

A. Bacha and K. Wu. "LSE-mode balun for hybrid integration of NRD-guide and microstrip line." 1998 Microwave and Guided Wave Letters 8.5 (May 1998 [MGWL]): 199-201.

A recently proposed hybrid integration technology of NRD-guide and planar circuits provides an alternative for exploiting advantageous features of the two complementary structures in view of three-dimensional circuit design at millimeter-wave frequencies. Such an integration scheme has been developed for use of the second fundamental mode (LSM) having the lowest transmission loss. In this work, a new balun structure (transition) integrating NRD-guide and microstrip line is reported for the first fundamental mode (LSE). A TLM algorithm is used to model and optimize the proposed LSE-mode related NRD-guide/microstrip line transition. Electrical characteristics of the new balun are studied theoretically and experimentally. Calculated and measured results are found to be in good agreement for designed experimental prototypes at 18-22 GHz.

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Design of a beam-switching active microstrip antenna array

Young-Huang Chou and Shyh-Jong Chung. "Design of a beam-switching active microstrip antenna array." 1998 Microwave and Guided Wave Letters 8.5 (May 1998 [MGWL]): 202-204.

An active microstrip antenna array with dual switching beams were developed and demonstrated. The array contained several active antennas and an extra amplifier-embedded coupling (microstrip) line. Two injection-locking signals were used in the design, that is, the free-space mutual coupling between antennas and the injection signal on the coupling line tapped from the first oscillator in the array. By turning on and off the amplifier on the line, these two signals dominated in turn, producing two radiation modes with different main beams. A three-element H-plane array and a two-element E-plane array were designed and measured. Both of the arrays had an out-of-phase radiation mode when the amplifier was turned off, and had an in-phase mode when the amplifier was on. Also, clean frequency spectra and good radiation patterns were measured, which demonstrated the validity of the present design.

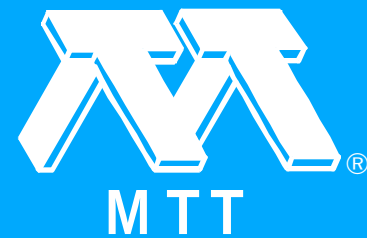


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A dual CP slot antenna using a modified Wilkinson power divider configuration

Wen-Jen Tseng and Shyh-Jong Chung. "A dual CP slot antenna using a modified Wilkinson power divider configuration." 1998 Microwave and Guided Wave Letters 8.5 (May 1998 [MGWL]): 205-207.

A dual circularly polarized (CP) slot antenna based on a proposed equal-split Wilkinson power divider is presented. An offset-fed slot antenna, which was analyzed using the method of moments together with a mixed potential integral equation, was used to replace the lumped resistor in the divider. A dual CP slot antenna operating at S-band was designed and demonstrated experimentally. The antenna possessed a return loss bandwidth of 39.3%, an isolation bandwidth of 10% for VSWR <2, and 3-dB axial ratio bandwidth of 28%.



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A super absorbing boundary condition for the analysis of waveguide discontinuities with the finite-difference method (Comments)

O.M. Ramahi, A. Khebir and R. Mittra. "A super absorbing boundary condition for the analysis of waveguide discontinuities with the finite-difference method (Comments)." 1998 Microwave and Guided Wave Letters 8.5 (May 1998 [MGWL]): 208-208.



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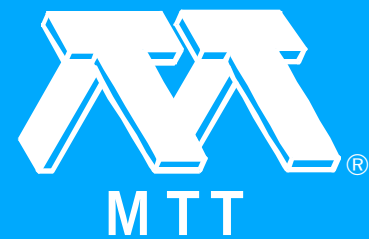
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A super absorbing boundary condition for the analysis of waveguide discontinuities with the finite-difference method (Authors' Reply)

Jian Yi Zhou and Wei Hong. "A super absorbing boundary condition for the analysis of waveguide discontinuities with the finite-difference method (Authors' Reply)." 1998 Microwave and Guided Wave Letters 8.5 (May 1998 [MGWL]): 208-209.

For the original paper see *ibid.*, vol. 7, p. 147-149 (June 1997). In the aforementioned work, it is pointed out that the authors may have overlooked the paper by Ramahi et al. (see IEEE Trans. Antennas and Propag., vol. 39, p. 350-353, Mar. 1991), which introduced a numerically derived Absorbing Boundary Condition (ABC) for the solution of open region scattering problems. In this paper, the idea was to present the unknown field or its derivative at a terminal node in terms of a weighted summation of neighboring nodes that lie in the interior. The weighting coefficients are solved for by representing the field at the terminal node in terms of a finite number of its spatial harmonics (three or five dominant harmonics). The concept was demonstrated by applying it to cylindrical harmonics in the context of the finite-element method, whereas the authors of the above paper considered planar waveguide harmonics in the context of the finite-difference method. The authors reply to this comment.

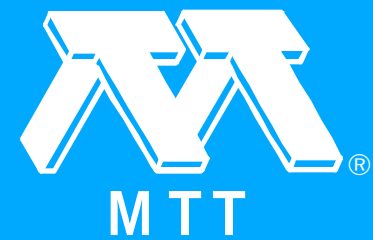
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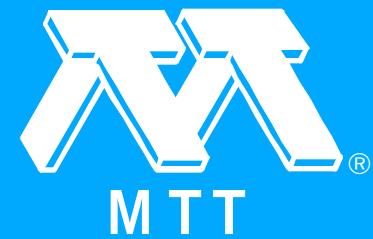
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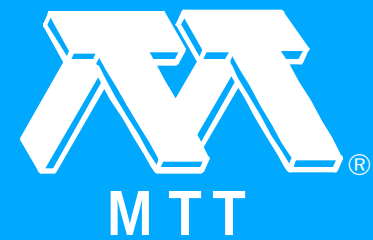
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R. Sorrentino. "Editorial (Jun. 1998 [MGWL])." 1998 Microwave and Guided Wave Letters 8.6 (Jun. 1998 [MGWL]): 213-214.



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A low-cost active antenna for short-range communication applications

F. Carrez, R. Stolle and J. Vindevoghel. "A low-cost active antenna for short-range communication applications." 1998 Microwave and Guided Wave Letters 8.6 (Jun. 1998 [MGWL]): 215-217.

A low-cost active antenna to be used in a miniature microwave transponder is presented. This active antenna operating at 9.9 GHz consists of a compact microstrip array antenna of electromagnetically gap-coupled rectangular resonators and a novel ASK demodulator/differential phase-shift keying (DPSK) modulator circuit. In order to minimize the power consumption and to reduce the cost of the active antenna, this novel microwave circuit employs a single "cold" MESFET which performs both the modulator and demodulator functions. The original methods used to realize the active antenna provide high performance, size reduction, and low power consumption.

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Scattering analysis of a coaxial line terminated by a gap

H.J. Eom, Y.C. Noh and J.K. Park. "Scattering analysis of a coaxial line terminated by a gap." 1998 Microwave and Guided Wave Letters 8.6 (Jun. 1998 [MGWL]): 218-219.

TEM-wave scattering on a coaxial line terminated by a gap is theoretically investigated. The Fourier transform and the mode matching are used to obtain a rapidly convergent series solution. Our solution is compared with Marcuvitz result based on the small-aperture method. Computations are performed to illustrate the phase behavior of reflection versus a gap variation.

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Abstracts

A rigorous frequency-domain approach to large-signal noise in nonlinear microwave circuits

V. Rizzoli, C. Cecchetti and F. Matri. "A rigorous frequency-domain approach to large-signal noise in nonlinear microwave circuits." 1998 Microwave and Guided Wave Letters 8.6 (Jun. 1998 [MGWL]): 220-222.

The authors introduce a rigorous approach to large-signal noise in nonlinear microwave circuits. The analysis is based on the well-known representation of white noise as a set of uniformly spaced pseudosinusoidal signals with random phases. The spectral resolution required for a reliable noise simulation is evaluated by Monte Carlo analysis and is found to be quite high, so that the resulting nonlinear analysis involves spectra of many tens of thousands of lines. This kind of problem may be efficiently solved by the inexact-Newton harmonic-balance technique. With this method, the amplitude of the noise waveforms is arbitrary, so that large-signal noise effects may be directly evaluated.



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Abstracts

General closed-form PML constitutive tensors to match arbitrary bianisotropic and dispersive linear media

F.L. Teixeira and W.C. Chew. "General closed-form PML constitutive tensors to match arbitrary bianisotropic and dispersive linear media." 1998 Microwave and Guided Wave Letters 8.6 (Jun. 1998 [MGWL]): 223-225.

The perfectly matched layer (PML) constitutive tensors that match more general linear media presenting bianisotropic and dispersive behavior are obtained for single interface problems and for two-dimensional (2-D) and three-dimensional (3-D) corner regions. The derivation is based on the analytic continuation of Maxwell's equations to a complex variables domain. The formulation is Maxwellian so that it is equally applicable to the finite-difference time-domain (FDTD) or finite-element (FEM) methods. It recovers, as special cases, previous anisotropic media formulations, and dispersive media formulations.



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Analysis of circular stripline resonators on normally biased ferrite substrates

V. Losada, R.R. Boix and M. Horno. "Analysis of circular stripline resonators on normally biased ferrite substrates." 1998 Microwave and Guided Wave Letters 8.6 (Jun. 1998 [MGWL]): 226-228.

Galerkin's method in the Hankel transform domain is used for determining the resonant frequencies of stripline circular resonators on normally biased ferrite substrates. The numerical results obtained show that the resonant frequencies of the resonators can be tuned by varying the magnitude of the applied bias magnetic field. However, there is a cutoff frequency band in which resonances are not allowed owing to the excitation of an infinite number of magnetostatic volume-wave modes along the ferrite substrates supporting the resonators.

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A photoconductive correlation receiver for time-hopped wireless spread-spectrum radio

E.E. Funk, S. Ramsey and C.H. Lee. "A photoconductive correlation receiver for time-hopped wireless spread-spectrum radio." 1998 Microwave and Guided Wave Letters 8.6 (Jun. 1998 [MGWL]): 229-231.

We present the first demonstration of a new receiver for digital time-hopped spread-spectrum wireless communications. The time-hopped system is based upon the transmission of short radio frequency (RF) pulses with bandwidths exceeding 200 MHz. The new receiver used photoconductive switching to perform front-end correlated reception. This type of receiver was designed to provide a large dynamic range in the presence of noise and interference. Results show a bit error rate of better than 10^{-7} at a 250-kB/s data rate.

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Planar diode solid-state receiver for 557 GHz with state-of-the-art performance

J.E. Oswald, T. Koch, I. Mehdi, A. Pease, R.J. Dengler, T.H. Lee, D.A. Humphrey, M. Kim, P.H. Siegel, M.A. Frerking and N.R. Erickson. "Planar diode solid-state receiver for 557 GHz with state-of-the-art performance." 1998 Microwave and Guided Wave Letters 8.6 (Jun. 1998 [MGWL]): 232-234.

The design and performance of a subharmonically pumped (SHP) 557-GHz mixer driven by a solid-state local oscillator (LO) are reported. Whisker contacts are not required as both the mixer and LO utilize planar Schottky devices. A measured mixer noise temperature of 2100-K double sideband (DSB) with a conversion loss of 8.9 dB has been achieved at room temperature. The mixer exhibits broad intermediate frequency (IF) bandwidth with measured DSB noise temperatures below 3400 K in the band from 1.5 to 17 GHz. An external 6-18-GHz amplifier has been added to the output of the mixer, and measured receiver noise temperatures below 7300 K have been measured across the IF band. The results are believed to represent state-of-the-art performance for a room-temperature broad-band solid-state receiver at this frequency.

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A degree-2 WRD750 ridge waveguide junction circulator using a gyromagnetic post resonator

J. Helszajn. "A degree-2 WRD750 ridge waveguide junction circulator using a gyromagnetic post resonator." 1998 Microwave and Guided Wave Letters 8.6 (Jun. 1998 [MGWL]): 235-237.

An important circulator structure that has received little attention in the literature is the ridge waveguide one. The purpose of this contribution is to provide some preliminary experimental data on one degree-1 arrangement. It consists of using a simple gyromagnetic post with the direct magnetic field along its axis at the junction of three WRD750 double ridge waveguides. A quarter-wave coupled geometry using a dielectric filler between the ridges with a degree-2 frequency response is also described.

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Embedded transmission line MMIC 1-W flip chip assembly using a Z-axis interconnect

T. Budka, A. Ketterson, Hua-Quen Tserng, L. Stiborek, L. Heinrich, R. Smith, B. Ables, C. Kyhl, K. Worthen, G. Brehm and J. Reddick. "Embedded transmission line MMIC 1-W flip chip assembly using a Z-axis interconnect." 1998 Microwave and Guided Wave Letters 8.6 (Jun. 1998 [MGWL]): 238-240.

The authors describe a new type of electronic packaging topology using embedded transmission-line (ETL) monolithic microwave integrated circuits (MMIC's) along with a new state-of-the-art Z-axis material that acts as a chip adhesive as well as an electrical connection with a carrier substrate. The results from the first two flip chip assemblies that were produced under the Microwave Analog Front End Technology (MAFET) Thrust 2 Program are presented. The flip chip packages provided greater than 1-W package output power on a Kovar housing floor with greater than 8-dB package large signal gain at 11.5 GHz.

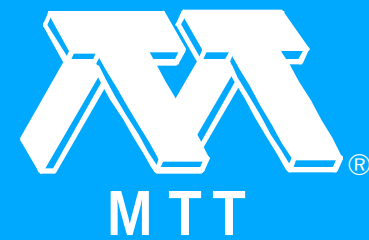
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Abstracts

Accurate Distributed Inductance of Spiral Resonators (Corrections)

Z.M. Hejazi, P.S. Excell and Z. Jiang. "Accurate Distributed Inductance of Spiral Resonators (Corrections)." 1998 Microwave and Guided Wave Letters 8.6 (Jun. 1998 [MGWL]): 241-241.



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Numerical dispersion and stability analysis of the FDTD technique in lossy dielectrics

J.A. Pereda, O. Garcia, A. Vegas and A. Prieto. "Numerical dispersion and stability analysis of the FDTD technique in lossy dielectrics." 1998 Microwave and Guided Wave Letters 8.7 (Jul. 1998 [MGWL]): 245-247.

Two different extensions of the finite-difference time-domain (FDTD) method for the treatment of lossy dielectrics are considered: the time-average (TA) and the time-forward (TF) difference schemes. An analytical study of the stability properties and numerical dispersion of these schemes is presented. The stability analysis is based on the Von Neumann (Fourier series) method, while the numerical dispersion properties are established in terms of the numerical permittivity of discrete lossy dielectrics. The analytical stability limits are compared with those obtained numerically in previous works. The accuracy of the two schemes is compared by computing the reflection coefficient of a lossy dielectric slab.





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Design methodology of microstrip lines using dimensional analysis

M.Y. Mah, L.L. Liou, R.L. Ewing and A.M. Ferendeci. "Design methodology of microstrip lines using dimensional analysis." 1998 Microwave and Guided Wave Letters 8.7 (Jul. 1998 [MGWL]): 248-250.

Dimensional analysis has been used to develop a new methodology in microwave integrated circuit design using microstrip lines. The analysis reveals a complete set of dimensionless products for the microstrip line. The dependencies between these products are established using the Pi theorem. Using commercial simulation tools and numerical fitting techniques, design formulas can be established. These design formulas calculate the desired microwave parameters, such as characteristic impedance, effective dielectric constants, and their frequency dependencies.

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Receive mode of optical signal processing multibeam array antennas

Yu Ji, K. Inagaki, O. Shibata and Y. Karasawa. "Receive mode of optical signal processing multibeam array antennas." 1998 Microwave and Guided Wave Letters 8.7 (Jul. 1998 [MGWL]): 251-253.

A receive mode of the optical processing array antennas is presented. In this receive mode, the transmitting radio frequency (RF) signals generated by optical processor will be shifted as local oscillator (LO) signals, and the received RF beams will be discriminated in the downconverted intermediate frequency (IF) frequency domain by a mixer array between the optical processor and antenna elements. A proof-of-concept experiment for a two-beam and four-element array antenna is demonstrated, and the received IF power distributions for each beam have very good agreement with the calculated antenna patterns.

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InGaAs/InAlAs/AlAs heterostructure barrier varactors for harmonic multiplication

X. Melique, J. Carbonell, R. Havart, P. Mounaix, O. Vanbesien and D. Lippens.

"InGaAs/InAlAs/AlAs heterostructure barrier varactors for harmonic multiplication." 1998 Microwave and Guided Wave Letters 8.7 (Jul. 1998 [MGWL]): 254-256.

In this work, we report on the radio frequency (RF) characterization up to 110 GHz of probable high-performance heterostructure barrier varactors fabricated from InP-based strained epilayers. By making use of a dual step-like barrier scheme, the voltage handling is as high as 12 V whereas the capacitance ratio at 85 GHz achieves 5:1 for a zero-bias capacitance of 1 fF/ $\mu\text{m}/\text{sup } 2/$ without deviation in the frequency band investigated. Good agreement between calculated and measured scattering parameters is found on the basis of electromagnetic simulation of diode embedding.



Abstracts

The interdigital coplanar waveguide: a new low-impedance micromachinable planar structure

D.A. Thompson and R.L. Rogers. "The interdigital coplanar waveguide: a new low-impedance micromachinable planar structure." 1998 Microwave and Guided Wave Letters 8.7 (Jul. 1998 [MGWL]): 257-259.

The authors describe a new type of coplanar waveguide (CPW) which we call interdigital coplanar waveguide (ICPW). ICPW has three advantages over CPW. First, ICPW can have a lower characteristic impedance for the same minimum feature size and overall line width. Second, at low impedances it can obtain reduced high-frequency resistive loss. Finally, thickening the conductor reduces the ohmic losses more rapidly in the ICPW than in the CPW. The authors present an analysis comparing CPW and ICPW, assuming a TEM mode of propagation. Calculations are performed using finite-element analysis, and volume filament and surface ribbon methods.



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Inverse scattering of nonuniform, symmetrical coupled lines

Tun-Ruey Cheng, Te-Wen Pan and Ching-Wen Hsue. "Inverse scattering of nonuniform, symmetrical coupled lines." 1998 Microwave and Guided Wave Letters 8.7 (Jul. 1998 [MGWL]): 260-262.

A novel technique is developed to reconstruct the physical layouts of nonuniform symmetric couplers from the scattering parameters at terminals. The coupler is decomposed into even- and odd-mode lines in which the decoupled modal lines are reconstructed from their respective scattering parameters. The effect of unequal modal propagation delays on the reconstructed coupler is also addressed. Numerical results are presented to illustrate the validity of this reconstruction technique.

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A transferred-substrate HBT wide-band differential amplifier to 50 GHz

B. Agarwal, Q. Lee, R. Pallela, D. Mensa, J. Guthrie and M.J.W. Rodwell. "A transferred-substrate HBT wide-band differential amplifier to 50 GHz." 1998 Microwave and Guided Wave Letters 8.7 (Jul. 1998 [MGWL]): 263-265.

Differential amplifiers are used in automatic gain control amplifiers and limiting amplifiers in fiber-optic receivers. Here we present a differential amplifier fabricated in the transferred-substrate heterojunction bipolar transistor (HBT) integrated circuit technology. The amplifier has a gain of 11 dB and the 3-dB bandwidth is greater than 50 GHz. Two gain stages with DC interstage coupling are used. Biasing is through active current mirrors and a single negative power supply. A bandwidth of 50 GHz is the highest bandwidth ever reported for a broad-band differential amplifier in any technology.

Click on title for a complete paper.



Abstracts

A novel approach to the analysis of microwave regenerative analog frequency dividers

K.-K.M. Cheng and Chun-Wah Fan. "A novel approach to the analysis of microwave regenerative analog frequency dividers." 1998 Microwave and Guided Wave Letters 8.7 (Jul. 1998 [MGWL]): 266-267.

The authors present a CAD-oriented approach to the analysis of regenerative analog frequency dividers based upon the Volterra series method. Design information such as locking frequency range and minimum injected power levels can easily be found from the determining equation thus obtained. Locking performances of a MESFET analog 1/3 frequency divider evaluated by the proposed method and a time-domain simulator are included.



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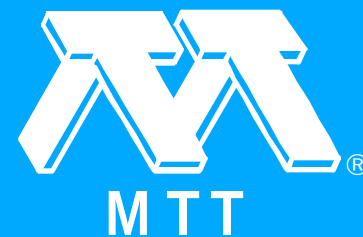
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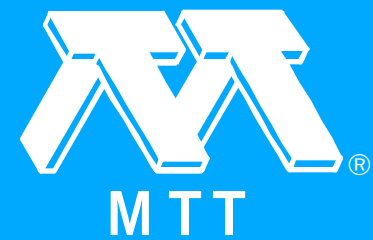
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Performance of low-loss RF MEMS capacitive switches

C.L. Goldsmith, Zhimin Yao, S. Eshelman and D. Denniston. "Performance of low-loss RF MEMS capacitive switches." 1998 Microwave and Guided Wave Letters 8.8 (Aug. 1998 [MGWL]): 269-271.

This letter details the construction and performance of metal membrane radio frequency MEMS switches at microwave and millimeter-wave frequencies. These shunt switches possess a movable metal membrane which pulls down onto a metal/dielectric sandwich to form a capacitive switch. These switches exhibit low loss (<0.25 dB at 35 GHz) with good isolation (35 dB at 35 GHz). These devices possess on-off capacitance ratios in the range of 80-110 with a cutoff frequency (figure of merit) in excess of 9000 GHz, significantly better than that achievable with electronic switching devices.

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Transient analysis of collector current collapse in multifinger HBT's

F. Dhondt, J. Barrette and P.A. Rolland. "Transient analysis of collector current collapse in multifinger HBT's." 1998 Microwave and Guided Wave Letters 8.8 (Aug. 1998 [MGWL]): 272-274.

The authors report for the first time a time-domain analysis of thermal instability in multifinger heterojunction bipolar transistors (HBT's). This is based on a transient quasi-three-dimensional (3-D) electrothermal model that selfconsistently solves the thermal and electrical equations. This model is designed to evaluate the thermal time constant of GaAs-based power HBT's employing emitter thermal shunt and emitter ballast resistance.

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Compact dual-mode filters for HTS satellite communication systems

Z.M. Hejazi, P.S. Excell and Z. Jiang. "Compact dual-mode filters for HTS satellite communication systems." 1998 Microwave and Guided Wave Letters 8.8 (Aug. 1998 [MGWL]): 275-277.

Novel compact dual-mode narrow bandpass microstrip filters using degenerate modes in multizigzag arms of square loop resonators were analyzed as realized in superconducting 2- and 4-pole versions and found to have high performance, selectivity, and substantial size reduction, compared with current designs. A 2-pole copper filter, scaled nearly eight times larger to operate at a center frequency of 142 MHz and bandwidth of 1.4%, was fabricated, tested, and compared with the prediction of a CAD tool to validate predictions for other analyzed designs. The agreement was found to be good.

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Characteristics of periodically loaded CPW structures

A. Gorur, C. Karpuz and M. Alkan. "Characteristics of periodically loaded CPW structures." 1998 Microwave and Guided Wave Letters 8.8 (Aug. 1998 [MGWL]): 278-280.

A capacitively loaded coplanar waveguide (CPW) resonator has been studied. It has been shown that the proposed resonator can be used to achieve a slow-wave effect without occupying extra surface area and it has a good performance as compared with the conventional half-wavelength CPW resonator. Furthermore, dispersive effects have been increased with the number of slots in periodically loaded structures.

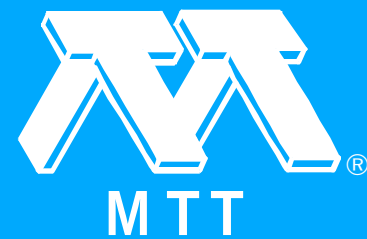


Abstracts

A hybrid technique combining the method of moments in the time domain and FDTD

A.R. Bretones, R. Mittra and R.G. Martin. "A hybrid technique combining the method of moments in the time domain and FDTD." 1998 Microwave and Guided Wave Letters 8.8 (Aug. 1998 [MGWL]): 281-283.

This letter presents a new hybrid method that efficiently combines two versatile numerical techniques, viz., the finite difference time domain (FDTD) and the method of moments in the time domain (MoMTD). The hybrid method is applicable to complex geometries comprising arbitrary thin-wire and inhomogeneous dielectric structures. It employs the equivalence theorem to separate the original problem into two subproblems: (1) the region containing the wires, which is analyzed by using the MoMTD, and (2) the dielectric zone that is modeled with the FDTD. The application of the method is illustrated by analyzing two canonical problems involving thin wires and inhomogeneous media.



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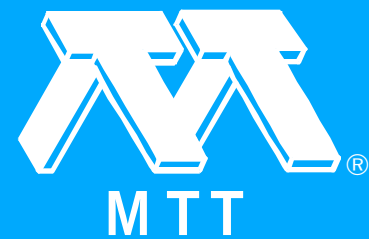
High-power high-frequency traveling-wave heterojunction phototransistors with integrated polyimide waveguide

D.C. Scott, D.P. Prakash, H. Erlig, D. Bhattacharya, M.E. Ali, H.R. Fetterman and M. Matloubian. "High-power high-frequency traveling-wave heterojunction phototransistors with integrated polyimide waveguide." 1998 Microwave and Guided Wave Letters 8.8 (Aug. 1998 [MGWL]): 284-286.

A high-power high-speed phototransistor has been demonstrated using a traveling-wave (TW) structure with an integrated polyimide optical waveguide. In our configuration, optical power transfer is distributed along the length of the device via leaky mode coupling of light from the polyimide waveguide to the active region of the phototransistor. The TW electrode design allows for an electrically long structure while maintaining high bandwidths. Due to the increased absorption volume, the optical power handling capabilities of the TW-heterojunction phototransistors (TW-HPT's) are improved over that of conventional lumped-element HPT detectors. The experimental results show no saturation of the fundamental at 60 GHz up to 50 mA of DC photocurrent.

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Wavelet-based adaptive solution for the nonuniform multiconductor transmission lines

S. Grivet-Talocia and F. Canavero. "Wavelet-based adaptive solution for the nonuniform multiconductor transmission lines." 1998 Microwave and Guided Wave Letters 8.8 (Aug. 1998 [MGWL]): 287-289.

A time-domain technique for the solution of arbitrary nonuniform multiconductor transmission lines (NMTL's) is presented. The technique is based on a weak formulation of the NMTL equations obtained through spatial expansion of the voltage and current vectors into biorthogonal wavelet functions. Wavelets allow adaptive representations of the solution by using few expansion coefficients, with any fixed approximation order. The set of significant expansion coefficients is determined automatically from the solution, which can be computed very efficiently. A numerical example illustrates the high adaptivity of the method.

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Coupling between neighboring CPWs in MMICs

F. Schnieder, H.-M. Helliger and W. Heinrich. "Coupling between neighboring CPWs in MMICs." 1998 Microwave and Guided Wave Letters 8.8 (Aug. 1998 [MGWL]): 290-292.

Coupling between neighboring coplanar waveguides (CPWs) is simulated and measured. Simulation is based on two-dimensional (2-D) electromagnetic analysis and a network description. The investigations show that, in general, coupling may be neglected (lower than -30 dB) if the distance between the CPWs is more than twice their ground-to-ground spacing. However, this does not hold in the conductor-backed case with a connection between CPW ground and backside metal. Then, one finds sharp resonance peaks in the coupling exceeding -10 dB.

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A fully integrated 1.9-GHz CMOS low-noise amplifier

Cheon Soo Kim, Min Park, Chung-Hwan Kim, Yeong Cheol Hyeon, Hyun Kyu Yu, Kwyro Lee and Kee Soo Nam. "A fully integrated 1.9-GHz CMOS low-noise amplifier." 1998 Microwave and Guided Wave Letters 8.8 (Aug. 1998 [MGWL]): 293-295.

A fully integrated 1.9 GHz CMOS low-noise amplifier (LNA) has been implemented in a 0.8 μ m CMOS technology. For low-noise performance, the amplifier employs high-quality spiral inductors with a quality factor of 8.5-12.5, and device layout and bias condition of the active devices were optimized for low-noise conditions. This amplifier showed a noise figure of 2.8 dB with a forward gain of 15 dB at current consumption of 15 mA. To the authors' knowledge, this represents the lowest noise figure reported to date for a fully integrated CMOS LNA operating at 1.9 GHz.



Abstracts

Electromagnetic Analysis for Microwave Fet Modeling (Comments)

R.H. Jansen. "Electromagnetic Analysis for Microwave Fet Modeling (Comments)." 1998 Microwave and Guided Wave Letters 8.8 (Aug. 1998 [MGWL]): 296-296.



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Electromagnetic analysis for microwave FET modeling (Authors' Reply)

R.H. Jansen, E. Larique, S. Mons, D. Baillargeat, S. Verdeyme, M. Aubourg, P. Guillon and R. Quere. "Electromagnetic analysis for microwave FET modeling (Authors' Reply)." 1998 Microwave and Guided Wave Letters 8.8 (Aug. 1998 [MGWL]): 296-296.

For the original paper see *ibid.*, vol. 8, p. 41-43 (Jan. 1998). The commenter states that the concept of EM-based microwave field-effect transistor (FET) modeling, as outlined in the aforementioned paper, is not new and has been published before. It is pointed out that a first version was published by Jansen (1989) and includes measurement results and implementation into the commercial LINMIC+ software version 2.0, Oct. 1987. Also a nonlinear version of the EM analysis for microwave FET modeling has been published already by Jansen and Pogatzki (1991). It is claimed that virtually the only difference between the published material is the use of finite-element modeling (FEM) analysis instead of other EM methods for the distributed passive part of the FET/HEMT. In reply the authors wish to underline the work on electromagnetic-based microwave component modeling by Jansen. They state that the methodology applied in their paper for the modeling of a FET is actually well known, and, moreover, they did not assert that they were the first to have developed such a solution. Nevertheless, with the development of an efficient electromagnetic solver and the increase of workstation capabilities, they were now able to apply a rigorous method for the treatment of the passive part of the FET, which has not, in their opinion, been done before in previous papers.



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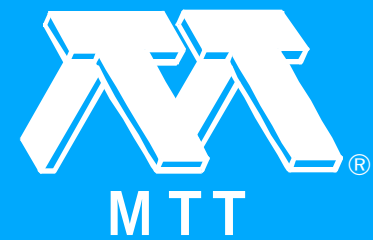
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*"Information for Authors Submitting Manuscripts in Electronic Form (Sep. 1998 [MGWL])."
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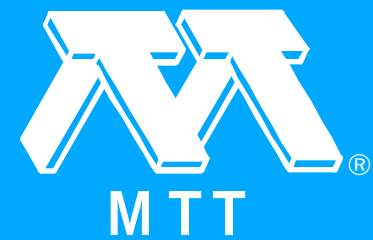
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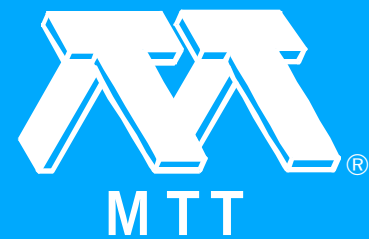
Extension of Berenger's PML for bi-isotropic media

S. Gonzalez Garcia, I. Villo Perez, R.G. Martin and B. Garcia Olmedo. "Extension of Berenger's PML for bi-isotropic media." 1998 Microwave and Guided Wave Letters 8.9 (Sep. 1998 [MGWL]): 297-299.

An extension of Berenger's perfectly matched layer (PML) absorbing boundary conditions to adapt bi-isotropic media is formulated. The method is developed under simple algebraic conditions and validated with the finite-difference time-domain method (FDTD).

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Reducing the substrate losses of RF integrated inductors

F. Mernyei, F. Darrer, M. Pardoen and A. Sibrai. "Reducing the substrate losses of RF integrated inductors." 1998 Microwave and Guided Wave Letters 8.9 (Sep. 1998 [MGWL]): 300-301.

The authors introduce a new method for reducing the substrate-related losses of integrated spiral inductors for Si RF ICs. Measurement based equivalent circuit parameters are demonstrated. Using our method the quality factor increased from 5.3 to 6.0 at 3.5 GHz at an 1.8 nH inductor.

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Abstracts

An overmoded coaxial buncher cavity for a 100-MW gyroklystron

M. Castle, J. Anderson, W. Lawson and G.P. Saraph. "An overmoded coaxial buncher cavity for a 100-MW gyroklystron." 1998 Microwave and Guided Wave Letters 8.9 (Sep. 1998 [MGWL]): 302-304.

An overmoded abrupt transition coaxial buncher cavity has been designed and experimentally cold tested for use in a second-harmonic 17.136-GHz three-cavity 100-MW gyroklystron. Circuit efficiencies of 41% can be achieved with a buncher cavity that has a quality factor of 389 in the TE/sub 021/ mode. Scattering matrix and finite-element codes were used to design and model the cavity theoretically and to determine that the cavity would be stable to oscillation. The experimental cold testing confirmed these results and refined the final dimensions from the theoretical models.



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Abstracts

Efficient numerical analysis of arbitrary single-mode optical fibers using Pade approximants

V. Fiumara, V. Galdi, V. Pierro and I.M. Pinto. "Efficient numerical analysis of arbitrary single-mode optical fibers using Pade approximants." 1998 Microwave and Guided Wave Letters 8.9 (Sep. 1998 [MGWL]): 305-307.

We propose a new, fast, and accurate numerical technique for analyzing single-mode optical fibers with arbitrary (transverse) refractive index profile. The method is based upon a Pade (rational) approximation of the spectral domain Green's function of the fiber, obtained by solving a hierarchy of static problems. The sought eigenfrequency and modal field are accordingly estimated by computing, respectively, the dominant pole and the related residual of the rational approximant. Numerical simulations and comparison with known analytical results indicate that the proposed method is highly accurate, reliable, and computationally affordable.



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Abstracts

Design equations for broad-band planar aperture coupler

K. Rambabu and A.T. Kalghatgi. "Design equations for broad-band planar aperture coupler." 1998 Microwave and Guided Wave Letters 8.9 (Sep. 1998 [MGWL]): 308-309.

We present design equations for coupling and directivity of a stripline-to-microstrip line coupler with apertures in their common ground plane. The concept of broad-banding using multiple aperture and supporting experimental results are presented.



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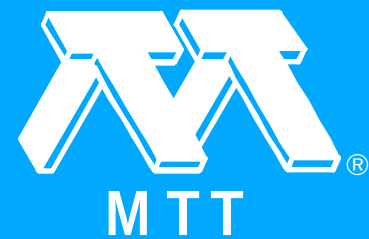
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A time-domain vector potential formulation for the solution of electromagnetic problems

F. De Flaviis, M.G. Noro, R.E. Diaz, G. Franceschetti and N.G. Alexopoulos. "A time-domain vector potential formulation for the solution of electromagnetic problems." 1998 Microwave and Guided Wave Letters 8.9 (Sep. 1998 [MGWL]): 310-312.

We present an alternative vector potential formulation of Maxwell's equations derived upon introduction of a quantity related to the Hertz potential. Once space and time are discretized, within this formulation the electric field and vector potential components are condensed in the same point in the elementary cell. In three dimensions the formulation offers an alternative to finite-difference time-domain (FDTD) method; when reduced to a two-dimensional (2-D) problem, only two variables, instead of three, are necessary, implying a net memory saving of 1/3 with respect to FDTD.

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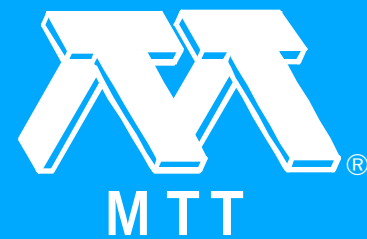


Abstracts

A systematic approach to the derivation of constitutive parameters of a perfectly matched absorber

M. Kuzuoglu and R. Mittra. "A systematic approach to the derivation of constitutive parameters of a perfectly matched absorber." 1998 Microwave and Guided Wave Letters 8.9 (Sep. 1998 [MGWL]): 313-315.

In this work, the constitutive parameters of a perfectly matched absorber are derived by imposing the condition that the fields decay within the absorber in a required manner, and it is shown that this absorber can be realized as a bianisotropic medium. This strategy is similar to that employed for the realization of perfectly matched layers (PML's), via the use of anisotropic media, and the imposition of certain conditions on the complex permittivity and permeability tensors. However, unlike the PML, the bianisotropic media are desirable candidates for physically realizable and passive absorbers. Furthermore, theoretically, such media have the potential of absorbing incident waves of arbitrary frequency and direction of propagation with no reflection.



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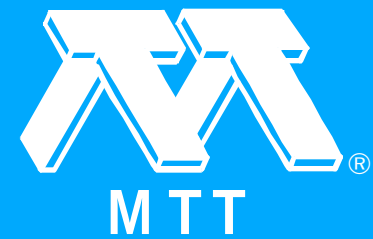
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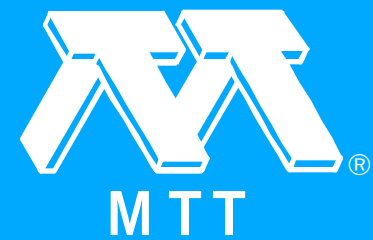
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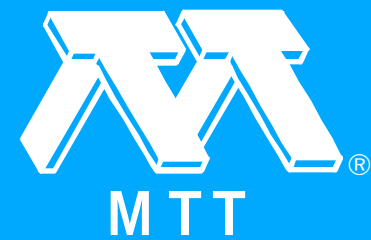
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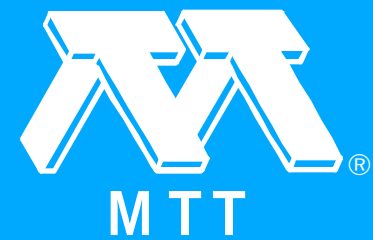
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Abstracts

Physical interpretation of the transparent absorbing boundary for the truncation of the computational domain

S.A. Tretyakov. "Physical interpretation of the transparent absorbing boundary for the truncation of the computational domain." 1998 Microwave and Guided Wave Letters 8.10 (Oct. 1998 [MGWL]): 321-323.

Physical interpretation of the recently introduced transparent absorbing boundary for the grid termination in finite methods shows that the absorbing domain in that method is described by the constitutive equations of moving media. The field solutions in this domain give the requirements for the material parameters to provide zero reflection at arbitrary incidence angles and arbitrary polarizations of the incident waves.



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A novel implementation of Berenger's PML for FDTD applications

F. Akleman and L. Sevgi. "A novel implementation of Berenger's PML for FDTD applications." 1998 Microwave and Guided Wave Letters 8.10 (Oct. 1998 [MGWL]): 324-326.

In this letter, a new implementation of the three-dimensional (3-D) perfectly matched layer (PML) in finite-difference time-domain (FDTD) applications is introduced. This technique is based on doubling the cell dimensions in PML region where extra averaging of electrical field components are necessary at the edges and faces along the PML-FDTD interfaces. The presented numerical examples are for 3-D structures which exhibit complex wave phenomena. Significant improvement obtained after this implementation, especially at lower frequencies, is demonstrated.

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Group velocity dispersion cancellation and additive group delays by cascaded fiber Bragg gratings in transmission

S. Wang, H. Erlig, H.R. Fetterman, E. Yablonovitch, V. Grubsky, D.S. Starodubov and J. Feinberg. "Group velocity dispersion cancellation and additive group delays by cascaded fiber Bragg gratings in transmission." 1998 Microwave and Guided Wave Letters 8.10 (Oct. 1998 [MGWL]): 327-329.

We have demonstrated that cascaded fiber Bragg gratings can provide delays of propagating pulses with minimal pulse reshaping. The grating pair used exhibited an overlap transmission region centered at 1551.05 nm, where both gratings contribute to the group delay and the group velocity dispersion (GVD) was canceled. Using wavelength tunable pulses spectrally sliced from a mode-locked fiber laser, the measurement was performed in the time domain with single picosecond resolution. Both gratings were 3 mm long and a maximum group delay of 15 ps was measured for the cascaded sequence. This compound grating configuration can be implemented as encoders and decoders in spread spectrum CDMA systems.

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An equivalent circuit approach for microstrip component analysis using the FDTD method

L.L. Liou, M. Mah and J. Cook. "An equivalent circuit approach for microstrip component analysis using the FDTD method." 1998 Microwave and Guided Wave Letters 8.10 (Oct. 1998 [MGWL]): 330-332.

The conventional analysis of waveguide parameters for microstrip components using the finite-difference time-domain (FDTD) method is based on monitoring the traveling wave at multiple locations. The dispersion relations of the effective dielectric constant and the characteristic impedance usually exhibit oscillatory behavior. An equivalent circuit approach was utilized for these parameters. Together with the FDTD results, the inductance and the capacitance were evaluated. The phase velocity and the characteristics impedance were then calculated at a single monitor location. With this method, the oscillatory features in the dispersion relations were minimized.

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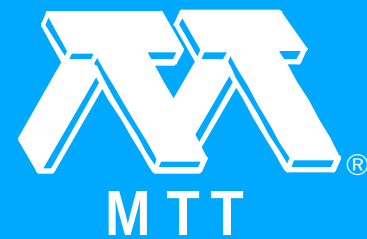


Abstracts

Extraction of equivalent circuits for microstrip components and discontinuities using the genetic algorithm

P.L. Werner, R. Mittra and D.H. Werner. "Extraction of equivalent circuits for microstrip components and discontinuities using the genetic algorithm." 1998 Microwave and Guided Wave Letters 8.10 (Oct. 1998 [MGWL]): 333-335.

This letter introduces a new technique based on the application of the genetic algorithm (GA) for extracting the equivalent circuits-from measured or computed S-parameters-that can be inserted into SPICE simulations. The GA is a robust optimization tool that is shown to yield excellent results for discontinuities in microstrip lines, for instance a right-angled bend, and for microwave circuits, e.g., planar inductors and parallel plate capacitors.



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Photonic bandgap structures used as filters in microstrip circuits

I. Rumsey, M. Piket-May and P.K. Kelly. "Photonic bandgap structures used as filters in microstrip circuits." 1998 Microwave and Guided Wave Letters 8.10 (Oct. 1998 [MGWL]): 336-338.

The application of photonic bandgap structures (PBG's) as substrates in microstrip circuits has been investigated. The effects of substrate thickness, microstrip transmission line location, and length of the PBG structure were studied using a finite-difference time-domain (FDTD) simulation and experimental measurement. A low-pass filter with a very wide high-frequency rejection bandwidth was constructed from a serial connection of many different PBG structures.





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CAD of triple-mode cavities in rectangular waveguide

G. Lastoria, G. Gerini, M. Guglielmi and F. Emma. "CAD of triple-mode cavities in rectangular waveguide." 1998 Microwave and Guided Wave Letters 8.10 (Oct. 1998 [MGWL]): 339-341.

In this paper describe a very simple cavity structure which can be used as the basic building block for the computer-aided design (CAD) of triple-mode filters in rectangular waveguide. The input output ports are standard rectangular waveguides with a common longitudinal axis. The proposed configuration is geometrically simple and exhibits the very important feature of being amenable to a rigorous electromagnetic simulation. As an application example, a three-pole filter is demonstrated thereby fully validating the configuration proposed.

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Abstracts

A new empirical I-V model for HEMT devices

Y.C. Chen, D.L. Ingram, H.C. Yen, R. Lai and D.C. Streit. "A new empirical I-V model for HEMT devices." 1998 Microwave and Guided Wave Letters 8.10 (Oct. 1998 [MGWL]): 342-344.

We have developed a new empirical model to represent the current-voltage (I-V) characteristics of HEMT devices. This model is simple and yet capable of representing the HEMT I-V characteristics with high accuracy. Excellent modeling of the measured drain current, its first (transconductance), second, and third derivatives with respect to gate voltage for multiple drain biases is demonstrated. A simple model extraction procedure has been developed and is described in the letter.



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New measurement-based technique for RF LDMOS nonlinear modeling

J.M. Collantes, J.J. Raoux, R. Quere and A. Suarez. "New measurement-based technique for RF LDMOS nonlinear modeling." 1998 Microwave and Guided Wave Letters 8.10 (Oct. 1998 [MGWL]): 345-347.

In this letter a new look-up table model is developed for the nonlinear modeling of radio frequency (RF) LDMOS transistors. The modeling technique is based on the use of approximation splines that are coupled to a pulsed I-V characterization setup. It provides a very fast modeling procedure, while avoiding the appearance of undesired ripples in the modeled functions. The technique has been applied to a RF LDMOS technology for L-band applications, obtaining excellent results in the prediction of both the small- and large-signal transistor responses. This technique is specially suitable for fast-evolution technologies.

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High-efficiency load-pull harmonic controlled Class-E power amplifier

*F.J. Ortega-Gonzalez, J.L. Jimenez-Martin, A. Asensio-Lopez and G. Torregrosa-Penalva.
"High-efficiency load-pull harmonic controlled Class-E power amplifier." 1998 Microwave and Guided Wave Letters 8.10 (Oct. 1998 [MGWL]): 348-350.*

This paper proposes a method to design high-efficiency Class-E power amplifiers following a frequency-domain approach instead of the classical time-domain analysis. Included are equations and plots of universal constant power and efficiency contours of Class-E amplifiers. To validate this method, a 900-MHz Class-E amplifier using a bipolar transistor has been designed and constructed. Power-added efficiency up to 79% and collector efficiency up to 91% have been measured at 900 MHz. Multiharmonic load-pull approach to the design of Class-E amplifiers proves that Class-E operation is possible at microwave frequencies using bipolar technology.

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V-band amplifier using InGaP/InGaAs/GaAs heterostructure MESFETs with asymmetric Au gate head

K. Onodera, K. Nishimura, T. Nittono, Y. Yamane and K. Yamasaki. "V-band amplifier using InGaP/InGaAs/GaAs heterostructure MESFETs with asymmetric Au gate head." 1998 *Microwave and Guided Wave Letters* 8.10 (Oct. 1998 [MGWL]): 351-353.

Self-aligned n⁺/i-InGaP/n-InGaAs/i-GaAs heterostructure MESFETs (N-MESFETs) with a gate length of 0.16 μm were developed for applications to microwave and millimeter-wave wireless communication systems. A T-shaped Au/WSiN gate was used and the 0.8- μm -wide Au gate head was deliberately shifted toward the source in order to reduce the parasitic feedback capacitance. Shifting the Au gate head by 0.2 μm , the gate-to-drain capacitance decreased by 43 fF/mm and the maximum stable gain was improved by 1 dB. V-band monolithic microwave integrated circuit (MMIC) amplifiers fabricated with the asymmetric gate head field-effect transistors (FETs) achieved a gain of 9.7 dB at 55 GHz; their chip size is only 0.95 mm².

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Design and modeling of uniplanar double-balanced mixer

Shau-Gang Mao, Kwann-Kaeo Chiou and Chun Hsiung Chen. "Design and modeling of uniplanar double-balanced mixer." 1998 Microwave and Guided Wave Letters 8.10 (Oct. 1998 [MGWL]): 354-356.

A novel uniplanar double-balanced mixer (UDBM) including coplanar waveguide (CPW)-to-coplanar stripline (CPS) baluns as well as CPS high-pass and low-pass filters is designed and implemented. This mixer is simulated by an equivalent-circuit model, and its measured and simulated results are compared. The proposed mixer has conversion loss ranging from 6 to 10 dB and LO-to-IF and LO-to-RF isolations greater than 30 and 20 dB, respectively, and also provides broader LO and IF bandwidths of 10-35 GHz and 0.15 GHz, respectively.



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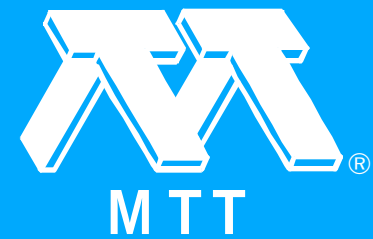
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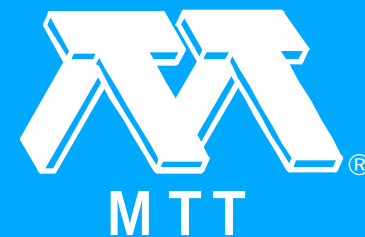
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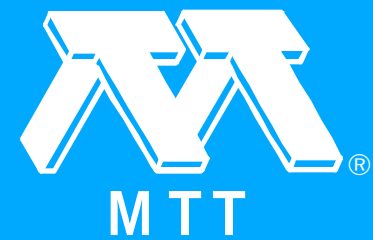
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Abstracts

Perfectly matched layer absorbing boundary conditions for the method of lines modeling scheme

S.J. Al-Bader and H.A. Jamid. "Perfectly matched layer absorbing boundary conditions for the method of lines modeling scheme." 1998 Microwave and Guided Wave Letters 8.11 (Nov. 1998 [MGWL]): 357-359.

The perfectly matched layer device for the absorption of electromagnetic radiation is incorporated with the method of lines numerical scheme. Examples are given that show the superior performance in comparison with numerical absorbing boundary conditions.



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Exact implementation of higher order Bayliss-Turkel absorbing boundary operators in finite-element simulation

O.M. Ramahi. "Exact implementation of higher order Bayliss-Turkel absorbing boundary operators in finite-element simulation." 1998 Microwave and Guided Wave Letters 8.11 (Nov. 1998 [MGWL]): 360-362.

A simple yet powerful scheme is employed to incorporate Bayliss-Turkel absorbing boundary conditions (ABCs) of any order into the finite-element simulation of open-region radiation problems. Unlike previous attempts to apply higher order ABC's in finite elements, the new implementation is exact. The exact implementation is made possible by incorporating normal derivatives in the ABC formulation through direct algebraic substitution. This scheme is found to offer enhanced accuracy while negligibly affecting the sparsity of the system matrix.

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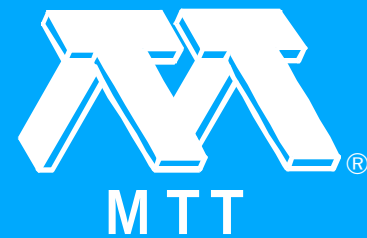


Abstracts

Minimization of microwave reflections from EC-coated glass slabs

P. Hui, E.H. Lim and H.S. Tan. "Minimization of microwave reflections from EC-coated glass slabs." 1998 Microwave and Guided Wave Letters 8.11 (Nov. 1998 [MGWL]): 363-365.

This study reports measurements and analysis of microwave reflections from the uncoated surfaces of glass slabs coated with electrically conductive (EC) films. The results show that these reflections can be minimized by varying the sheet resistance of the EC films. General design formulas to calculate such optimizing sheet resistance are given.



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Suppression of the CPW leakage in common millimeter-wave flip-chip structures

Gye-An lee and Hai-Young Lee. "Suppression of the CPW leakage in common millimeter-wave flip-chip structures." 1998 Microwave and Guided Wave Letters 8.11 (Nov. 1998 [MGWL]): 366-368.

Leakage phenomena in GaAs flip-chip structures, mounted on common GaAs and alumina main substrates, are studied using the spectral domain approach with the goal of reducing possible chip-to-chip crosstalk and transmission resonance. We have found that the TM/sub 0/ parallel-plate mode in the main substrate is dominant for the coplanar waveguide flip-chip leakage, and that the leakage can be suppressed by properly selecting the gap height and the main substrate thickness in addition to the dielectric constant.

Click on title for a complete paper.



Coplanar waveguides on silicon substrate with thick oxidized porous silicon (OPS) layer

Choong-Mo Nam and Young-se Kwon. "Coplanar waveguides on silicon substrate with thick oxidized porous silicon (OPS) layer." 1998 Microwave and Guided Wave Letters 8.11 (Nov. 1998 [MGWL]): 369-371.

The problem of high dielectric loss of waveguide on silicon in the microwave region can be solved by utilizing a thick silicon dioxide layer that is formed by silicon substrate anodization and oxidation processes. Coplanar waveguides (CPW's) are fabricated on silicon substrate with a 20- μm -thick oxidized porous silicon (OPS) layer and demonstrate very high performance of 0.1-dB/mm attenuation at 4 GHz. Thus, the OPS process is promising for gigahertz applications of silicon substrates.



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A novel low-loss slow-wave microstrip structure

Fei-Ran Yang, Yongxi Qian, R. Coccioli and T. Itoh. "A novel low-loss slow-wave microstrip structure." 1998 Microwave and Guided Wave Letters 8.11 (Nov. 1998 [MGWL]): 372-374.

A low-loss slow-wave microstrip line using a periodic structure in the ground plane is presented. The periodic structure is realized with metal pads etched in the ground plane connected by thin lines to form a distributed LC network. The slow-wave factor is demonstrated to be 1.2-2.4 times larger than that of conventional microstrip lines over a wide frequency range. Due to the unique design of the structure, low insertion loss comparable to conventional microstrips has been achieved. The proposed structure is easier to fabricate than other slow-wave devices which require multilayer substrates or very fine features.

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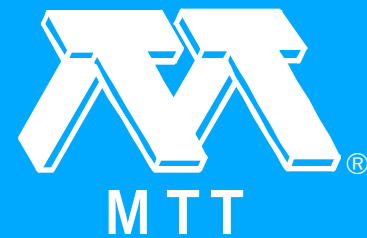


Abstracts

Accelerated FD analysis of dielectric resonators

J. Mielewski, A. Cwikla and M. Mrozowski. "Accelerated FD analysis of dielectric resonators." 1998 Microwave and Guided Wave Letters 8.11 (Nov. 1998 [MGWL]): 375-377.

Finite-difference frequency-domain (FDFD) formulation, based on Yee's mesh, is used for determination of resonant frequencies of rotationally symmetric shielded dielectric resonators. Resulting eigenproblems are solved by means of the Arnoldi method with Chebyshev preconditioning.



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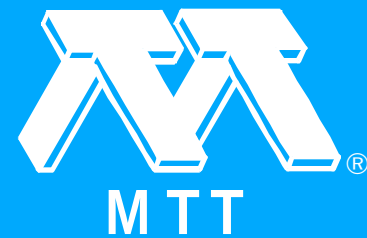


Abstracts

Forcing causality on S-parameter data using the Hilbert transform

P.A. Perry and T.J. Brazil. "Forcing causality on S-parameter data using the Hilbert transform." 1998 Microwave and Guided Wave Letters 8.11 (Nov. 1998 [MGWL]): 378-380.

A new technique to condition S-parameter data for inclusion in a time-domain simulator is presented. This technique uses the Hilbert transform and a new set of network parameters which are always positive real for a passive network. The usefulness of the technique is demonstrated by removing the noncausal aspects of a set of measured S-parameter data.



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Experimental results of SIS mixers with distributed junction arrays

Sheng-Cai Shi, T. Noguchi, J. Inatani, Y. Irimajiri and T. Saito. "Experimental results of SIS mixers with distributed junction arrays." 1998 Microwave and Guided Wave Letters 8.11 (Nov. 1998 [MGWL]): 381-383.

The heterodyne mixing performance of three respective distributed junction arrays, i.e., a number of superconductor-insulator-superconductor (SIS) junctions distributed along a thin-film transmission line involving two, five, and ten junctions are measured and compared to their Fourier transform spectroscopy (FTS) detection responses. It has been found that distributed junction arrays have a rather large bandwidth in comparison to conventional SIS junction devices, while still keeping a quantum-limited noise performance. Detailed experimental results are presented.

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5-mW and 5% efficiency 216-GHz InP-based heterostructure barrier varactor tripler

X. Melique, C. Mann, P. Mounaix, J. Thornton, O. Vanbesien, F. Molloy and D. Lippens. "5-mW and 5% efficiency 216-GHz InP-based heterostructure barrier varactor tripler." 1998 Microwave and Guided Wave Letters 8.11 (Nov. 1998 [MGWL]): 384-386.

We report on record performance in terms of efficiency and output power for an InP-based heterostructure barrier varactor (HBV) tripler. Owing to a step-like InGaAs/InAlAs/AlAs barrier scheme, the device exhibits excellent voltage handling with low leakage current ($10 \text{ A/cm/sup } 2/$ up to at least 5 V. A $4/\text{spl times}/12 \text{ /spl mu/m/sup } 2/$ finger-shaped device in a dual configuration yielded a delivered output power of 5 mW (5.4% conversion efficiency) at 216 GHz.

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Modeling and design aspects of millimeter-wave Schottky varactor frequency multipliers

J. Grajal de la Fuente, V. Krozer and F. Maldonado Martos. "Modeling and design aspects of millimeter-wave Schottky varactor frequency multipliers." 1998 Microwave and Guided Wave Letters 8.11 (Nov. 1998 [MGWL]): 387-389.

Design and optimization of frequency multipliers for millimeter and submillimeter wavelengths have been previously performed using harmonic-balance techniques together with equivalent circuit models. Using this approach it is difficult to simultaneously design and optimize the diode device and the multiplier circuit. This work demonstrates results from numerical semiconductor simulation coupled with the harmonic-balance technique. The good agreement between the calculated and published experimental data for the output power and efficiency is essentially due to the incorporation of impact ionization in the numerical model. Details on the device behavior and circuit operation at different power levels are provided.

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On the noise properties of balanced amplifiers

A.R. Kerr. "On the noise properties of balanced amplifiers." 1998 *Microwave and Guided Wave Letters* 8.11 (Nov. 1998 [MGWL]): 390-392.

The balanced amplifier is used in applications requiring a better input match than is possible with a single-ended amplifier. While the impedance matching property of the balanced amplifier is well known, its noise behavior appears not to be widely understood. It is shown that the outgoing noise waves at the input and output of a balanced amplifier are uncorrelated even though they originate in the same components. Hence, a sliding short-circuit at the input produces no variation in the output noise of the amplifier. The properties of a balanced amplifier are similar to those of an amplifier preceded by an isolator, although the noise wave emerging from inputs of the two circuits originates in different elements. The noise theory of the balanced amplifier applies also to balanced mixers based on quadrature hybrids.

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An InP HEMT MMIC LNA with 7.2-dB gain at 190 GHz

R. Lai, M. Barsky, T. Huang, M. Sholley, H. Wang, Y.L. Kok, D.C. Streit, T. Block, P.H. Liu, T. Gaier and L. Samoska. "An InP HEMT MMIC LNA with 7.2-dB gain at 190 GHz." 1998 Microwave and Guided Wave Letters 8.11 (Nov. 1998 [MGWL]): 393-395.

We present the highest frequency performance of any solid-state monolithic microwave integrated circuit (MMIC) amplifier. A 2-stage 80-nm gate length InGaAs/InAlAs/InP HEMT MMIC balanced amplifier has a measured on-wafer peak gain of 7.2 dB at 190 GHz and greater than 5 dB gain from 170 to 194 GHz. The circuit was fabricated using a pseudomorphic 20-nm In/sub 0.65/Ga/sub 0.35/As channel HEMT structure grown on a 3-in InP substrate by MBE. Based on the measured circuit results, the intrinsic exhibits an $F_{\text{sub max}}$ greater than 400 GHz.

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Comparison of coplanar 60-GHz low-noise amplifiers based on a GaAs PM-HEMT technology

A. Bessemoulin, L. Verweyen, H. Massler, W. Reinert, G. Alquie, A. Hulsmann and M. Schlechtweg. "Comparison of coplanar 60-GHz low-noise amplifiers based on a GaAs PM-HEMT technology." 1998 Microwave and Guided Wave Letters 8.11 (Nov. 1998 [MGWL]): 396-398.

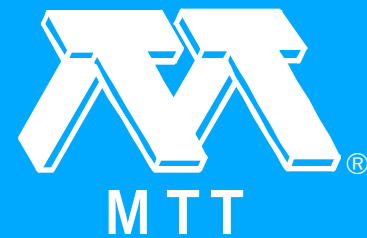
For use in low-noise receivers of communication or radar systems, three different two-stage amplifiers for 60 GHz, using a 0.15- μm PM-HEMT technology on GaAs, have been compared in terms of gain and noise figure. The amplifiers realized in coplanar waveguide technology (CPW) differ in the matching networks of the two stages, optimized either for low-noise or maximum gain bias condition. At 59 GHz, a minimum noise figure of 3.0 dB with an associated gain of 9.3 dB and a maximum gain of 12.2 dB with a noise figure of 3.8 dB were achieved.

Abstracts

A 95-GHz InP HEMT MMIC amplifier with 427-mW power output

Y.C. Chen, D.L. Ingram, R. Lai, M. Barsky, R. Grunbacher, T. Block, H.C. Yen and D.C. Streit. "A 95-GHz InP HEMT MMIC amplifier with 427-mW power output." 1998 Microwave and Guided Wave Letters 8.11 (Nov. 1998 [MGWL]): 399-401.

We have established a state-of-the-art InGaAs-InAlAs-InP HEMT MMIC fabrication process for millimeter-wave high-power applications. A two-stage monolithic microwave integrated circuit (MMIC) power amplifier with 0.15- μm gate length and 1.28-mm output periphery fabricated using this process has demonstrated an output power of 427 mW with 19% power-added efficiency at 95 GHz. To our knowledge, this is the highest output power ever reported at this frequency for any solid-state MMIC amplifier.



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New linearization method using interstage second harmonic enhancement

Dong Jing, Wing Shing Chan, Shi Man Li and Chung Wai Li. "New linearization method using interstage second harmonic enhancement." 1998 Microwave and Guided Wave Letters 8.11 (Nov. 1998 [MGWL]): 402-404.

Efficient use of the frequency spectrum necessitates the use of modulation formats such as $\pi/4$ -DQPSK, which requires linear amplification to minimize spectral regrowth. A new linearization technique is presented that allows a more efficient operation of these linear amplifiers by combining both the advantage of the transparent nature of feed-forward linearization with the efficiency of feedback linearization. The method of convolution is used to analyze the amplifier characteristics and to determine how linearization can be achieved. This method is verified experimentally and proves that by careful use of the second harmonic component, a new method of linearization has been realized.

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Novel push-pull integrated antenna transmitter front-end

W.R. Deal, V. Radisic, Yongxi Qian and T. Itoh. "Novel push-pull integrated antenna transmitter front-end." 1998 Microwave and Guided Wave Letters 8.11 (Nov. 1998 [MGWL]): 405-407.

A new integrated antenna power amplifier architecture is investigated. In this topology, a multifeed patch antenna is used as the tuned load of a class-B push-pull amplifier in such a manner that the fundamental radiates efficiently and higher harmonics are suppressed. This eliminates the necessity of using a second hybrid at the output of the amplifier and results in an extremely compact class of push-pull front end with lower associated circuit losses. Measured data shows that the power-added efficiency of the amplifier is greater than 55%, indicating that this new approach works as expected.

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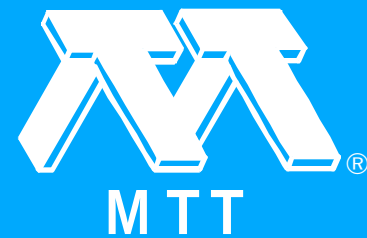


Abstracts

Optical frequency conversion using a linearized LiNbO₃ modulator

H. Roussel and R. Helkey. "Optical frequency conversion using a linearized LiNbO₃ modulator." 1998 Microwave and Guided Wave Letters 8.11 (Nov. 1998 [MGWL]): 408-410.

High dynamic range optical frequency conversion is demonstrated using a third-order linearized modulator. A record dynamic range of 122.5 dB/spl middot/Hz/sup 4/5/ was achieved at an input frequency of 400 MHz.



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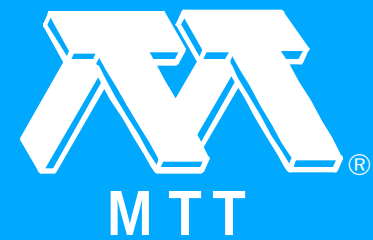
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Abstracts

Efficient computation of resonant frequencies and quality factors of cavities via a combination of the finite-difference time-domain technique and the Pade approximation

S. Dey and R. Mittra. "Efficient computation of resonant frequencies and quality factors of cavities via a combination of the finite-difference time-domain technique and the Pade approximation." 1998 Microwave and Guided Wave Letters 8.12 (Dec. 1998 [MGWL]): 415-417.

An efficient method for analyzing cavity structures by using the fast Fourier transform (FFT)/Pade technique, in combination with the finite-difference time-domain (FDTD) method, is presented. Without sacrificing the accuracy of the results, this new method significantly reduces the computational time compared to that needed where the conventional FFT algorithm is used. The usefulness of this approach is demonstrated by modeling a lossy cavity and computing its resonant frequencies as well as Q .



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Bound-mode resonance improving the input matching of a dual-mode leaky guiding structure

Ching-Chyuan Lin and C.C. Tzuang. "Bound-mode resonance improving the input matching of a dual-mode leaky guiding structure." 1998 Microwave and Guided Wave Letters 8.12 (Dec. 1998 [MGWL]): 418-420.

A novel approach of incorporating the bound-mode resonance in a uniform micro-CPW (coplanar waveguide) line that shows excellent input matching is presented. The matrix-pencil signal analyses of the CPW-fed micro-CPW guide confirm that two modes, namely, the bound CPW mode and the leaky second higher order microstrip mode, dominate, whereas the microstrip mode contributes too little to be detected. Both theoretical analyses and experimental measurements of the CPW-fed micro-CPW guide show that two well-matched input return losses regions are directly related to the resonances of the CPW mode within the guide.

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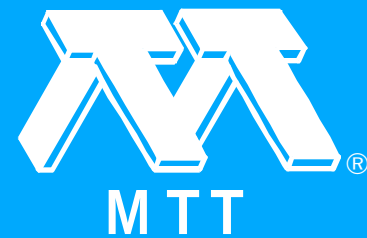


Abstracts

A 96-GHz ortho-mode transducer for the Polatron

G. Chattopadhyay, B. Philhour, J.E. Carlstrom, S. Church, A. Lange and J. Zmuidzinas. "A 96-GHz ortho-mode transducer for the Polatron." 1998 Microwave and Guided Wave Letters 8.12 (Dec. 1998 [MGWL]): 421-423.

We describe the design, simulation, fabrication, and performance of a 96-GHz ortho-mode transducer (OMT) to be used for the Polatron-a bolometric receiver with polarization capability. The OMT has low loss, good isolation, and moderately broad bandwidth, and its performance closely resembles simulation results.



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New technique for the determination through commercial software of the stable-operation parameter ranges in nonlinear microwave circuits

V. Iglesias, A. Suarez and J.L. Garcia. "New technique for the determination through commercial software of the stable-operation parameter ranges in nonlinear microwave circuits." 1998 Microwave and Guided Wave Letters 8.12 (Dec. 1998 [MGWL]): 424-426.

In this paper, a new technique is presented for the global stability analysis of nonlinear microwave circuits using harmonic balance commercial software. The stable operation region in any two-parameter plane is determined from a combination of the bifurcation conditions and a new continuation technique. In the case of asynchronous instability, the quasi-periodic solution paths are entirely traced and their stability is analyzed, which allows the prediction of possible chaotic responses. The new method makes both kinds of analysis, limited so far to in-house simulators, accessible to any circuit designer. Here, it has been applied to a varactor-based frequency doubler with excellent agreement with the experimental results.

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Frequency-locked GaAs/AlAs superlattice oscillator for tunable narrowband microwave generation

K. Hofbeck, E. Schomburg, J. Grenzer, K.F. Renk, D.G. Pavel'ev, Yu. Koschurinov, B. Melzer, S. Ivanov and P.S. Kop'ev. "Frequency-locked GaAs/AlAs superlattice oscillator for tunable narrowband microwave generation." 1998 Microwave and Guided Wave Letters 8.12 (Dec. 1998 [MGWL]): 427-429.

We observed frequency locking of a wide-miniband GaAs/AlAs superlattice oscillator. The oscillator showed a free self-sustained current oscillation giving rise to microwave generation (power 100 μ W) at a natural frequency (near 5 GHz) and ultraharmonics. A narrowband driving field locked the oscillator and caused a drastic narrowing (from 10^6 Hz to less than 10 Hz) of the halfwidths of the microwave lines, now centered at the driving frequency and its harmonics; at a driving power of 10 μ W we obtained a locking range of 1% around the natural frequency. Our experiment, performed with a superlattice integrated in a planar microwave circuit, shows that a locked superlattice oscillator is suitable for tunable narrowband generation of high-frequency radiation.

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High-gain cascode MMICs in coplanar technology at W-band frequencies

A. Tessmann, W.H. Haydl, A. Hulsmann and M. Schlechtweg. "High-gain cascode MMICs in coplanar technology at W-band frequencies." 1998 Microwave and Guided Wave Letters 8.12 (Dec. 1998 [MGWL]): 430-431.

Compact high-gain W-band multistage amplifier MMICs have been developed in coplanar technology using 0.15 μm AlGaAs-InGaAs-GaAs PM-HEMTs. The conventional dual-gate HEMT has been modified to include an additional interstage network between the common-source and the common-gate HEMT. The effect of stabilizing circuit elements has been investigated. A gain of 10 dB per cascode stage is obtained at 94 GHz. Multistage amplifier MMIC's with up to 40 dB gain have been realized.

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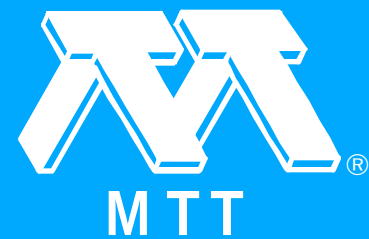


Abstracts

Design and development of printed antenna remote units for optically distributed mobile communications

M. Lye, R.B. Waterhouse, D. Novak, F. Zavosh and J.T. Aberle. "Design and development of printed antenna remote units for optically distributed mobile communications." 1998 Microwave and Guided Wave Letters 8.12 (Dec. 1998 [MGWL]): 432-434.

The first demonstration of a printed antenna remote unit (ARU) for optically distributed mobile communications compliant with the 1.9 GHz PCN specifications is presented. The ARU consists of a cavity-backed printed antenna with appropriate RF and photonic circuitry. The ARU is low cost, compact, robust, and can be easily positioned in typical microcell/picocell sites. A summary of the design procedure for the ARU and the measured results are given. The developed ARU is a key component for the successful deployment of future optically distributed microcellular mobile communications systems.



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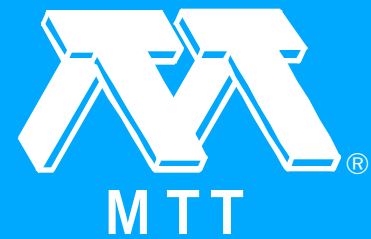
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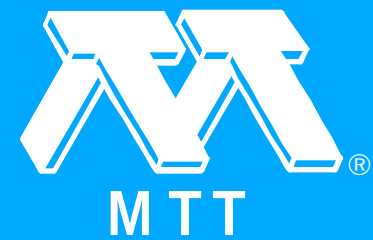
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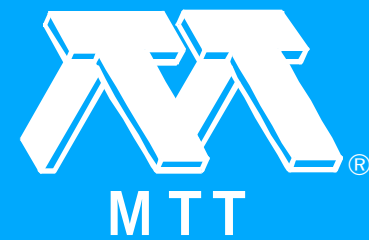
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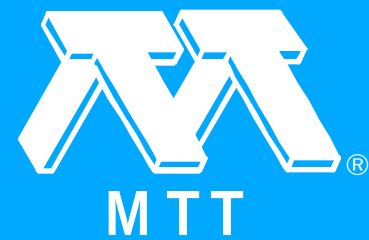


Abstracts

Satellite communications: services, systems & technologies

B.A. Pontano. "Satellite communications: services, systems & technologies." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 1-4.

Satellite communications is thriving in today's telecommunications market and will continue to interoperate with other transmission media to achieve the grand vision of a global information highway. Satellite systems will employ increasing levels of digital signal processing, in both the space and ground segments, to efficiently and cost-effectively provide the broad spectrum of services demanded by end users. Geostationary and non-geostationary satellite systems, using technologies such as bandwidth on demand, TDMA, onboard processing, switching and large multibeam antennas with hopping spot beams will work seamlessly with terrestrial systems to offer the very best in systems and services to consumers.



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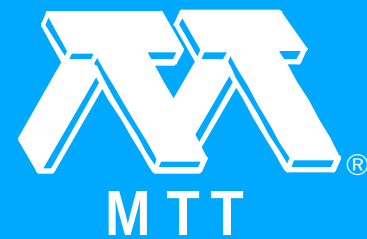


Abstracts

RF/microwave applications in medicine with emphasis on RF ablation for the treatment of cardiac arrhythmias

A. Rosen and A.J. Greenspon. "RF/microwave applications in medicine with emphasis on RF ablation for the treatment of cardiac arrhythmias." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 5-7.

RF/microwaves are used in the treatment of cancer, arrhythmias, tachycardia, benign prostatic hyperplasia, and sleep apnea. This paper addresses the advances in RF catheter ablation for the treatment of cardiac arrhythmias.



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Abstracts

Development of knowledge based artificial neural network models for microwave components

P.M. Watson, K.C. Gupta and R.L. Mahajan. "Development of knowledge based artificial neural network models for microwave components." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 9-12.

Artificial neural networks (ANNs) provide fast and accurate models for microwave modeling, simulation, and optimization. This paper addresses the use of prior knowledge (or existing models) for reducing the complexity of the input/output relationships that an ANN has to learn. This reduction of input/output complexity allows an accurate ANN model to be developed with less training data, which is very advantageous when training data is expensive/time-consuming to obtain, such as with EM simulation. Two simple methods of incorporating prior knowledge into ANN training are demonstrated and compared: the difference method and the prior knowledge input (PKI) method. As an example, a 2-port microstrip via model has been developed by using a closed-form expression for the via's inductance as prior knowledge.



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A neural network model for CAD and optimization of microwave filters

P. Burrascano, M. Dionigi, C. Fancelli and M. Mongiardo. "A neural network model for CAD and optimization of microwave filters." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 13-16.

Improvement of the performance/cost ratio for modern microwave filters requires manufacturing-oriented design, hence accommodating full-wave tolerance analyses and yield optimization which are very computer-insensitive. The use of neural networks for reducing the design effort of microwave filters, although still in its infancy, seems to provide a rather promising option. Once properly selected and trained, neural networks can approximate the filter response at a very modest fraction of the computer resources used by the full-wave rigorous model, hence enabling systematic application of manufacturing-oriented design. In this paper we present the solution of the major important choices related to the effective selection of a neural network suitable for approximating the behavior of a typical microwave filter. For illustration we consider the example of a standard four-pole E-plane metal-insert filter operating in X-band.

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Abstracts

Unrestricted arbitrary shape optimization based on 3D electromagnetic simulation [passive microwave structures]

A. Kozak and W.K. Gwarek. "Unrestricted arbitrary shape optimization based on 3D electromagnetic simulation [passive microwave structures]." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 17-20.

An efficient computer system, for automatic synthesis of passive microwave structures of novel geometrical shapes, based on 3D FD-TD electromagnetic simulation was developed. The first robust multilevel hybrid optimization which allows unrestricted evolution of an arbitrary circuit shape is presented. Two designs of unique microwave structures illustrate our technique.



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Abstracts

Multi-dimensional Cauchy method and adaptive sampling for an accurate microwave circuit modelling

S. Peik, R. Mansour and Y.L. Chow. "Multi-dimensional Cauchy method and adaptive sampling for an accurate microwave circuit modelling." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 21-24.

The paper presents an effective generic approach for CAD design of microwave circuits. We extend the one-dimensional Cauchy method for frequency response interpolation to a multi-dimensional Cauchy interpolation with respect to both frequency and physical dimensions. The paper also demonstrates the feasibility of applying adaptive sampling to the multi-dimensional rational function expansion. Two examples are given to verify the validity of the proposed approach.



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Identifying S-parameter models in the Laplace domain for high frequency multiport linear networks

A. Verschueren, Y. Rolain, R. Vuerinckx and G. Vandersteen. "Identifying S-parameter models in the Laplace domain for high frequency multiport linear networks." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 25-28.

The aim is to build a model for the S-parameter matrix of a linear, time invariant multiple-port system operating at RF frequencies. The proposed method delivers stable, accurate models starting from measurements as well as from simulation data. The use of orthogonal polynomials allows high model orders.

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Abstracts

Multigrid technique with local grid refinement for solving static field problems [RF circuits]

R. Kulke, Th. Sporkmann and I. Wolff. "Multigrid technique with local grid refinement for solving static field problems [RF circuits]." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 29-32.

A multilevel iteration technique has been developed for solving the Laplace equation of 2-dimensional static field problems in arbitrary layered structures for RF circuit design. Multigrid methods are well accepted in the fields of applied mathematics, but are poorly disseminated in numerical applications of electromagnetic fields. That is why the authors wish to give an introduction to this theory and emphasize the convergence acceleration. The method is verified with measurements of a coplanar capacity line and is compared with conventional solvers.



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Abstracts

A CAD algorithm for coupling between dielectric covered MMICs in multi-chip assemblies

Z. Wang and R.W. Jackson. "A CAD algorithm for coupling between dielectric covered MMICs in multi-chip assemblies." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 33-37.

An algorithm is presented for determining the coupling between sealant covered MMICs in a multi-chip module. This technique is computationally simple, appropriate for use with layout based circuit CAD software, and uses no numerical electromagnetics. It has been tested by comparison to fullwave electromagnetic simulation.



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GalnP/GaAs HBT broadband monolithic transimpedance amplifiers and their high frequency small and large signal characteristics (1998 Vol. I [MWSYM])

Jae-Woo Park, S. Mohammadi, D. Pavlidis, C. Dua, J.L. Guyaux and J.-G. Garcia.

"GalnP/GaAs HBT broadband monolithic transimpedance amplifiers and their high frequency small and large signal characteristics (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 39-42.

Monolithic broadband transimpedance amplifiers were developed using GalnP/GaAs single HBTs. The HBTs showed a cutoff frequency ($f_{sub T/}$) of 60 GHz and maximum oscillation frequency ($f_{sub max/}$) of 100 GHz. The fabricated amplifiers had a maximum bandwidth of 19 GHz and an associated transimpedance gain of 47 dB/spl Omega/ The large signal characteristics of two transimpedance amplifier designs with similar gain were also investigated and showed that the cascode approach is much less sensitive to input power level.





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K/Ka-band low-noise embedded transmission line (ETL) MMIC amplifiers (1998 Vol. I [MWSYM])

Hua-Quen Tserng, L. Witkowski, A. Ketterson, P. Saunier and T. Jones. "K/Ka-band low-noise embedded transmission line (ETL) MMIC amplifiers (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 43-46.

The design, fabrication, and performance of producible, high-performance K-, and Ka-band pHEMT low-noise MMIC amplifiers using the embedded transmission line (ETL) circuit concept with top-side grounding are reported. A state-of-the-art noise figure of 1.2 dB with 25 dB gain is achieved at 31 GHz. These amplifiers can be implemented in low-cost, ultra compact receiver modules for emerging spaceborne phased-array communication applications.

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Integrated 1.55 μm receivers using GaAs MMICs and thin film InP detectors (1998 Vol. I [MWSYM])

Carl Chun, O. Vendier, E. Moon, J. Lakar, Hyeon Cheol Ki, N.M. Jokerst and M. Brooke.
"Integrated 1.55 μm receivers using GaAs MMICs and thin film InP detectors (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 47-50.

A GaAs-based amplifier has been designed and integrated with a large area, high efficiency, thin film InP-based metal-semiconductor-metal photodetector. Thin film integration is a hybrid integration scheme that minimizes the parasitics between the InP detector and the GaAs circuit to the order of integrated circuits. The GaAs integrated circuits are fabricated using a commercial TriQuint Semiconductor foundry process, demonstrating the use of standard GaAs-based foundry circuits for long wavelength, highly integrated, high speed, low cost photoreceivers. Utilizing thin film integration to minimize interconnect parasitics, a 1.55 μm wavelength receiver has been demonstrated at 1 GB/s, and initial results for a 10 GB/s receiver under fabrication are presented.





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A Ka-band 4-bit monolithic phase shifter using unresonated FET switches (1998 Vol. I [MWSYM])

K. Maruhashi, H. Mizutani and K. Ohata. "A Ka-band 4-bit monolithic phase shifter using unresonated FET switches (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 51-54.

This paper presents a Ka-band 4-bit monolithic phase shifter incorporating novel unresonated FET switches which show broadband on/off characteristics up to 40 GHz without inductors. The developed switched-line phase shifter MMIC demonstrated an overall phase deviation of 3.3/spl deg/ r.m.s. and an insertion loss deviation of 0.9 dB r.m.s. at 34.5 GHz. Over a relatively wide frequency range from 33 to 36 GHz, the phase deviation was less than 7/spl deg/ r.m.s. The chip size of the MMIC is 2.5 mm/spl times/2.2 mm.

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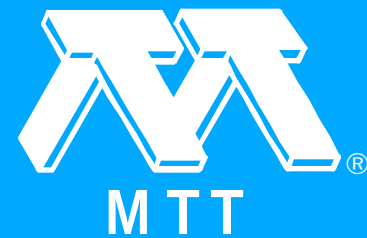


Abstracts

A wideband pHEMT downconverter MMIC for satellite communication systems (1998 Vol. I [MWSYM])

C.F. Campbell. "A wideband pHEMT downconverter MMIC for satellite communication systems (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 55-59.

This paper presents the design and performance of a broadband, low power, +3.0 V pHEMT Gilbert cell downconverter IC for satellite communication systems. The downconverter is fully integrated on to a single die and requires no external matching elements. The MMIC demonstrates 300-8000 MHz RF-LO bandwidth and 185-2085 MHz IF bandwidth.



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Abstracts

Digital Video Broadcasting standards for satellite, terrestrial and cable television transmission

A. Mason. "Digital Video Broadcasting standards for satellite, terrestrial and cable television transmission." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 61-66.

The paper describes the Digital Video Broadcasting (DVB) technical standards used for the transmission of digital television over satellite, terrestrial and cable networks. The paper explains the principles of both the source and channel coding used in the family of DVB standards. The main focus will be on the DVB-T terrestrial standard together with the plans for starting digital television services in the United Kingdom (UK).



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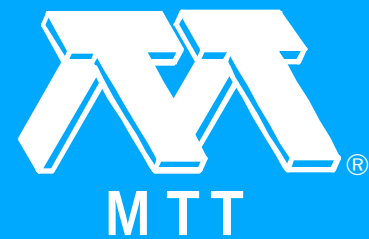


Abstracts

VSB transmission system: Broadcast and microwave applications

W. Bretl, W. Luplow and G. Sgrignoli. "VSB transmission system: Broadcast and microwave applications." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 67-70.

The vestigial sideband (VSB) digital transmission system has been developed for terrestrial, MMDS, and cable television broadcasting in the United States. It was thoroughly evaluated by the FCC's Advisory Committee on Advanced Television Service (ACATS), and on December 24, 1996, this system was adopted as the new digital terrestrial standard for the United States. A family of compatible VSB standards suitable for many applications, including microwave, is based on the same rugged signal features that support operation in the difficult terrestrial environment.



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Abstracts

Development of satellite and terrestrial digital broadcasting systems in Japan

O. Yamada, H. Matsumura and M. Sasaki. "Development of satellite and terrestrial digital broadcasting systems in Japan." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 71-75.

Digital broadcasting implementation is advancing more rapidly in Europe and America than in Japan. Digital broadcasting research and development in Japan is promoted to convert the current analog broadcasting into digital broadcasting as well as to fully utilize the features of digital broadcasting and further expand the broadcasting system's potential. This expansion will include not only improving the picture quality but also taking a long view of the future and the possibilities for new services and the fusion of broadcasting and communications.



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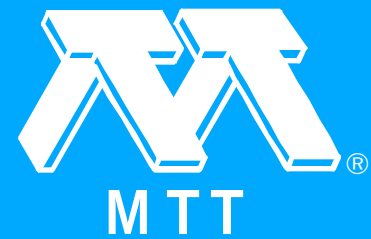


Abstracts

A 900 MHz ISM band transceiver RFIC chip set and RF module

Chien-Kuang Lee, Chung-Chiang Ku, Keng-Li Su, Chao-Hui Lin and Kuang-Chung Tao. "A 900 MHz ISM band transceiver RFIC chip set and RF module." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 77-80.

This paper demonstrates a packaged RF front-end IC chip set (transmitter and receiver) and a highly integrated transceiver RF module used in the 902/spl sim/928 MHz ISM band. By using the RF IC chip set with other application circuits, this module can provide the sensitivity of -93 dBm at 1.152 Mb/s data rate. The transmit power of the module can be varied continuously from -10dBm to +20 dBm simply by a 0/spl sim/3V DC control voltage. The average current consumption of the module under TDD operation is 150 mA for +20 dBm output power, and 60 mA for -10 dBm output power.



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GaAs RFICs for CDMA/AMPS dual-band wireless transmitters (1998 Vol. I [MWSYM])

V. Aparin, K. Gard, G. Klemens and C. Persico. "GaAs RFICs for CDMA/AMPS dual-band wireless transmitters (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 81-84.

An upconverter and two driver amplifiers for CDMA/AMPS cellular/PCS wireless transmitters are presented. The upconverter has two selectable RF outputs operating over 800 to 1900 MHz frequency range. They can be assigned to different frequency bands providing a dual-band operation. The driver amplifiers offer two gain modes selected with a control voltage. The cellular driver amplifier provides DC power savings in the low gain mode. The chip set was fabricated using a GaAs 0.6 μ m E/D MESFET process.

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A bipolar upconversion modulation loop transmitter for dual-band mobile communications (1998 Vol. I [MWSYM])

Shen Feng, B. Kolb, H. Herrmann, W. Veit, V. Thomas, S. Herzinger, F. Volpe, G. Lipperer and J. Fenk. "A bipolar upconversion modulation loop transmitter for dual-band mobile communications (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 85-88.

This paper presents design considerations and measurement results of an upconversion modulation loop transmitter IC (PMB 2255) implemented in Siemens 26 GHz Si bipolar technology B6HF. The device consists of a vector modulator, downconversion mixer, a modulation phase-locked loop (PLL) and a three-wire programming bus. Besides power-down and standby modes, added values of switchable filter cutoff frequency and precharge function are also realized for dual- and multi-band digital mobile communication systems such as GSM900, GSM1800 and GSM1900. Based on measurements the device provides an excellent performance in designed intermediate frequency range from 300 to 550 MHz with supply voltage from 2.7 to 4.5 V, ambient temperature from -30 to 85/spl deg/C, and local and RF frequencies up to 2.0 GHz.



Abstracts

IF-band MMICs for high-speed wireless signal processing (1998 Vol. I [MWSYM])

H. Hyashi and M. Muraguchi. "IF-band MMICs for high-speed wireless signal processing (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 89-92.

IF-band MMICs for high-speed wireless signal processing are presented. The first is a miniaturized 90/spl deg/ divider/combiner with 2.1-dB mean transmission loss for dividing signals at 140 MHz. The second is a logarithmic/limiting amplifier which utilizes a self-phase-distortion compensation technique. More than 65-dB gain and less than 5/spl deg/ phase deviation were obtained.



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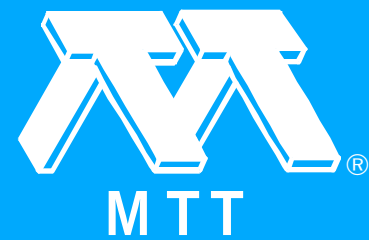


Abstracts

A high dynamic range, digitally tuned, Q-enhanced LC bandpass filter for cellular/PCS receivers (1998 Vol. I [MWSYM])

W.B. Kuhn, N.K. Yanduru and A.S. Wyszynski. "A high dynamic range, digitally tuned, Q-enhanced LC bandpass filter for cellular/PCS receivers (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 93-97.

A fully-integrated, 850 MHz, 2-pole, bandpass filter with a 2 percent fractional bandwidth is reported. The filter provides digital control of center frequency and Q, and includes a companion on-chip oscillator suitable for master-slave tuning. Prototype measurements show a dynamic range of 75 dB when used in a system with a 1 MHz final IF bandwidth, and an oscillator phase noise of -105 dBc/Hz at 100 kHz offset.



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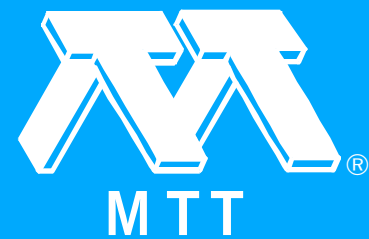
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New coplanar-like transmission lines for application in monolithic integrated millimeter-wave and submillimeter-wave circuits

A. Reichelt and I. Wolff. "New coplanar-like transmission lines for application in monolithic integrated millimeter-wave and submillimeter-wave circuits." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 99-102.

In monolithic microwave integrated circuits (MMICs) for application at millimeter-wave and submillimeter-wave frequencies, new transmission lines with low loss and low dispersion are needed. An additional requirement is that these transmission lines can be produced using conventional MMIC technology. In this paper two new coplanar-like transmission lines which fulfil the above mentioned requirements are analyzed using a finite difference time domain (FDTD) analysis and a quasi-static finite difference method (FD). It will be shown that transmission lines with a low value of the effective dielectric constant, with low dispersion and low losses can be easily produced.

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An hermetic coplanar waveguide-to-HDI microstrip microwave feedthrough

E. Holzman, R. Teti, B. Dufour and S. Miller. "An hermetic coplanar waveguide-to-HDI microstrip microwave feedthrough." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 103-106.

We describe the design, construction and performance of a novel hermetic, multi-layer ceramic feedthrough for microwave modules. In particular, the feedthrough takes a coplanar waveguide input and provides a three-via output compatible with a microstrip module utilizing High Density Interconnect (HDI) microstrip or coplanar transmission lines. The same feedthrough also carries DC and logic signals. We designed the feedthrough using a commercial finite element analysis tool. The feedthrough was fabricated from multiple layers of ceramic using the HTCC process. Measurements of two feedthroughs in a fixture show wide band performance: less than 1 dB of insertion loss (including 0.5 dB from the fixture) from 2 to 3.6 GHz, and less than 2 dB insertion loss up to 5 GHz.

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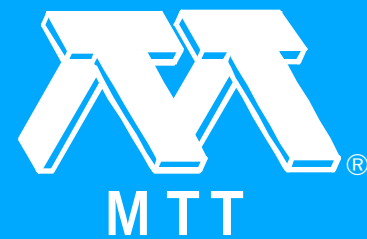


Abstracts

W-Band finite ground coplanar waveguide (FGGPW) to microstrip line transition

G.P. Gauthier, L.P. Katehi and G.M. Rebeiz. "W-Band finite ground coplanar waveguide (FGGPW) to microstrip line transition." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 107-109.

A uniplanar transition from finite ground coplanar waveguide (FGCPW) to microstrip line operating at W-Band has been developed. The design is uniplanar and does not require vias or wirebonds. The transition, centered at 94 GHz, results in 0.2 dB insertion loss with a bandwidth of 20%. The return loss is better than -17 dB from 85 GHz to 100 GHz. To our knowledge, this simple transition shows state-of-the-art performance, and can be very useful for CPW-probe to microstrip circuit measurements.



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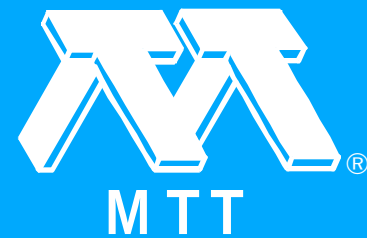


Abstracts

CPS structure potentialities for MMICs: a CPS/CPW transition and a bias network

D. Prieto, J.C. Cayrou, J.L. Cazaux, T. Parra and J. Graffeuil. "CPS structure potentialities for MMICs: a CPS/CPW transition and a bias network." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 111-114.

Present paper deals with new applications of coplanar waveguides (CPW) and coplanar strips (CPS) based designs. As examples, a new reversible 50/spl Omega/ CPS/CPW transition and a bias network are reported. The designed circuits show significant improvements over size reduction and measured electrical broadband performances (losses less than 1 dB and reflection better than -10 dB are observed for the transition).



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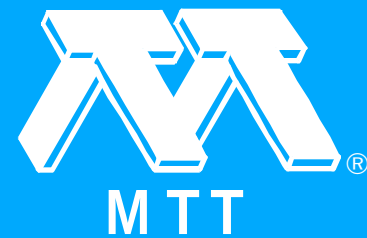


Abstracts

Micromachined thick-metal coplanar coupled-line filters and couplers

T.L. Willke, E. Onggosanusi and S.S. Gearhart. "Micromachined thick-metal coplanar coupled-line filters and couplers." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 115-118.

Highly-coupled couplers (3-dB and 6-dB) are necessary for a wide range of millimeter-wave coplanar circuits. The high line-to-line capacitance required for these couplers is impossible to achieve with thin-film planar coupled lines. Using 80 μm -thick conductors patterned using a 3-D X-ray micromachining technique, we have successfully demonstrated a 15 GHz 6-dB coupler and a single-section coupled-line BPF that utilizes a 3-dB coupler geometry.



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Original techniques for designing wideband 3D integrated couplers

C. Person, L. Carre, E. Rius, J.P. Coupez and S. Toutain. "Original techniques for designing wideband 3D integrated couplers." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 119-122.

In this paper, we propose some original technological configurations for implementing highly coupled wideband structures in a 3D environment. Thanks to a convenient combination of thinkable topologies, difficulties commonly encountered with a classical approach can be solved. Different design examples of couplers are given, and experimental and simulated results are presented.

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Abstracts

Simplified design technique for high performance microstrip multi-section couplers

D. Lau, S.P. Marsh, L.E. Davis and R. Sloan. "Simplified design technique for high performance microstrip multi-section couplers." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 123-126.

A new design technique has been developed which improves the design of microstrip multi-section coupler by a simplified version of the non-uniform coupler method. The design is further improved by the use of the "saw-tooth" odd and even mode equalisation technique. The measured results demonstrate an improved performance over the multi-section coupler in terms of coupling performance and bandwidth, whilst the size and the fabrication tolerance are better than the nonuniform line coupler.



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MEMS designed for tunable capacitors

H.D. Wu, K.F. Harsh, R.S. Irwin, Wenge Zhang, A.R. Mickelson, Y.C. Lee and J.B. Dobsa. "MEMS designed for tunable capacitors." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 127-129.

A new tunable capacitor based on a standard microelectromechanical systems (MEMS) technology has been demonstrated. Its unique feature was the use of thermal actuators as indirect drives to change air gap from 2 to 0.2 μm for high-Q MM-wave capacitors. Such a drive scheme achieved a sub- μm controllability. The insertion loss of a polysilicon MEMS capacitor was measured to be -4dB at 40 GHz. Such a loss would have been better than -1 dB if the polysilicon were coated with metal.

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Low loss air-gap spiral inductors for MMICs using glass microbump bonding technique

Jeff Chuang, S. El-Ghazaly, N. El-Zein, V. Nair, G. Maracas and H. Gronkin. "Low loss air-gap spiral inductors for MMICs using glass microbump bonding technique." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 131-135.

Air-gap spiral inductor structures have been fabricated and integrated with semiconductor substrates using glass microbump bonding (GMBB) techniques. Spiral inductors using air-gap structures have the advantages of low losses, and low parasitic capacitance compared to conventional inductors on doped silicon semiconductor substrate. Stacked air-gap spiral inductors on GaAs substrates using GMBB techniques also can reduce the inductor area. Because the glass microbump bonding techniques are simple, this bonding technique provides an alternative integration approach for monolithic microwave integrated circuits (MMICs). Experimental results of air-gap spiral inductor on both silicon and GaAs substrates are presented in this paper.

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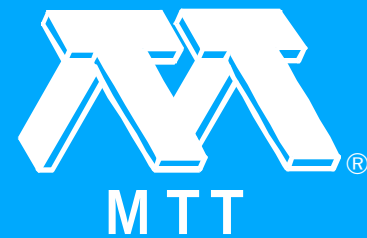


Abstracts

A new analytical and scaleable noise model for HFET

R. Reuter and F.J. Tegude. "A new analytical and scaleable noise model for HFET." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 137-140.

In this paper an analytical noise model for HFET, based on the physical interpretation of the bias dependence of the equivalent intrinsic noise sources, is presented. This model is bias-dependent and scaleable with the gate-geometry and allows the prediction of all noise parameters using two device dependent parameters in a wide bias range.



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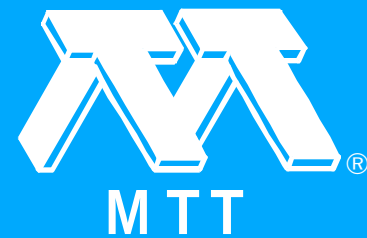


Abstracts

A bias and temperature dependent noise model of heterojunction bipolar transistors

R.A. Pucel, T. Daniel, A. Kain and R. Tayrani. "A bias and temperature dependent noise model of heterojunction bipolar transistors." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 141-144.

A bias and temperature dependent HBT noise model based on an extension of the van der Ziel noise theory is presented. An extrapolation technique is applied to the noise model that is valid for the entire bias and temperature operating range of the HBT given experimental data for a single reference condition.



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Technology independent degradation of minimum noise figure due to pad parasitics

C.E. Bilber, M.L. Schmatz, T. Morf, U. Lott, E. Morifuji and W. Bachtold. "Technology independent degradation of minimum noise figure due to pad parasitics." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 145-148.

In order to investigate the influence of pad parasitics on device noise performance, noise parameters on Si CMOS, GaAs MESFET and GaAs p-HEMT transistors were determined. Measurements of devices with various gate widths demonstrate that the parasitic losses of the pads substantially influence the noise performance independent of FET technology. To accurately separate the noise contribution of the pad and the device, a noise parameter de-embedding procedure has been developed. It is shown that for an improvement of minimum noise figure $NF_{sub\ min}$ of devices on non ideal substrates, pad losses must be minimized. Especially for small input transistors of amplifiers, pad parasitics must be considered during device modeling and design. A mathematical procedure using noise correlation matrices allows the embedding and de-embedding of noise parameters.

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Abstracts

Robust, model-independent generation of intrinsic characteristics and multi-bias parameter extraction for MESFETs/HEMTs

A. Ghazinour and R.H. Jansen. "Robust, model-independent generation of intrinsic characteristics and multi-bias parameter extraction for MESFETs/HEMTs." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 149-152.

This paper presents an improved, model-independent and particularly robust RF characterization and parameter extraction approach based on multi-bias S-parameters. With a new hybrid evolutionary/conjugate gradient strategy, consistent and largely start value-independent results are obtained. Devices from various MMIC foundries are used to demonstrate the quality of this approach.



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Comparison of quasi-2D and ensemble Monte Carlo simulations for deep submicron HEMTs

C.G. Morton and C.M. Snowden. "Comparison of quasi-2D and ensemble Monte Carlo simulations for deep submicron HEMTs." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 153-156.

In this paper, we present corroborative material indicating the accuracy of our quasi-2D HEMT model when applied to the analysis of deep sub-micron devices. We compare our modelling results with those derived from ensemble Monte Carlo simulations, and demonstrate excellent agreement in the velocity profiles for 0.5, 0.25 and 0.05 micrometre gate-length devices.



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Extrinsic elements extraction of DGMESFET

Wei-Kung Deng and Tah-Hsiung Chu. "Extrinsic elements extraction of DGMESFET." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 157-160.

A procedure for the extraction of extrinsic elements of dual-gate MESFET (DGMESFET) is described in this paper. It is the first time to accurately extract the extrinsic elements of series resistance by considering the distributed channel resistance under the regions of two gates with the use of the "end resistance measurement" method. The extrinsic elements of capacitance and inductance are extracted by three-port Y-matrix and Z-matrix calculation from cold measurements. The developed procedure is useful for the characterization of DGMESFET.

Click on title for a complete paper.



Abstracts

A systematic scheme for power amplifier design using a multi-harmonic loadpull simulation technique

Qian Cai, J. Gerber and Solti Peng. "A systematic scheme for power amplifier design using a multi-harmonic loadpull simulation technique." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 161-165.

This paper presents, for the first time, a systematic procedure for narrowband power amplifier design using a multi-harmonic loadpull simulation technique. This scheme explores the effects of each harmonic termination on amplifier performance and finds the optimal load at each harmonic. Following this systematic design procedure we can improve the amplifier performance significantly. The advantages of our method are demonstrated for two power amplifiers. Very promising results are obtained.



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A 2-V operation RF front-end GaAs MMIC for PHS hand-set (1998 Vol. I [MWSYM])

T. Seshita, K. Kawakyu, W. Wakimoto, M. Nagaoka, Y. Kitaura and N. Uchitomi. "A 2-V operation RF front-end GaAs MMIC for PHS hand-set (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 167-170.

A single 2-V operation RF front-end MMIC has been developed using three kinds of self-aligned gate MESFETs. Its transmitter block of a power amplifier with an antenna switch exhibited a power gain of 28.9 dB and a high power-added efficiency of 27.0% at 20.5-dBm output power. The receiver block of a low-noise amplifier with the antenna switch exhibits a noise figure of 3.4 dB and a gain of 11.1 dB.

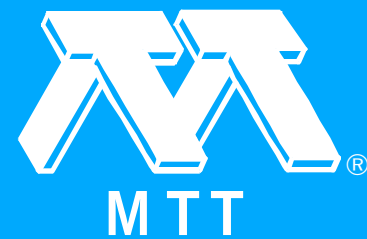


Abstracts

A 1.9 GHz single-chip RF front-end GaAs MMIC with low-distortion cascode FET mixer for Personal Handy-phone System terminals (1998 Vol. I [MWSYM])

M. Nakayama, K.-I. Horiguchi, K. Yamamoto, Y. Yoshii, S. Sugiyama, N. Suematsu and T. Takagi. "A 1.9 GHz single-chip RF front-end GaAs MMIC with low-distortion cascode FET mixer for Personal Handy-phone System terminals (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 171-174.

This paper describes new single-chip RF front-end GaAs MMIC for 1.9 GHz Japanese PHS handheld terminals. The IC consists of a high power amplifier, a T/R switch, a low noise amplifier, a newly developed low distortion cascode FET mixer and a negative voltage generator for FET gate bias voltage. The IC has high performance as an RF front-end for PHS terminals.



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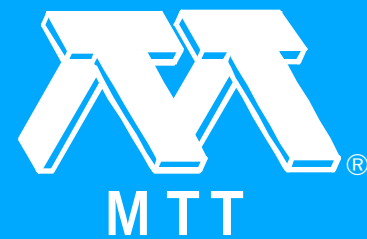


Abstracts

A monolithic even harmonic quadrature mixer using a balance type 90 degree phase shifter for direct conversion receivers (1998 Vol. I [MWSYM])

M. Shimozawa, K. Kawakami, H. Ikematsu, K. Itoh, N. Kasai, Y. Sota and O. Ishida. "A monolithic even harmonic quadrature mixer using a balance type 90 degree phase shifter for direct conversion receivers (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 175-178.

This paper proposes a novel circuit configuration of an even harmonic quadrature mixer (EHQMIX) for direct conversion receivers. In this EHQMIX, a 90 degree phase shifter consists of balance type high pass and low pass filters, and it does not require any circuits connecting to the ground plane. So this configuration is suitable for low cost monolithic IC implementation without any via-holes, because amplitude and phase imbalance, caused by the inductance included in the wires and leads of a package, can be reduced for circuits connected to the ground plane. A developed L-band MMIC achieves good quadrature detection characteristics.



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An 18 GHz Si bipolar mold package prescaler (1998 Vol. I [MWSYM])

M. Mineo, M. Okamoto, K. Hosoki and H. Ohba. "An 18 GHz Si bipolar mold package prescaler (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 179-182.

A mold package static prescaler operating at 18 GHz has been realized. The technology used is the Si bipolar process of which the emitter mask width is 0.8 μm . The cut-off frequency and the maximum oscillation frequency are 30 GHz and 40 GHz respectively. The input power range of operations is more than 10 dB in -70 to +95/spl deg/C at 1 to 15 GHz. This prescaler features a +5 V single supply voltage and 190 mW power dissipation.



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A Q-factor enhancement technique for MMIC inductors (1998 Vol. I [MWSYM])

M. Danesh, J.R. Long, R.A. Hadaway and D.L. Hareme. "A Q-factor enhancement technique for MMIC inductors (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 183-186.

An increase of 50% in the peak Q-factor and a wider operating bandwidth for monolithic inductors is achieved by exciting a microstrip structure differentially. Conventional excitation of a 8 nH spiral inductor fabricated in a production silicon IC technology resulted in a peak (measured) Q-factor of 6.6 at 1.6 GHz, while the differential connection showed a maximum Q-factor of 9.7 at 2.5 GHz. These experimental results compared favorably with the behaviour predicted from simulation.

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Design and verification of a SAW based chirp spread spectrum system

M. Huemer, A. Pohl, W. Gugler, A. Springer, R. Weigel and F. Seifert. "Design and verification of a SAW based chirp spread spectrum system." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 189-192.

We report on the design and performance of a SAW based spread spectrum wireless LAN system which operates in the ISM band at 2.45 GHz. System IF frequency, transmission bandwidth and data rate are 348.8 MHz, 80 MHz, and 2 Mbit/s, respectively. Due to the high processing gain of 22 dB-made possible by the use of SAW devices-and the large transmission bandwidth, the system is insensitive against narrowband fading and noise. We give a brief system overview and present measurements of the data throughput. A comparison with simulation results, focused primarily on measured and modeled channel characteristics, is also presented.

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The implementation of RTU and RSU transceiver for WLL system

Young-Jun Chong, Sang-Gee Kang, Il-Kyoo Lee, Bong-Kyum Kim and Heon-Jin Hong. "The implementation of RTU and RSU transceiver for WLL system." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 193-196.

The implementation of RTU and RSU transceiver for Korean WLL system based on W-CDMA is presented in this paper. RTU transceiver consists of three boards; receiver, transmitter and RF controller. RSU transceiver is divided into three parts; receiver, transmitter and IF board. At the RTU receiver, the experimental measurement shows 2.86 dB of NF and 60 dB above of dynamic range in AGC locking. At the RTU transmitter, the -49.34 dBc of ACPR is attained when the output power of the transmitter is 34.3 dBm. At the RSU receiver, the measured of the NF shows 5.65 dB. The measured ACPR of the RSU transmitter is -49.33 dBc when the transmitter operates in normal state. These results are good enough to meet standard performance specifications.

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Ultrafast analog-to-digital converter using resonant-tunneling ternary quantizers

T. Itoh, T. Waho, J. Osaka, H. Yokoyama and M. Yamamoto. "Ultrafast analog-to-digital converter using resonant-tunneling ternary quantizers." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 197-200.

We study an analog-to-digital converter (ADC) that uses ternary quantizers consisting of resonant-tunneling diodes and HEMTs. This paper explains the ADC design and presents experimental results. A resonant-tunneling ternary quantizer operates at 10 GHz and a 2-bit ADC operates at 5 GHz.

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Abstracts

Intelligent RF power module using automatic bias control (ABC) system for PCS CDMA applications

T. Sato, S. Yuyama, A. Nakajima, H. Ono, A. Iwai, E. Hase and C. Kusano. "Intelligent RF power module using automatic bias control (ABC) system for PCS CDMA applications." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 201-204.

Intelligent RF Power Module accommodates advanced PHEMT (Pseudomorphic HEMT) die and a Automatic Bias Control (ABC) system Si die on a small ceramic substrate. This 3.5 V RF Power Module has been designed for use in PCS CDMA applications. At PCS frequency of 1880 MHz, the module attained 35% PAE at $P_o=28$ dBm.



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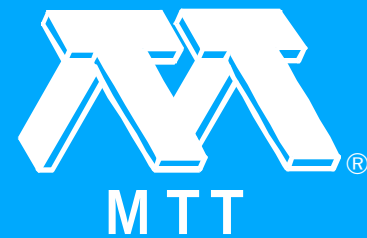


Abstracts

A 900 MHz HBT power amplifier MMICs with 55% efficiency, at 3.3 V operation

H. Asano, S. Hara and S. Komai. "A 900 MHz HBT power amplifier MMICs with 55% efficiency, at 3.3 V operation." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 205-208.

A 3.3 volt GSM class V power amplifier MMIC has been developed by using AlGaAs/GaAs HBTs and flip chip bonding technology. The amplifier has an output power of 32 dBm and a power added efficiency of 55%. The HBT amplifier inherently requires no negative bias and has very low leak current, 2nA. Th MMIC is assembled to small and low profile package (6.35/spl times/6.35/spl times/1.05 mm).



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A 44 GHz InP-based HBT double-balanced amplifier with novel current re-use biasing (1998 Vol. I [MWSYM])

K.W. Kobayashi, M. Nishimoto, L.T. Tran, H. Wang, J. Cowles, T.R. Block, J. Elliott, B. Allen, A.K. Oki and D.C. Streit. "A 44 GHz InP-based HBT double-balanced amplifier with novel current re-use biasing (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 211-214.

Here we report on what is believed to be the first Q-band IP3 results of an InAlAs/InGaAs-InP based HBT MMIC linear amplifier. The 3-stage amplifier uniquely combines a "double-balanced" design topology that incorporates a "current re-use" bias scheme. The amplifier MMIC achieves 15.4 dB of gain, 28.3 dBm of IP3, and a P/sub sat/ of 16.2 dBm at 44 GHz. The corresponding output-stage IP3/P/sub dc/ ratio is 5.3 which is the best reported for InP-HBTs at Q-band. The MMIC is a high complexity chip which integrates 15 HBTs and 18 Lange couplers in a 6.2/spl times/3.5 mm/sup 2/ area, and is self-biased through 5 V while consuming 108 mA. The "current re-use" enables easier system integration while the "double-balanced" design produces wideband IP3, gain and return-loss performance. This work demonstrates the promising linearity performance of InP-HBTs and its practical biasing capability which is attractive for Q-band receiver applications such as mm-wave digital radio.

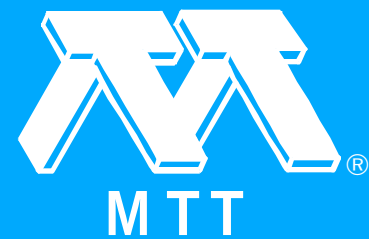


Abstracts

A 60 GHz 256 QAM balanced vector modulator for short range LOS communication applications (1998 Vol. I [MWSYM])

S. Nam, A.E. Ashtiani, G. Passiopoulos, S. Lucyszyn and I.D. Robertson. "A 60 GHz 256 QAM balanced vector modulator for short range LOS communication applications (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 215-218.

An I-Q type vector modulator employing two orthogonal bi-phase amplitude reflection type modulators has been demonstrated which sets a new benchmark for a multilevel direct carrier modulator for digital communications. The 60 GHz modulator uses design techniques and technology capability to reduce hardware complexity in communication applications. The modelling and design of the balanced I-Q vector modulator are reported, followed by the measured performances.



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A single-chip 94-GHz frequency source using InP-based HEMT-HBT integration technology (1998 Vol. I [MWSYM])

H. Wang, R. Lai, L. Tran, J. Cowles, Y.C. Chen, E.W. Lin, H.H. Liao, M.K. Ke, T. Block and H.C. Yen. "A single-chip 94-GHz frequency source using InP-based HEMT-HBT integration technology (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 219-222.

This paper presents the development of a 94-GHz monolithic frequency source using InP-based HEMT-HBT integration technology. This single-chip frequency source consists of five sub-circuits: a 23.5-GHz HBT VCO, a 23.5-GHz HBT buffer amplifier, a 23.5 to 47 GHz HEMT frequency doubler, a 47 GHz HEMT buffer amplifier, and a 47 to 94 GHz HEMT doubler. The source chip has a peak output power of 1.6 dBm, with tuning range from 90.8 GHz to 94.3 GHz. This is the highest-level integration of millimeter-wave solid-state integrated circuits using this technology reported to date.





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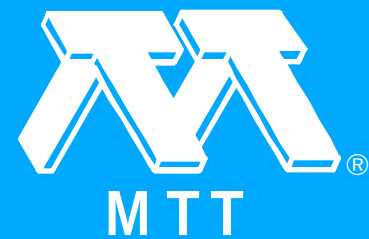
Fully integrated Q-band MMIC transmitter and receiver chips using resistive PHEMT mixers (1998 Vol. I [MWSYM])

S. Nam, T. Gokdemir, A.H. Baree, I.D. Robertson, A.D. Plews, M.J. Howes, C.M. Snowden, J.G. Leckey, A.D. Patterson and J.A.C. Stewart. "Fully integrated Q-band MMIC transmitter and receiver chips using resistive PHEMT mixers (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 223-226.

This paper describes the design of resistive PHEMT mixers and their application in fully integrated Q-band millimetre-wave monolithic receiver and transmitter chips, where LO power is limited. The design method has been verified with excellent measured performances over the RF frequency range of 36.5/spl sim/40 GHz.

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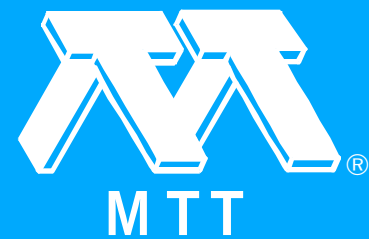
Low cost GaAs PHEMT MMICs for millimeter-wave sensor applications

H.J. Siweris, A. Werthof, H. Tischer, U. Schaper, A. Schafer, L. Verweywn, T. Grave, G. Bock, M. Schlechtweg and W. Kellner. "Low cost GaAs PHEMT MMICs for millimeter-wave sensor applications." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 227-230.

A chip set for millimeter-wave sensor applications, especially automotive radar systems, is described. It consists of a highly integrated transceiver chip, a voltage controlled oscillator, a harmonic mixer and a medium power amplifier. The MMICs operate in the 76-77 GHz frequency range and have been fabricated by a production oriented GaAs PHEMT technology.

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Generalized multilayer anisotropic dielectric resonators

Chi Wang and K.A. Zaki. "Generalized multilayer anisotropic dielectric resonators." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 233-236.

Modeling of the generalized multilayer cylindrical anisotropic dielectric loaded resonator structure by rigorous mode matching method is presented. Eigen modes of the multilayers two parallel plates waveguides are obtained. By cascading the radial discontinuities of the structure, resonant frequency, field distribution and the unloaded Q of the resonator are obtained. The computed results are compared with the experimental data for higher order Whispering Gallery (WG) modes and shown to be in good agreement.

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Abstracts

Attenuation and power-handling capabilities of generalized ridge waveguides

Yu Rong and K.A. Zaki. "Attenuation and power-handling capabilities of generalized ridge waveguides." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 237-240.

The generalized ridge waveguides are analyzed using mode matching method. The attenuation, cutoff frequencies, and power-handling capability characteristics in antipodal ridge waveguides, ridge-trough waveguides and cross finger double ridge waveguides are presented. Numerical results are obtained which are useful in design of microwave components and subsystems.



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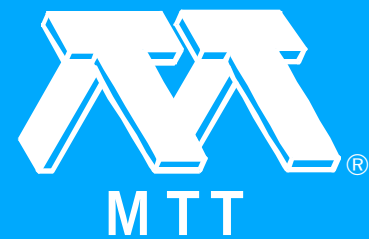
Automated design of a novel dual mode coupler for compact dual polarization beam forming networks

F. Alessandri, R. Sorrentino, M. Schioccola and L. Vanni. "Automated design of a novel dual mode coupler for compact dual polarization beam forming networks." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 241-244.

A new dual mode coupler has been recently proposed. This component functions as two independent directional couplers for the TE/sub 10/ and the TE/sub 01/ modes of a rectangular waveguide. The component is very attractive for the realization of compact dual polarization beam forming networks for satellite applications. In order to provide an effective tool for the design of such a device an equivalent circuit and synthesis formulas are presented here. The equivalent circuit has been used to obtain a program for the automatic design of the structure. A number of different designs of the component showing the good performance of this novel component are presented in this paper.

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Coaxial-probe to parallel-plate dielectric waveguide transition: analysis and experiment

G.K.C. Kwan and N.K. Das. "Coaxial-probe to parallel-plate dielectric waveguide transition: analysis and experiment." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 245-248.

In this paper, we present a rigorous analysis and experimental results of a coaxial to "parallel plate dielectric waveguide" transition. Coaxial probe has been used in microstrip lines and rectangular waveguides. The present study shows that it is also an effective method to excite the parallel-plate dielectric waveguide. We use here a spectral domain analysis. Applying the method of image, the probe is modeled as an infinitely long thin strip inside a dielectric slab. As experimental results show, efficient excitation can be achieved for such a transition with an insertion loss of about 0.055 dB.

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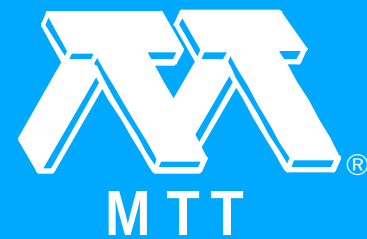


Abstracts

A novel wideband TM₀₁-to-TE₁₁ mode converter

R.L. Eisenhart. "A novel wideband TM₀₁-to-TE₁₁ mode converter." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 249-252.

A novel, state-of-the-art design is presented for a TM₀₁-to-TE₁₁ circular waveguide mode convertor, providing over 30% bandwidth of extraneous-mode-free operation at a conversion loss of less than 0.5 dB. The design philosophy is based upon the unique use of two intermediate modes, a coaxial TEM and a rectangular waveguide TE₁₀, which provide input-output isolation of the converted modes.



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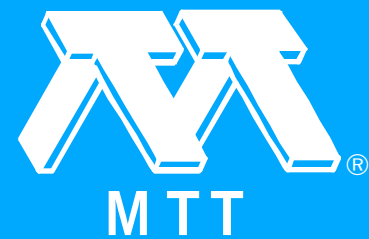
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Wideband crossed-guide waveguide directional couplers

P. Meyer and J.C. Kruger. "Wideband crossed-guide waveguide directional couplers." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 253-256.

Crossed-guide X-band waveguide couplers with bandwidths of up to 40% and coupling factors of better than 5 dB are presented. The tight coupling and wide bandwidth are achieved by using reduced height waveguide. Design graphs and measured data are presented.

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A novel coplanar transmission line to rectangular waveguide transition

W. Simon, M. Werthen and I. Wolff. "A novel coplanar transmission line to rectangular waveguide transition." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 257-260.

Waveguides (WG) are often utilised for antenna or filter design. This paper presents a new, easy to build transition from a coplanar line to a WG, which is often needed to embed WGs into MMIC designs or vice versa. In contrast to the well known E-plane probe-transitions and ridged waveguide-transitions, the proposed waveguide transition does not require modifications of the waveguide and the planar design. The transition was optimised for a low radiation pattern on the top side and for a broadband transmission using the Finite Difference Time Domain Method (FDTD). Measurements for verification are also presented.

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Abstracts

Global modeling of microwave devices using wavelets

M. Toupikov, G. Pan and S. El-Ghazaly. "Global modeling of microwave devices using wavelets." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 263-266.

A new approach to the simultaneous modeling of semiconductor devices and all the circuit elements is discussed in this paper. The electromagnetic wave propagation through semiconductor devices is modeled by using interpolating wavelets. The solution is developed in the time-domain. Examples of device and circuit simulations are presented.



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Nonlinear transient simulation of embedded subnetworks characterized by S-parameters using complex frequency hopping

R. Achar, M. Nakhla and E. Ahmed. "Nonlinear transient simulation of embedded subnetworks characterized by S-parameters using complex frequency hopping." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 267-270.

This paper describes an efficient technique for simulation of linear subnetworks characterized by s-parameters using general purpose circuit simulators such as SPICE. The proposed method is based on the recently developed model-reduction technique, complex frequency hopping (CFH). A new algorithm for computing the moments of s-parameter based subnetworks is presented and it overcomes the instability problems associated with the previously published techniques which depend on numerical differentiation. The proposed method is suitable for simulating large number of s-parameter based subnetworks in a general circuit environment consisting of lumped/distributed elements and nonlinear devices.



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Chaos detection in microwave circuits using harmonic balance commercial simulations

A. Suarez and J.-M. Collantes. "Chaos detection in microwave circuits using harmonic balance commercial simulations." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 271-274.

In the present work a method has been developed for the detection of chaotic responses in microwave circuits. The new technique is based on the use of commercial harmonic balance software, which constitutes a major advantage for microwave circuit designers. In order to validate the new method, the bifurcation loci of Chua's chaotic circuit have been obtained and successfully compared with time domain simulations. The proposed method is readily applicable to IMPATT, Gunn and tunnel diode microwave oscillators.

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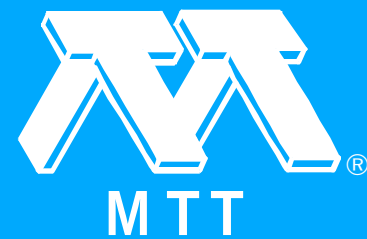


Abstracts

A new approach for the extraction of SPICE compatible models from measured parameters of microwave circuits

J.M. Gomez and J.I. Alonso. "A new approach for the extraction of SPICE compatible models from measured parameters of microwave circuits." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 275-278.

A new and simple technique for implementing microwave and MMIC circuits and components into a general purpose time-domain simulator, such as SPICE, will be presented. The developed technique is based in a generalization the Method of Characteristics and use the S-parameters as only requirement to obtain the model, which is composed by input impedances and voltage controlled voltage sources, both frequency dependent. These controlled generators can be easily implemented into SPICE using the Analog Behavioral Modelling. The technique will be validated by comparisons between measured S-parameters and those obtained with developed model.



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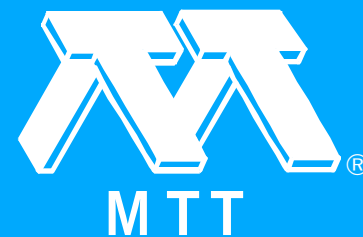


Abstracts

New extraction method for FET extrinsic capacitances using active bias conditions

F. Lenk and R. Doerner. "New extraction method for FET extrinsic capacitances using active bias conditions." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 279-282.

A new procedure for extracting the extrinsic capacitances of FETs is presented. It requires measurements only in the active bias regime. The method utilizes the symmetry of the intrinsic FET in the forward and reverse biased operating regime. The extraction is performed analytically and does not require any optimization.



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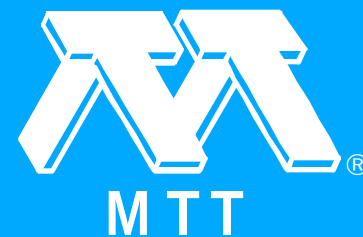


Abstracts

New versatile model: accurate prediction and synthesis ability for arbitrary geometry FET

J. Dubouloy, J.F. Villemazet, V. Grognet, M. Soulard, D. Pasquet and E. Bourdel. "New versatile model: accurate prediction and synthesis ability for arbitrary geometry FET." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 283-286.

An original transistor modeling and synthesis approach, using electromagnetic simulation, is successfully used to describe various FET response. Starting from one single sample, this novel method can predict numerous other device response, which can strongly differ in geometry and gate width. This model shows excellent agreement with experimental data. Other papers have been published on active circuit electromagnetic analysis but, we propose and demonstrate, for the first time, synthesis ability.



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Small-signal distributed FET modeling through electromagnetic analysis of the extrinsic structure

A. Cidronali, G. Collodi, A. Santarelli, G. Vannini and G. Manes. "Small-signal distributed FET modeling through electromagnetic analysis of the extrinsic structure." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 287-290.

The paper presents a new approach to the distributed modeling of high frequency transistors suitable for CAD applications. In particular, electromagnetic simulation is adopted to characterize the extrinsic part of the electron device in terms of a multi-port scattering matrix without introducing approximations based on lumped components. Experimental and simulation results for 0.5 μm GaAs MESFETs with different gate widths preliminary confirm the consistency of the proposed approach.

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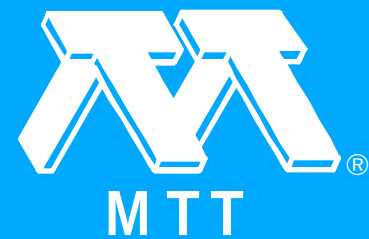
Reliable extraction of small-signal elements of a generalized distributed FET model

G. Kompa. "Reliable extraction of small-signal elements of a generalized distributed FET model." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 291-294.

This paper presents a new approach for the reliable determination of the small-signal parameter values of a generalized distributed FET model. For the first time it is shown that unique and physically relevant values for all parameters can be obtained, including the bias-dependent series resistances and the distributed parts of the effective gate-source and drain-source capacitance. The approach has been validated with respect to various FETs with different gate-lengths (0.5 μm -0.12 μm) in different measurement environment (in-fixture, on-wafer). Exemplary results for a wire-bonded 0.5 μm -gate MESFET and a MMIC 0.12 μm -gate HEMT are presented and discussed.

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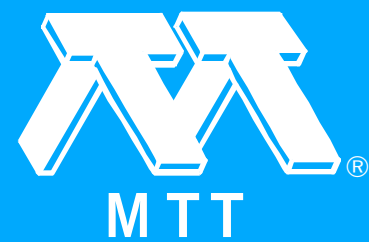
Subjects

A 44 GHz low noise block downconverter MMIC suitable for EHF satellite communication applications (1998 Vol. I [MWSYM])

A.R. Barnes, D.C. Bannister and M.T. Moore. "A 44 GHz low noise block downconverter MMIC suitable for EHF satellite communication applications (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 297-300.

A multifunction MMIC, containing the core components required for an EHF satellite communications receiver, operating over 43.5 to 45.5 GHz, has been designed and tested. The circuit has been fabricated using a high yield, commercially available, 0.25 μm /m PHEMT GaAs-InGaAs-AlGaAs foundry process at GEC Marconi Materials Technology Ltd. The multifunction MMIC integrates a low noise amplifier, downconverter, local oscillator doubler and buffer amplifier onto a single chip occupying an area of 3.0/spl times/3.8 mm/sup 2/. Successful performance was achieved for a first pass iteration, namely 4.3 dB noise figure and 5 to 8 dB conversion gain with a low local oscillator (LO) drive level of 0 dBm.





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A highly integrated multi-functional chip set for low cost Ka-band transceiver (1998 Vol. I [MWSYM])

D.L. Ingram, L. Sjogren, J. Kraus, M. Nishimoto, M. Siddiqui, S. Sing, K. Cha, M. Huang and R. Lai. "A highly integrated multi-functional chip set for low cost Ka-band transceiver (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 301-304.

This paper presents the development of a highly integrated multi-functional chip set for low-cost Ka-band transceiver. The transmitter portion consists of a 17.5-to-35 GHz doubler macrocell which delivers >20 dBm of output power, a Ka-band SPDT polarization switch macrocell with >45 dB of isolation and a >10-W high power module. The receiver portion consists of a Ka-band doubler macrocell, an InGaAs-InAlAs-InP HEMT Ka-band balanced LNA with 1.9 dB noise figure and 19 dB gain and a Ka-band image rejection mixer with >32 dB image rejection and 5.5 dB conversion loss. The high power module consists of two power modules; each can deliver 6 W with 24% PAE and an associated power gain of 21.5 dB. The power module consists of a driver amplifier and two power amplifier chips. These MMIC amplifiers were fabricated with a 2 mil thick substrate using 0.15 μm InGaAs-AlGaAs-GaAs HEMT technology. The total GaAs real estate required for implementation of a typical pulsed-FM transceiver is <150 mm². This highly integrated chip set will also reduce the assembly cost substantially.



Abstracts

V-band single chip, direct carrier BPSK modulation transmitter with integrated patch antenna (1998 Vol. I [MWSYM])

G. Passiopoulos, S. Nam, A. Georgiou, A.E. Ashtiani, I.D. Robertson and E.A. Grindrod. "V-band single chip, direct carrier BPSK modulation transmitter with integrated patch antenna (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 305-308.

A single chip V-band pHEMT technology transmitter with wideband direct BPSK modulation and on-chip dual band patch antenna is reported. The transmitter features, 10% bandwidth electronic tuning range, substantial power output, injection locking capability, low power consumption and good patch antenna radiation characteristics. As such it is well suited to wireless digital communications systems as well in radar and phased array applications.



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A Ka-band monolithic single-chip transceiver using sub-harmonic mixer (1998 Vol. I [MWSYM])

Yon-Lin Kok, M. Ahmadi, Huei Wang, B.R. Allen and T. Lin. "A Ka-band monolithic single-chip transceiver using sub-harmonic mixer (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 309-311.

This paper presents development of a Ka-band (38 GHz) single-chip transceiver based on GaAs HEMT MMIC technology. The transceiver chip utilizes a sub-harmonic mixer in receiving chain such that LO-to-RF port isolation can be improved by more than 20 dB without sacrificing chip compactness. In addition the DC power consumption can be reduced to about one-half of the conventional transceiver with a direct mixer receiver. To date this single-chip transceiver chip has demonstrated a measured LO-to-RF input port isolation of 62 dB, LO-to-RF transmitter port isolation of 52 dB and a power consumption of 1.0 and 3.4 watt in receive and transmit modes respectively. The receiver noise figure achieves 9 dB across the RF band from 38.0 to 38.6 GHz with an IF of 2.38 GHz under 4 dBm LO drive. The conversion gain was measured to be greater than 17 dB.

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Millimeter-wave three-dimensional masterslice MMICs (1998 Vol. I [MWSYM])

K. Nishikawa, K. Kamogawa, K. Inoue, K. Onodera, M. Hirano, T. Tokumitsu and I. Toyoda. "Millimeter-wave three-dimensional masterslice MMICs (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 313-316.

The three-dimensional (3D) masterslice MMIC technology has, even in the millimeter-wave region, the advantages of high integration levels, simple design procedures, short turn-around-time, and low fabrication cost. Fabricated V-band amplifiers achieve an 8-dB gain and a 5.3 dB noise figure in an area of 0.27 mm². A U-band single-chip downconverter is also demonstrated.

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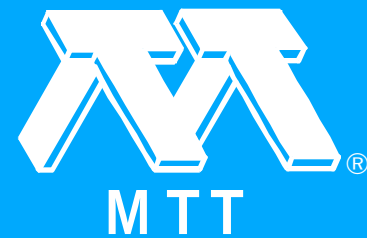


Abstracts

Low voltage electronics for portable wireless applications: an industrial perspective

M. Golio. "Low voltage electronics for portable wireless applications: an industrial perspective." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 319-322.

This paper provides an overview of low voltage/low power electronics developments and issues for portable RF wireless applications. Issues discussed include: semiconductor materials, device technologies, device modeling, circuit approaches, and system architectures. Finally, issues that impact the lower limits achievable in DC power and voltage reductions are discussed.



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Nonlinear effects of power amplification on multicarrier spread spectrum systems

V. Borich, Je-Hong Jong, J. East and W.E. Stark. "Nonlinear effects of power amplification on multicarrier spread spectrum systems." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 323-326.

We present a study of the distortion caused by power amplifiers driven by multicarrier spread-spectrum (MCSS) signals. The details of a time-domain technique for nonlinear amplifier characterization are presented as an alternative to the conventional, network analyzer methods. The bandpass nonlinear model and the associated AM-AM and AM-PM transfer characteristics are employed in order to predict the spectral regrowth as a function of the spreading gain. The predictions differ by approximately 2 dB from the measured results.

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Abstracts

Device and circuit approaches for improved linearity and efficiency in microwave transmitters

P.M. Asbeck, T. Itoh, Y. Qian, M.F. Chang, L. Milstein, G. Hanington, P.F. Chen, V. Schultz, D.W. Lee and J. Arun. "Device and circuit approaches for improved linearity and efficiency in microwave transmitters." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 327-330.

This paper presents several power amplifier approaches that promise to significantly improve efficiency, while meeting the linearity requirements of advanced, spectrally efficient wireless systems. The approaches include: a) use of active integrated antenna structures that provide harmonic terminations for high efficiency Class F amplifiers; b) integrated dc-dc converters for power conditioning and envelope restoration; c) switching mode amplifiers based on bipolar transistors with controlled saturation; and d) the use of band-pass delta-sigma modulators to tailor input signals.



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MEMS and Si-micromachined components for low-power, high-frequency communications systems

L.P.B. Katehi, G.M. Rebeiz and C.T.-C. Nguyen. "MEMS and Si-micromachined components for low-power, high-frequency communications systems." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 331-333.

The next leap beyond the state of the art in multichip module (MCM) for communications systems is the development of a technology which can integrate high-frequency Si/Ge based active devices, advanced micromechanical (MEMS) devices and micromachined components into one wafer. Critical advancements based on new concepts at fundamental levels of circuit design are needed in order to replace the main components of a communication system front end such as the transfer switch, diplexer, RF amplifiers, mixers, IF filters, local oscillators and IF amplifiers by very small yet power efficient monolithic versions. This presentation will discuss the development of MEMS/Si micromachined components that can replace the passive components of an existing communication system. The emphasis of this presentation will be on the transfer switch and high-Q RF/IF filters and resonators.



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X-band Si bipolar transistor single-chip transceiver using three-dimensional MMIC technology (1998 Vol. I [MWSYM])

I. Toyoda, K. Nishikawa, K. Kamogawa, C. Yamaguchi, M. Hirano, K. Onodera and T. Tokumitsu. "X-band Si bipolar transistor single-chip transceiver using three-dimensional MMIC technology (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 337-340.

The three-dimensional (3-D) MMIC technology significantly improves the operating frequency of Si MMICs and offers highly integrated masterslice MMICs. This paper introduces a newly developed X-band Si bipolar transistor transceiver MMIC which integrates 13 function blocks on a 2.3/spl times/2.3 mm chip; it offers 20 dB receiver gain and 13 dB transmitter gain. Its design uses a novel function-block-library concept based on the 3-D masterslice MMIC technology.

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Direct conversion for FLEX paging receivers - a feasibility study (1998 Vol. I [MWSYM])

Zhiheng Chen and J. Lau. "Direct conversion for FLEX paging receivers - a feasibility study (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 341-344.

To achieve an integrated solution for the 6400 bps FLEX paging receiver, we examined the direct conversion architecture and addressed two major problems that may obstruct the implementation: (1) the compensation of the DC offset, and (2) the design of a 4-level FSK demodulator at zero-IF. Simulation results show that the combination of harmonic mixers with a zero-crossing-interpolation based demodulator is a possible solution.

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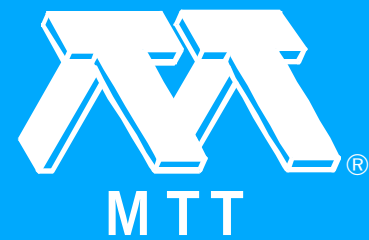


Abstracts

A Si BJT RF dual band receiver IC for DAB (1998 Vol. I [MWSYM])

W. Titus, R. Croughwell, C. Schiller and L. DeVito. "A Si BJT RF dual band receiver IC for DAB (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 345-348.

A low cost 1.5 GHz and 200 MHz dual channel broadband receiver IC for Digital Audio Broadcast (DAB) is described. The SSOP-28 packaged Si bipolar device provides 28 dB of conversion gain, 4 dB NP and 50 dB IM3 suppression to a common 920 MHz IF. Two novel 30 dB variable gain, 2.4 dB NP, low noise amplifiers are integrated with doubly balanced mixers, VCO, dual modulus prescaler, AGC and power management circuitry. With a companion IF IC, filters, and 20 MHz frequency synthesizer, it forms a complete DAB receiver for large dynamic range signals between -97 and -5 dBm.



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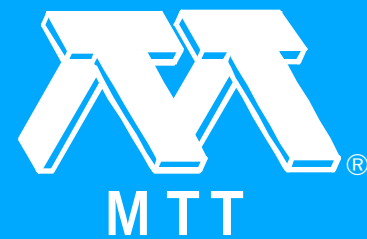


Abstracts

A low voltage RF receiver for digital satellite radio (1998 Vol. I [MWSYM])

G. Cali, G. Cantone, P. Filoramo, G. Sirna, P. Vita and G. Palmisano. "A low voltage RF receiver for digital satellite radio (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 349-352.

An integrated low voltage RF receiver for the digital satellite radio is presented. It uses innovative solutions for critical blocks such as LNA, IF buffer, VCO, etc., and includes power supply regulators at 2.4 V. The circuit has been integrated in a high performance 20 GHz silicon bipolar technology and correctly operates with an external power supply varying from 2.7 V to 5.5 V.



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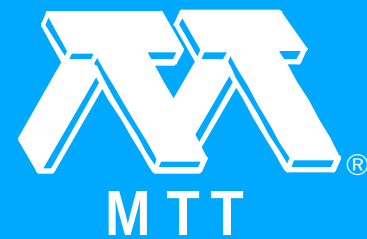


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A Si BJT IF downconverter/AGC IC for DAB (1998 Vol. I [MWSYM])

M. Goldfarb, R. Croughwell, C. Schiller, D. Livezey and G. Heiter. "A Si BJT IF downconverter/AGC IC for DAB (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 353-356.

A low cost, 920 MHz to 30 MHz downconverter/AGC IF IC of novel topology is described. Implemented in Si bipolar technology, this device provides 85 dB of conversion gain, a 15 dB NF (including the 22 dB loss of an external bandpass filter), a leveled output of 41 dBmV (120 mVrms), with a minimum IM ratio of 40 dB. With a companion RFIC, it forms a DAB receiver.



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RF micromachined varactors with wide tuning range (1998 Vol. I [MWSYM])

A. Dec and K. Suyama. "RF micromachined varactors with wide tuning range (1998 Vol. I [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 357-360.

Polysilicon surface micromachined varactors using two- and three-plate structures with 1.5:1 and 1.87:1 tuning ranges, respectively, are presented. The tuning ranges are near-theoretical limits and can be obtained within 4.4 V control voltage. The two-plate varactor has a nominal capacitance of 2.05 pF and a Q-factor of 20 at 1 GHz.

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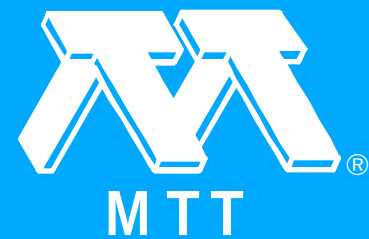
High-Q tunable YBCO disk resonator filters for transmitter combiners in radio base stations

B.A. Aminov, A. Baumfalk, H.J. Chaloupka, M. Hein, T. Kaiser, S. Kolesov, H. Piel, H. Medelius and E. Wikborg. "High-Q tunable YBCO disk resonator filters for transmitter combiners in radio base stations." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 363-366.

Results on the development of a tunable HTS resonator structure for transmitter combiners of radio base stations are reported. The design goal was the minimization of the dissipative insertion loss of a one-pole filter with a 3-dB bandwidth of 630 kHz under the impediment of a required tunability of the center frequency between 1.93 and 1.99 GHz and a power handling capability for 10 W transmitted power. At 70 K the quality factor of the utilized disk resonator structure turned out to be limited to 10^5 due to dielectric losses in LaAlO_3 substrate, but in a lower temperature range where dielectric losses are no longer dominating, $Q \approx 290000$ was obtained for the tunable version.

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8-pole superconducting quasi-elliptic function filter for mobile communications application

J.S. Hong, M.J. Lancaster, D. Jedamzik and R.B. Greed. "8-pole superconducting quasi-elliptic function filter for mobile communications application." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 367-370.

This paper presents recent developments of an 8-pole planar high temperature superconductor bandpass filter with a quasi-elliptic function response. A novel planar filter configuration that allows a pair of transmission zeros to be placed at the band edges is described. The miniature filter has a bandwidth of 15 MHz at a centre frequency of 1777.5 MHz it is designed for mobile communication base station applications. The filter is fabricated using double sided YBCO thin film on an MgO substrate of size 0.3/spl times/22.5/spl times/39 mm. The preliminary results are presented.

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Direct synthesis of tubular bandpass filters with frequency-dependent inductors

Qiang Huang, Ji-Fuh Liang, Dawei Zhang and Guo-Chun Liang. "Direct synthesis of tubular bandpass filters with frequency-dependent inductors." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 371-374.

A method for direct synthesis of a tubular filter with thin-film frequency-dependent lumped element resonators is presented. The synthesis procedure is developed with frequency-dependent inductors to accommodate a large parameter aspect ratio in compact configurations. The explicit design equations are derived from required coupling coefficients among resonators, which provide a great flexibility in choosing design parameters. A design example of a 4th order bandpass filter using high-temperature superconductor (HTS) thin-film material is shown which has a 0.6% fractional bandwidth, a less than 0.2 dB insertion loss and a 20 dB return loss. Experimental data show a good agreement with simulation performance. The technique is especially useful for designing ultra-narrowband filters where the proper coupling is difficult to achieve.

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Abstracts

A satellite repeater comprising superconducting filters

T. Kasser, M. Klauda, C. Neumann, E. Guha, S. Kolesov, A. Baumfalk and H. Chaloupka. "A satellite repeater comprising superconducting filters." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. I [MWSYM]): 375-378.

This paper deals with the development of a satellite repeater comprising superconducting filters. We show measurements of single devices such as narrow-band filters and we also deal with the topics of cryopackaging and cooling. We argue that the implementation of superconducting devices is advantageous.



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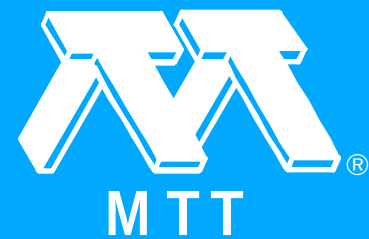
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Novel superconducting ring filter

G. Tsuzuki, M. Suzuki, N. Sakakibara and Y. Ueno. "Novel superconducting ring filter." 1998 MTT-S International Microwave Symposium Digest 98.1 (1998 Vol. 1 [MWSYM]): 379-382.

A novel planar filter composed of ring resonators with open gaps is proposed. The coupling intensity between the adjacent resonators can be controlled by changing the relative direction of the gaps. Very weak coupling can be obtained so that the narrow bandwidth filter is realized in a compact size. A 5-pole filter at 3 GHz center frequency with 1% bandwidth and an 8-pole filter at 2 GHz with 0.25% bandwidth were demonstrated by using niobium films on 50 mm diameter MgO substrates.

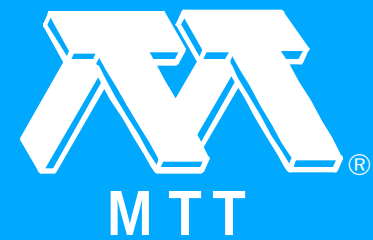
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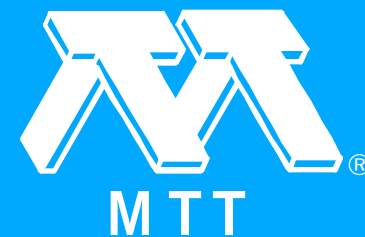
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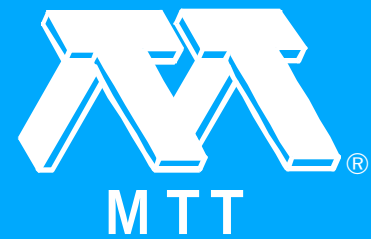
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Technical Program Schedule (1998 Vol. II [MWSYM])

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Novel millimeter wave active MMIC triplers

H. Fudem and E.C. Niehenke. "Novel millimeter wave active MMIC triplers." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 387-390.

A novel millimeter wave MMIC active balanced tripler with input driver amplifier has been developed using GaAs PHEMT 0.25 micron technology. Frequency conversion is realized using the high third harmonic currents of an overdriven class A amplifier with output short circuits at the fundamental and higher order harmonics with optimum load conductance at the third harmonic. Q- and W-band MMIC triplers were developed and exhibited +12 and +5 dBm peak output powers respectively. A MMIC W-band receiver was fabricated using the Q-band active multiplier to drive a subharmonic mixer with 5-dB overall conversion gain.

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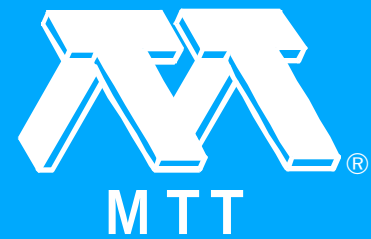


Abstracts

An 80/160 GHz broadband, fixed-tuned, balanced frequency doubler

D.W. Porterfield, T.W. Crowe, R.F. Bradley and N.R. Erickson. "An 80/160 GHz broadband, fixed-tuned, balanced frequency doubler." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 391-394.

We report on the development of a high-power, broadband, fixed-tuned 80/160 GHz frequency doubler. The design is based on a similar 40/80 GHz doubler which exhibited a measured 3 dB bandwidth of 17% and peak efficiency of 48% at an output power of 100 mW. Simulations for the new 80/160 GHz doubler indicate similar bandwidth and efficiency. The focus of this paper is the design and simulation of the 80/160 GHz doubler. Test results will be presented at the conference.



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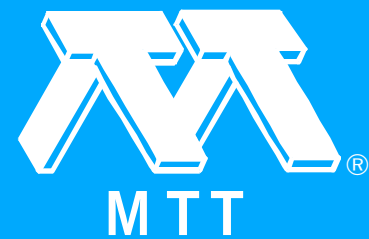
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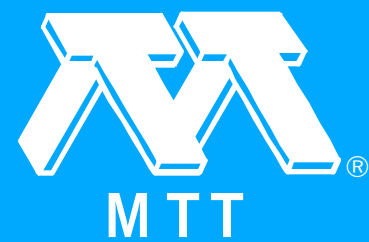
Millimeter-wave GaAs monolithic multipliers

J. Papapolymerou, J. East and L.P.B. Katehi. "Millimeter-wave GaAs monolithic multipliers." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 395-398.

This paper describes the design, fabrication and experimental results for planar monolithic multipliers with output frequencies in W- and D-band. The multipliers are fabricated using FGC (Finite Ground Coplanar) lines which provide a low loss, low dispersion near-TEM structure. This structure allows circuit fabrication on full thickness wafers with no via holes. A variety of circuits have been designed and fabricated. Different W-band multipliers have an output efficiency of 22.9%, a peak output power of 66 milliwatts and an output bandwidth greater than 8 GHz in W-band. Initial D-band results show an uncalibrated output of approximately 100 /spl mu/W at 160 GHz.

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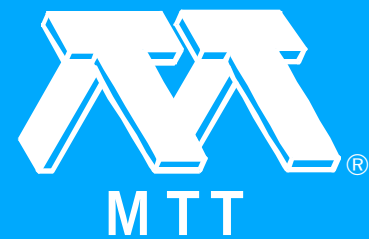
Progress towards the realization of MMIC technology at submillimeter wavelengths: a frequency multiplier to 320 GHz

J. Bruston, R.P. Smith, S.C. Martin, D. Humphrey, A. Pease and P.H. Siegel. "Progress towards the realization of MMIC technology at submillimeter wavelengths: a frequency multiplier to 320 GHz." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 399-402.

The authors report on the design, analysis and performance of an all GaAs MMIC multiplier for use at submillimeter wavelengths. A novel method for coupling power in and out of the MMIC chip via a broadband photoetched ridge-waveguide-to-microstrip transition has been developed and used for this implementation. Measurements on the first iteration chipset, which implements a Schottky varactor diode doubler to 320 GHz, show a conversion efficiency of 2.8% at an input power level of 15 mW. This performance is shown to be extremely well predicted by commercially available circuit simulators: HP MDS and Ansoft Maxwell. A second iteration chipset, based upon the excellent agreement between the numeric simulator and measurements on the existing circuit, is nearly complete and is expected to yield even better performance.

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An all solid-state 640 GHz subharmonic mixer

I. Mehdi, P.H. Siegel, D.A. Humphrey, T.H. Lee, R.J. Dengler, J.E. Oswald, A. Pease, R. Lin, H. Eisele, R. Zimmermann and N. Erickson. "An all solid-state 640 GHz subharmonic mixer." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 403-406.

This paper reports on the first all solid-state two-diode subharmonically pumped (SHP) mixer operating at 640 GHz. The required local oscillator (LO) power is less than 4 mW at 320 GHz for optimum performance. Two approaches are used to generate the required LO power. The first approach utilizes a 107 GHz InP Gunn diode followed by a whisker-contacted tripler while the second employs an IMPATT diode at 80 GHz followed by two planar diode frequency doublers. The best measured mixer noise temperature is 2500 K double sideband with a conversion loss of 9 dB at an IF of 2 GHz. An IF-frequency scan of the mixer shows a noise temperature of no worse than 3700 K across the 1.5 to 15 GHz band. Extraneous LO noise from the IMPATT is not evident for the SHP mixer, even at those frequencies and with low IF's. This performance represents the state-of-the-art for room temperature subharmonic mixers operating at these frequencies. The mixers are being developed for NASA's Mission to Planet Earth.

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A 640 GHz planar-diode fundamental mixer/receiver

P.H. Siegel, I. Mehdi, R.J. Dengler, T.H. Lee, D.A. Humphrey, A. Pease, R. Zimmermann and P. Zimmermann. "A 640 GHz planar-diode fundamental mixer/receiver." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 407-410.

The design and performance of a 640 GHz solid-state receiver using a fundamental planar-Schottky-diode mixer, InP Gunn diode oscillator, whisker-contacted Schottky-varactor-diode sextupler and folded-Fabry-Perot diplexer are reported. A best mixer noise temperature of 1640 K DSB, conversion loss of 8.1 dB, has been achieved at room temperature at an IF of 8 GHz and the noise is below 2100 K DSB from 1.5-11 GHz IF. Measurements employing a commercial 4-8 GHz Miteq amplifier and external bias T yield a double sideband receiver noise temperature below 3100 K from 2-8 GHz with a best value of 2720 K at 4 GHz. Measured local oscillator power was only 350 microwatts measured on a Keating acousto-optic power meter. These results are believed to represent the best reported performance for a room-temperature planar-Schottky diode receiver at this frequency.

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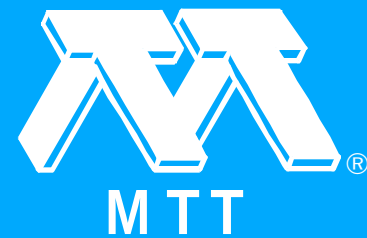


Abstracts

Westinghouse microwave systems and technology

G. Strull. "Westinghouse microwave systems and technology." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 413-416.

The first knowledge of the impending Japanese attack on Pearl Harbor was obtained by a Westinghouse surface radar. Unfortunately, the information was not utilized. Microwave systems at Westinghouse began in 1929. From then to early 1996, Westinghouse radar and EW systems excelled on land, sea, air and space-from World War II through Desert Storm. That proud tradition has been continued by Northrop Grumman.



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Early work on millimeter wave systems and phased array radars (in the Baltimore-Washington area)

C.M. Johnson. "Early work on millimeter wave systems and phased array radars (in the Baltimore-Washington area)." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 417-420.

Early development (1950s-1960s) of millimeter wave systems and phased array radars in the Baltimore/Washington area is recalled. Although, many of the components and instruments of the period have been superceded by more modern technology, many accomplishments became milestones or seeded later work. Some notable examples include: radiometers up to 600 GHz (0.5-millimeter wavelength), the first modern phased array radar, self-focused imaging radars, and sea scattering measurements in the 10 to 50-GHz region.

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Abstracts

Historical perspectives on commercial and non-military government space applications of microwave systems in the Baltimore/Washington area

G. Hyde, C. Mahle, A. Williams, R. Gupta, R. Marsten, J. Frank, J. Goldhirsh, C. Moore and R. Gasparovic. "Historical perspectives on commercial and non-military government space applications of microwave systems in the Baltimore/Washington area." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 421-424.

The Baltimore/Washington area has made significant contributions to commercial and non-military government space applications of microwaves. These include especially (both for experimental/proof-of-concept and for operation), design of communications satellite systems, satellites, payloads and hardware, and satellites for remote sensing, their payload and some hardware, and radiowave propagation on the slant (Earth-satellite) path. Unique contributions include the ATS-6 satellite, the discovery and characterization of Gigahertz ionospheric scintillation, possibly the first electronically steerable phased array and the invention and implementation of the waveguide multimode filter.



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Abstracts

The origins of the proximity fuze

L. Brown. "The origins of the proximity fuze." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 425-428.

The poor quality of antiaircraft artillery in 1940 could be traced to the uncertainties in determining the range to the target and in setting a time fuze accordingly. The proximity fuze eliminated these problems by sensing the presence of the aircraft.



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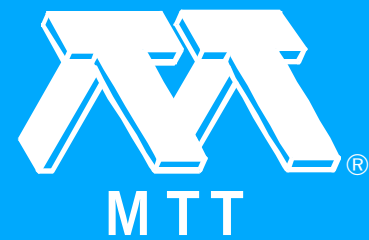


Abstracts

A 1.9 GHz fully integrated PHS power amplifier with a novel automatic gate-bias control circuit [MESFET ICs]

R. Singh, H. Nakamura, Khen-Sang Tan and J. Shibata. "A 1.9 GHz fully integrated PHS power amplifier with a novel automatic gate-bias control circuit [MESFET ICs]." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 431-434.

A 3.6 V PHS power amplifier (PA) GaAs MMIC with on-chip matching circuits and a novel automatic gate-bias control circuit is reported. It obviates the need for cumbersome and expensive post fabrication dc bias current tuning. The 1.02/spl times/1.73 mm/sup 2/ SSOP-16 plastic packaged chip, meets all PHS specifications, and the performance is comparable to the PA without the bias control circuit. The measured PA performance is presented for deep, shallow and typical pinch-off voltage cases confirming the robustness and suitability of the proposed bias control circuit.



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63.2% high efficiency and high linearity two-stage InGaP/GaAs HBT power amplifier for personal digital cellular phone system

T. Iwai, S. Ohara, T. Miyashita and K. Joshin. "63.2% high efficiency and high linearity two-stage InGaP/GaAs HBT power amplifier for personal digital cellular phone system." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 435-438.

This paper reports on a high efficiency and high linearity two-stage InGaP/GaAs heterojunction bipolar transistor (HBT) power amplifier for the Japanese personal digital cellular phone system (PDC). Our power-stage HBT amplifier exhibited a high power added efficiency (PAE) of 68.8% and an adjacent channel leakage power (ACP) of -48 dBc. The ACP of the two-stage amplifier was improved enough for PDC with keeping a high PAE by combining of a driver-stage and this power-stage amplifiers. Our two-stage HBT power amplifier exhibited the highest PAE of 63.2% ever reported and an ACP at a 50-kHz offset frequency of -52 dBc in 1.5 GHz PDC standard at a Pout of 31 dBm under a supply voltage of 3.5 V.

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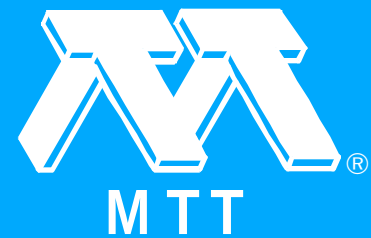


Abstracts

64% efficiency enhancement-mode power heterojunction FET for 3.5 V Li-ion battery operated personal digital cellular phones

Y. Bito, N. Iwata and M. Tomita. "64% efficiency enhancement-mode power heterojunction FET for 3.5 V Li-ion battery operated personal digital cellular phones." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 439-442.

This paper describes 950 MHz power performance of an enhancement-mode double-doped AlGaAs/InGaAs/AlGaAs heterojunction FET operated at 3.5 V for personal digital cellular phones. The developed 0.5 μm gate length FET exhibited an on-resistance of 1.5 Ω/mm and a threshold voltage of +0.09 V. Under single 3.5 V operation, a 19.2 mm gate width FET exhibited an output power of 1.03 W (30.1 dBm) and a power-added efficiency of 64.0% with an adjacent channel leakage power of -48.7 dBc at 50 kHz off-center frequency.



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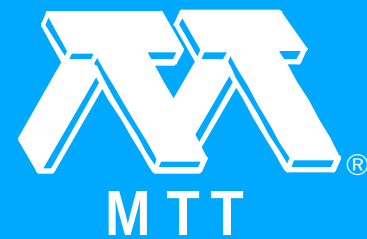


Abstracts

A high efficiency GaAs power amplifier module with a single voltage for digital cellular phone systems

M. Nishida, S. Murai, H. Uda, H. Tominaga, T. Sawai and A. Ibaraki. "A high efficiency GaAs power amplifier module with a single voltage for digital cellular phone systems." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 443-446.

This work describes a two-stage 0.2 cc power amplifier (PA) module with single voltage operation for digital cellular phone system terminals. A new GaAs FET structure enables this operation. To increase power-added efficiency, it is found to be advantageous to use heat spreading with a Cu plate in the cavity and second-order harmonic suppression with the trap capacitor built into the drain bias circuit. Output power of 30.5 dBm with power added efficiency of 54% has been obtained at 1.45 GHz and 3.5 V.



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3.5 V operation driver-amplifier MMIC utilizing SrTiO/sub 3/ capacitors for 1.95 GHz wide-band CDMA cellular phones

T.B. Nishimura, N. Iwata, K. Yamaguchi, K. Takemura and Y. Miyasaka. "3.5 V operation driver-amplifier MMIC utilizing SrTiO/sub 3/ capacitors for 1.95 GHz wide-band CDMA cellular phones." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 447-450.

This paper describes 1.95 GHz Wide-band Code Division Multiple Access power performance of a two-stage driver amplifier MMIC with 1.0/spl times/1.5 mm/sup 2/ area, in which double-doped AlGaAs/InGaAs/AlGaAs FETs and SrTiO/sub 3/ capacitors are utilized. Operated at 3.5 V with gate bias conditions chosen to reduce distortion, the complete MMIC delivered an adjacent channel leakage power ratio (ACPR) of -47.3 dBc at 5 MHz off-center frequency and an output power (P_{out}) of 73 mW (18.6 dBm) with a power-added efficiency (PAE) of 11.1% and an associated gain of 23.5 dB. A maximum PAE of 33.2% was obtained with P_{out} of 113 mW (20.5 dBm) at ACPR of -42.0 dBc.

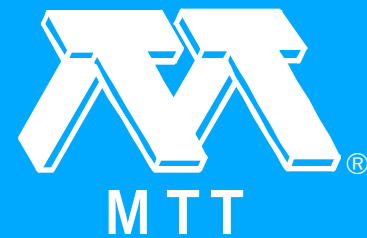


Abstracts

Performance of RFMOS/sup TM/ for 1.9 GHz CDMA operation

F. Brauchler, M. Tutt, D. Seymour, A. Khatibzadeh, J. Erdljac and J. Arch. "Performance of RFMOS/sup TM/ for 1.9 GHz CDMA operation." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 451-454.

We report the first measured ACPR properties of Texas Instruments' RFMOS/sup TM/ power transistor technology at 1.9 GHz. It demonstrated a 49% PAE with ACPR=-45 dBc for V/sub DS/=3.6 V. The performance results are presented as a function of bias and tuning and demonstrate that the RFMOS/sup TM/ technology has excellent potential for CDMA applications.



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High efficiency mode "E" amplifier powers high efficiency active transmitting patch antenna

F.J. Ortega Gonzalez, A. Asensio Lopez, V. Gonzalez Posadas, J.L. Jimenez Martin and C. Martin Pascual. "High efficiency mode "E" amplifier powers high efficiency active transmitting patch antenna." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 455-458.

This paper describes a high efficiency amplifier that uses the load presented by a patch antenna to work in class "E". The resulting set is a high efficiency transmitting active antenna. The dimensions, shape and location of the feeding point in the antenna are selected to obtain an input impedance to force the transistor to work in class "E" at 885 MHz with very high collector efficiency: $\eta_c = 90\%$ at $V_{cc} = 12.5$, $P_{out} = 1.5$ W.

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Abstracts

Stable and efficient ABCs for graded mesh FDTD simulations

A. Lauer and I. Wolff. "Stable and efficient ABCs for graded mesh FDTD simulations." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 461-464.

Well known Absorbing Boundary Conditions show instabilities if used for graded mesh FDTD simulations of structures on high permittivity substrates. This paper proposes a PML like absorber which is unconditionally stable. Reflection factors of less than -70 dB have been achieved for coplanar waveguide termination.



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Abstracts

Adapted radiating boundaries (ARB) for efficient time domain simulation of electromagnetic interferences

S. Lindenmeier, L. Pierantoni and P. Russer. "Adapted radiating boundaries (ARB) for efficient time domain simulation of electromagnetic interferences." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 465-468.

The novel method of Adapted Radiating Boundaries (ARB) is a very fast and powerful tool for the field simulation of electromagnetic interference in time domain. The ARB method shows a high stability of the algorithm and a very fast computational time. The ARB method is especially suitable for the efficient simulation of transient electromagnetic interferences between various lossy structures of complex geometry.



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Unsplit-field formulations for generalised material independent PML absorbers

An Ping Zhao. "Unsplit-field formulations for generalised material independent PML absorbers." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 469-472.

To absorb EM waves propagating in arbitrary anisotropic media consisting of both permittivity and permeability tensors, a generalized material independent PML (GMIPML) absorber based on split-field formulations was recently developed by the author. In this paper, to further enhance the efficiency of the GMIPML, unsplit-field formulations for this absorber are proposed. Validation of the GMIPML based on the unsplit-field formulations is carried out through numerical examples.





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An interface for the FDTD diakoptics

T. Shibata and M. Tomizawa. "An interface for the FDTD diakoptics." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 473-476.

A new formulation of the TLM type (or the directional wave type) interface for the FDTD diakoptics is proposed. The interface is implemented in the FDTD algorithm using the concept of the impedance boundary condition incorporated with a signal source model without adopting the absorbing boundary condition. Thus efficient and rigorous analyses are accomplished.

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Abstracts

A novel 2-D multi-mode parallel time domain diakoptics and its application in filter analysis and design

Donglin Su, Jun-Seok Park, B. Houshmand, Yongxi Qian and T. Itoh. "A novel 2-D multi-mode parallel time domain diakoptics and its application in filter analysis and design." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 477-480.

A novel two-dimensional multi-mode parallel time domain diakoptics based on FDTD is proposed. The discrete time domain Green's function is employed to analyze complicated circuits entirely in time domain with greatly improved efficiency. A part of the results is combined with frequency-domain synthesis method to design a band-pass filter. Excellent agreement with mode-matching and measured results is obtained.



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Space adaptive analysis of evanescent waveguide filters

E.M. Tentzeris and L.P.B. Katehi. "Space adaptive analysis of evanescent waveguide filters." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 481-484.

The MRTD scheme is applied to the analysis of evanescent waveguide filters. Specifically, a space adaptive algorithm in 3 dimensions is implemented by thresholding the wavelet values. The results are compared to those obtained by use of the conventional FDTD to indicate considerable savings in memory and computational time.



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Abstracts

Time-domain vector-potential analysis of complex RF multilayer structures via segmentation technique

N. Georgieva, Zhizhang Chen and W. Oberhammer. "Time-domain vector-potential analysis of complex RF multilayer structures via segmentation technique." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 485-488.

The newly developed time-domain vector potential (TDVP) approach, based on the finite-difference solution of the wave equation for the magnetic vector potential $A/\text{spl } 1.0\text{arr/}$, is applied to the analysis of multilayer structures typical for RF/microwave printed-circuit boards (PCB), widely used in the personal communication systems (PCS) technology. The transient analysis of complex multiport discontinuities, where cross-talk and resonant phenomena occur, is used to obtain their scattering parameters. The subsequent modeling of the whole unit is carried out by making use of the S-parameter library, prepared by the TDVP algorithm, and, a suitable microwave-circuit simulator, e.g. EESof Touchstone and Libra. The TDVP algorithm is also used to predict the resonant frequencies of patch cavities which are encountered in multilevel multiconductor structures.



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A robust ultra broadband wireless communication system using SAW chirped delay lines

A. Springer, A. Pohl, W. Gugler, M. Huemer, L. Reindl, C.C.W. Ruppel, F. Seifert and R. Weigel. "A robust ultra broadband wireless communication system using SAW chirped delay lines." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 491-494.

Design and performance of SAW chirped delay lines on LiTaO₃/sub 3/-X112rotY for a wireless communication system are presented. Center frequency, bandwidth and chirp rate are 350 MHz, 80 MHz, and ± 20 MHz/s, respectively. An optimized square-root weighting was chosen to reduce the sidelobes of the compressed pulse to -42 dB compared to the correlation peak. The chirp filters have been deployed in a hardware demonstrator for a wireless indoor communication system for data rates of a few Mbit/s. Limiting factors for the data rate according to simulations and measurements are mainly the intersymbol interference due to the time-overlapping of consecutive symbols and to a lesser extent the multipath propagation.

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Performance degradation in GPS-receivers caused by group delay variations of SAW-filters

T. Muller. "Performance degradation in GPS-receivers caused by group delay variations of SAW-filters." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 495-498.

In modern RF-receivers several SAW-filters are used in RF- and IF-stages. The use of SAW-filters is critical with respect to the pseudo-range error after the decorrelation-process. We present a new simulation technique to predict the decorrelation results depending on the group delay characteristics of the filters. This technique allows an improvement of the accuracy of the GPS correlation results and a related optimization of the SAW-filter characteristics.





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Miniature SAW antenna duplexer module for 1.9 GHz PCN systems using SAW-resonator-coupled filters

N. Shibagaki, K. Sakiyama and M. Hikita. "Miniature SAW antenna duplexer module for 1.9 GHz PCN systems using SAW-resonator-coupled filters." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 499-502.

Surface Acoustic Wave (SAW) filters has been widely applied to radio personal communication to reduce size and volume of the radio terminals. In this paper, we discuss the application of SAW filters used in a 1.8 GHz band antenna duplexer module for Personal Communications Network (PCN) systems. The module consisting of a receiver top filter, a transmitter final stage filter, lumped matching-circuit elements and lumped phase-shift circuits has been developed. The duplexer module has an insertion loss of less than 1.6 dB (1710-1785 MHz) in the Tx-to-antenna path and of less than 3.3 dB (1805-1880 MHz) in the antenna-to-Rx path, respectively. It also has the size of 14/spl times/8/spl times/1.8 mm/sup 3/ and the weight of 0.4 g, which achieved about one-fifth reduction compared with the conventional dielectric-resonator filter duplexers.





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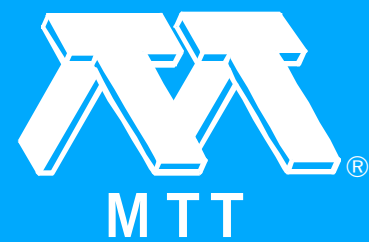
New applications of wirelessly interrogable passive SAW sensors (1998 Vol. II [MWSYM])

A. Pohl, A. Springer, L. Reindl, F. Seifert and R. Weigel. "New applications of wirelessly interrogable passive SAW sensors (1998 Vol. II [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 503-506.

By applying passive wirelessly interrogable SAW sensors, many physical parameters can be measured. Up to now all SAW sensor applications are performed by taking a snapshot of the sensor's response periodically, evaluating the measurand assumed to be quasistationary. Therefore the upper limit for the rate of sampling of a mechanical effect by the sensor is the interrogation rate. Usually it is in the range of 100 kHz or less and measurands with a periodicity of up to a few tenths of kHz can be sampled satisfactory. Even audible vibrations of machine parts can be monitored. Here, the behaviour of the sensors for dynamic measurands is discussed. Advanced applications for the measurement of vibration, acceleration, for dynamic pressure measurement in mechanical engineering, for example for monitoring the tyres of cars are presented. Measurement results from an experimental setup are given.

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A chirp spread spectrum DPSK modulator and demodulator for a time shift multiple access communication system by using SAW devices

Y. Takeuchi and K. Yamanouchi. "A chirp spread spectrum DPSK modulator and demodulator for a time shift multiple access communication system by using SAW devices." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 507-510.

We have developed a modulator and a demodulator for DPSK modulated chirp signals using a SAW dispersive delay line and a SAW matched filter. The SAW chirp modulator spreads the 100 MHz spectrum between every 1 bit data interval of 1.5 /spl mu/sec and provides DPSK modulation, depending upon data. The SAW demodulator demodulates data using exclusive output pulses from two output ports of a newly designed SAW matched filter. By employing nonlinear chirp modulation, the modulator generates a frequency-weighted chirp signal that keeps a flat amplitude in the time domain. The demodulator has a 19 dB process gain, and it has good correlation characteristics of less than -30 dB time sidelobe. By using these modulator and demodulator, we have examined a multiple access of the chirp spread spectrum (SS) system. The multiplexity is achieved by the time shift of chirp SS signals, which are easily produced by the SAW modulator. We have confirmed 20 multiplex accesses experimentally, and have measured the bit error rate up to 9 multiplexity. In the case of one chirp signal, the bit error rate degrades 2 dB from the theoretical level, and the degradation of multiplexity up to 9 was only 1 dB.

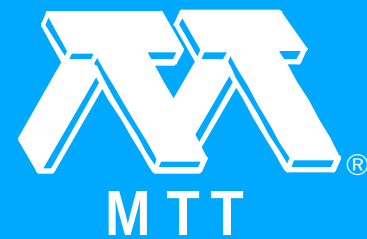


Abstracts

Novel nonlinear FMCW radar for precise distance and velocity measurements

M. Vossiek, T.v. Kerssenbrock and P. Heide. "Novel nonlinear FMCW radar for precise distance and velocity measurements." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 511-514.

A new nonlinear FMCW radar concept for precise distance and velocity measurements is presented. The radar system incorporates a surface acoustic wave (SAW) reference device used for an online detection of oscillator phase errors. With a specific Doppler/distance ambiguity function, that is continuously adapted to the measured phase error, the target signal is evaluated. By applying this novel technique the optimal distance resolution at a given sweep bandwidth is obtained independently of the Doppler resolution. The proposed system approach has been evaluated with a 77 GHz radar incorporating a flip-chip MMIC VCO.



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A W-band dielectric-lens-based integrated monopulse radar receiver (1998 Vol. II [MWSYM])

S. Raman, N.S. Barker and G.M. Rebeiz. "A W-band dielectric-lens-based integrated monopulse radar receiver (1998 Vol. II [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 517-520.

An integrated monopulse receiver has been developed for tracking applications at W-band frequencies. The receiver is based on dielectric-lens-supported, coplanar-waveguide-fed slot-ring antennas integrated with uniplanar subharmonic mixers. The design center frequency is 94 GHz and the IF bandwidth is 2-4 GHz. The measured DSB conversion losses of the individual receiver channels range from 14.4 to 14.7 dB at an LO frequency of 45.0 GHz and an IF of 1.4 GHz. This includes the lens reflection and absorption losses, backside radiation, RF feedline loss, mixer conversion loss, and IF distribution loss. Excellent monopulse patterns are achieved with better than 45 dB difference pattern nulls using IF monopulse processing. This translates to sub-milliradian angular accuracy for a 24 mm aperture. Better than 25 dB nulls are possible over a 600 MHz bandwidth.

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Multi-beam automotive radar front end using non-contact cylindrical NRD switch

T. Tanizaki, H. Nishida, T. Nishiyama, H. Yamada, K. Sakamoto and Y. Ishikawa. "Multi-beam automotive radar front end using non-contact cylindrical NRD switch." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 521-524.

We have developed a multi-beam automotive FM-pulse radar front end for the 60 GHz band by using new NRD technologies. The multi-beam antenna consists of a dielectric lens and a non-contact cylindrical NRD switch with four dielectric resonator radiators and a motor. The millimeter-wave circuit consists of our original NRD guide components. The size of the equipment is W125 mm/spl times/H80 mm/spl times/D74 mm. This is expected to be applicable for automotive ICC applications.

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A flip-chip MMIC design with CPW technology in the W-band

*T. Hirose, K. Makiyama, T.M. Shimura, S. Aoki, Y. Ohashi, S. Yokokawa and Y. Watanabe.
"A flip-chip MMIC design with CPW technology in the W-band." 1998 MTT-S International
Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 525-528.*

We designed and fabricated a W-band flip-chip MMIC amplifier with a coplanar waveguide (CPW) transmission line using 0.15 μm InGaP-InGaAs HEMT technology. In addition, we present a test structure for obtaining an accurate flip-chip CPW line model, and demonstrate a two-stage flip-chip MMIC amplifier with a gain of 12 dB at 79 GHz to validate this model.

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80 GHz distributed amplifiers with transferred-substrate heterojunction bipolar transistors

B. Agarwal, R. Pullela, Q. Lee, D. Mensa, J. Guthrie and M.J.W. Rodwell. "80 GHz distributed amplifiers with transferred-substrate heterojunction bipolar transistors." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 529-532.

We report distributed amplifiers with 80 GHz bandwidth, 6.7 dB gain and /spl sim/70 GHz bandwidth, 7.7 dB gain. These amplifiers were fabricated in the transferred-substrate heterojunction bipolar transistor integrated circuit technology. Transferred-substrate HBTs have very high $f_{\text{sub max}}$ (>400 GHz) and have yielded distributed amplifiers with record gain-bandwidth product.

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Characteristics of a MM-wave tapered slot antenna with corrugated edges

S. Sugawara, Y. Maita, K. Adachi, K. Mori and K. Mizuno. "Characteristics of a MM-wave tapered slot antenna with corrugated edges." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 533-536.

We discuss how the radiation pattern of a reduced ground plane tapered slot antenna (TSA) is improved by varying the dimensions of a corrugated structure present at the edge of the TSA substrate. Experimental results are given that indicate that E-plane radiation patterns can be adjusted by varying the corrugation structure geometry. We also present calculated analyses of the corrugation structure using the finite-difference time-domain (FDTD) method.

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Optimization of MM-wave distribution networks using silicon-based CPW

T.M. Weller, R.M. Henderson, S.V. Robertson and L.P.B. Katehi. "Optimization of MM-wave distribution networks using silicon-based CPW." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 537-540.

This paper describes work relating to the optimization of silicon-based, coplanar waveguide (CPW) air-bridge and bend discontinuities. Experimental results shown here verify that the return loss is improved by introducing a step-compensation into the CPW center conductor. The technique is demonstrated in the design of an asymmetric coplanar-strip Wilkinson power divider at 45 GHz.

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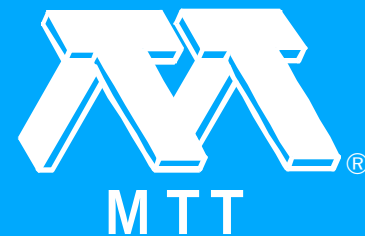


Abstracts

Is our engineering education system suitable to fulfill the needs of the wireless industry?

L. Besser. "Is our engineering education system suitable to fulfill the needs of the wireless industry?." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 543-546.

To survive in the globally competitive marketplace, the traditional "microwave engineer" of the past decades has gradually transformed to a "wireless RF engineer." Industry expectations for this new breed are quite different from its predecessor, therefore our universities must develop new programs to prepare young engineers for their careers.



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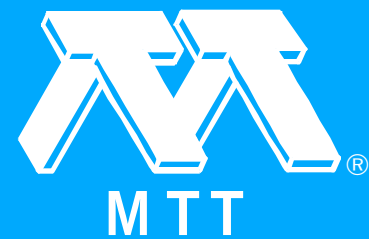


Abstracts

East-West summer schools in microwave and optical engineering

H.L. Hartnagel. "East-West summer schools in microwave and optical engineering." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 547-550.

Originated by the European Union under the Tempus Programme these Summer Schools have since then grown in strength, in the mean time based on other funding schemes, with participating universities from both the EU and eastern Europe. So far they took place annually in Warsaw, Rome, Guilford near London, Darmstadt, Prague, Warsaw and Bratislava. The next one will be in the year 1998 in Chemnitz. Students have to work on individual projects within small fully international groups of typically 4 or 5, attend lectures and have a competitive presentation of their results, sometimes with local industry offering prizes for the best groups. The language used is English. This course is at their home universities fully accepted as satisfying the normal course requirements. The industrial response to this multicultural course experience is indeed very positive.



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Abstracts

MMIC designers trained on real chips without expensive fabrication

J.C.M. Hwang. "MMIC designers trained on real chips without expensive fabrication." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 551-554.

Without many lengthy and expensive design/fabrication/test iterations, we have trained a number of MMIC designers who can contribute to the industry even before they graduate. The approach involves mainly large-signal modeling and internal-node microwave waveform probing of existing MMIC chips. Typically, it starts by a company asking us to help diagnose a certain MMIC. Students then extract large-signal transistor models themselves and use the models to simulate the internal-node waveforms of the MMIC. By comparing the modeled and measured results, students gain insight of the MMIC working principles. Next, design improvement is suggested and verified by novel cutting and pasting techniques. Lastly, by focusing on microwave waveforms students are proficient in both frequency- and time-domain techniques, making them particularly suitable for modern wireless communication applications which involve complex signal-modulation schemes.



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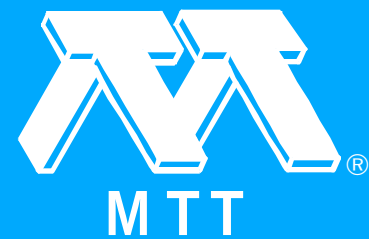


Abstracts

A virtual field-based laboratory for microwave education

M. Righi, W.J.R. Hoefer and T. Weiland. "A virtual field-based laboratory for microwave education." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 555-558.

The design of complex microwave and millimeter-wave circuits requires field modeling expertise and computer tools that include electromagnetic field simulators. The need for field modeling and simulation tools is growing steadily. Present and future users of such tools must understand the underlying physical phenomena and acquire modeling expertise. Educational packages have thus been developed at the Universities of Victoria and Darmstadt that convey experience in electromagnetic field modeling, simulate a realistic electromagnetics laboratory environment, and invite students to experiment and test new ideas with a minimum of time and material investment.



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Abstracts

Microwave education after the unification of Germany-an example: Gerhard-Mercator-University Duisburg

A. Beyer, K. Solbach and A. Ziermann. "Microwave education after the unification of Germany-an example: Gerhard-Mercator-University Duisburg." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 559-562.

The expansion of the wireless and mobile communication techniques has rendered possible the opening of numerous new fields of activities not only at lower microwave (0.9 GHz, 1.8 GHz), but also at millimeter-wave frequency (66 GHz) bands. These areas became very important factors at the international market of communication. With the rapid changes of these techniques there arise a lot of new demands both in the industry and in the university area. This paper describes activities within a university in order to show how the demands connected with the new technologies can be fulfilled.



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Educating tomorrow's RF/microwave engineer: a new undergraduate laboratory uniting circuit and system concepts

T.M. Weller, P.G. Flikkema, L.P. Dunleavy, H.C. Gordon and R.E. Henning. "Educating tomorrow's RF/microwave engineer: a new undergraduate laboratory uniting circuit and system concepts." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 563-566.

This paper describes recent advancements made at the University of South Florida for educating undergraduate electrical engineering students in the fields of wireless circuits and systems. The foundation for the program is an innovative lecture/laboratory course which guides students through wireless component and subsystem analysis and design using a case-study approach. While providing a broad exposure to the wireless arena, students also gain hands-on experience with state-of-the-art instrumentation and computer-aided engineering software.



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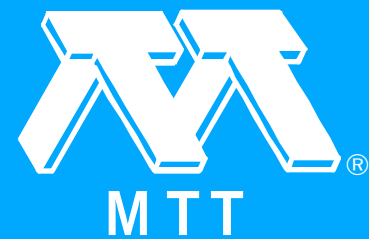


Abstracts

A high power and high efficiency monolithic power amplifier for local multipoint distribution service

M.K. Siddiqui, A.K. Sharma, L.G. Callejo and R. Lai. "A high power and high efficiency monolithic power amplifier for local multipoint distribution service." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 569-572.

A high power and high efficiency monolithic power amplifier operating from 27.5 to 29.5 GHz is presented for local multipoint distribution service (LMDS). Using 0.15 μm InGaAs-AlGaAs-GaAs pseudomorphic HEMT (PHEMT) devices, the two stage power amplifier on 4 mil GaAs substrate demonstrated greater than 16 dB small signal gain, 32 dBm (1.6 watts) power with 35% power-added-efficiency. The amplifier attained peak output power of 33.9 dBm (2.4 watts) and peak power-added efficiency of 37%. At the peak power level, the amplifier exhibited power densities in excess of 640 mw/mm which is the highest output power density attained by Ka-band monolithic power amplifiers.



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Ka-band 2 watt power SSPA for LMDS application

J. Shu, T. Hwang, D. Nguyen, R. Pumares, P. Chye and P. Khanna. "Ka-band 2 watt power SSPA for LMDS application." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 573-576.

A Ka-band high power single power supply SSPA, using a MM-wave power PHEMT process, has been successfully developed for LMDS (Local Multi-point Distribution System) application. Operated under 5 V single power supply, this four stage amplifier has 23 dB of linear gain and typical 33 dBm (2 W) of 1 dB gain compression power for the entire 900 MHz bandwidth (27.5/spl sim/28.4 GHz). This amplifier is designed to meet the demanding hub station linearity requirement of the DAVIC specification for grade A QPSX modulation of data and video transmission. When operated at 30 dBm (1 W) power output with single channel band limited signal, the spectral re-growth is -35 dBc, 3 dB better than the -32 dBc performance target. To our knowledge, the linearity performance presented is the best reported so far for this application.

Click on title for a complete paper.



Abstracts

High-efficiency, packaged Ka-band MMIC operating at 24 volts

J. Schellenberg. "High-efficiency, packaged Ka-band MMIC operating at 24 volts." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 577-580.

A power MMIC, employing a unique series bias scheme, is presented operating over the 31 to 33 GHz band. Mounted in a low cost metal-ceramic package and operating at 24 volts, this IC has demonstrated an output power of 0.81 watt with a power-added efficiency of 32%.



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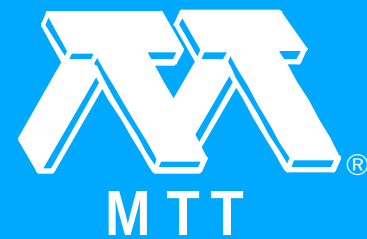


Abstracts

A robust 3W high efficiency 8-14 GHz GaAs/AlGaAs heterojunction bipolar transistor power amplifier

M. Salib, A. Gupta, A. Ezis, M. Lee and M. Murphy. "A robust 3W high efficiency 8-14 GHz GaAs/AlGaAs heterojunction bipolar transistor power amplifier." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 581-584.

A monolithic power amplifier has been developed using GaAs/AlGaAs HBT technology. This amplifier uses cascode HBTs and provides /spl sim/3 W CW from 8 to 14 GHz with a power added efficiency of /spl sim/40% and a gain of /spl sim/15 dB. The cascode HBT is designed to be free of burnout problems associated with current collapse. Spurious signals at the output of the MMIC are kept /spl sim/50 dBc, worst case, and phase noise 1 kHz from the carrier is -130 to -140 dBc/Hz, better than that of comparable PHEMT amplifiers.



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High-efficiency L-band Kahn-technique transmitter

F.H. Raab, B.E. Sigmon, R.G. Myers and R.M. Jackson. "High-efficiency L-band Kahn-technique transmitter." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 585-588.

This paper describes a 20 W PEP linear L-band transmitter based upon the Kahn envelope-elimination-and-restoration technique. A double envelope-feedback loop assures high linearity. The RF power amplifier employs a two stage MMIC driver amplifier and a 20 W PA biased for class-AB operation. The class-S modulator includes a high speed comparator and 0.5 μm HFETs in its output stage. A double envelope-feedback loop assures both high linearity and time-delay equalization for RF bandwidths to 150 kHz. With a two-tone signal the transmitter achieves an efficiency of 56% at full power (40 dBm under QPSK modulation), and 35% at 18 dB in back-off. The third-order IMDs for a two-tone signal vary from -30 dBc to -40 dBc over a 20 dB back-off range.

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Abstracts

Microwave power amplifier efficiency improvement with a 10 MHz HBT DC-DC converter

G. Hanington, P.F. Chen, V. Radisic, T. Itoh and P.M. Asbeck. "Microwave power amplifier efficiency improvement with a 10 MHz HBT DC-DC converter." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 589-592.

This paper presents a technique for raising power efficiency in portable wireless transmitters by integrating a variable voltage output DC-DC converter together with a MESFET RF power amplifier. Significant increases in power efficiency are obtainable over a large range of output power levels. The system includes an envelope detector, a closed feedback loop, and a pulse width modulator operating at 10 MHz. A 300 mW transmitter is shown for which battery life can be extended by over 1.4 times.



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Abstracts

Analytical charge conservative large signal model for MODFETs validated up to MM-wave range

R. Osorio, M. Berroth, W. Marsetz, L. Verweyen, M. Demmler, H. Massler, M. Neumann and M. Schlechtweg. "Analytical charge conservative large signal model for MODFETs validated up to MM-wave range." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 595-598.

We present an analytical charge conservative large signal model for MODFETs, which is valid up to MM-wave frequencies. Although the model equations are simple, an excellent accuracy in the representation of the nonlinear elements of the FET is achieved. The model was used for the successful design of a 2-stage power amplifier for 60 GHz.



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Abstracts

Measurement based nonlinear electrothermal modeling of GaAs FET with dynamical trapping effects

Z. Ouarch, J.M. Collantes, J.P. Teyssier and R. Quere. "Measurement based nonlinear electrothermal modeling of GaAs FET with dynamical trapping effects." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 599-602.

This paper presents MESFET measurement methods based on pulsed measurements that separate trapping and thermal effects. Derived from these measurements, a model of the trapping effect is determined, as well as a thermal model. The proposed nonlinear model is validated from DC to RF frequencies, it handles dynamical dispersive effects and does not depend on the hot bias point.



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Abstracts

Modeling of current lag in GaAs IC's

W.R. Curtice, J.R. Bennett, D. Suda and B.A. Syrett. "Modeling of current lag in GaAs IC's." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 603-606.

Leakage currents, thermal effects and deep-level traps cause significant current lag effects in GaAs MESFETs. A conventional, MESFET large-signal, equivalent-circuit model has been modified to simulate these effects and used to improve the design of GaAs digital control and RF switching circuits. Both gate lag and drain lag are simulated as well as over-shoot or under-shoot behavior.



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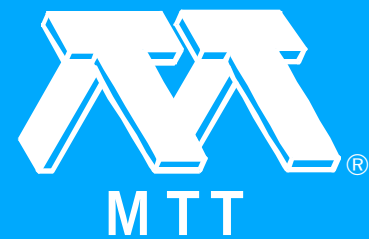
A physically-based transient SPICE model for GaAs MESFET's

R.E. Leoni, III, J.W. Bao, M.S. Shirokov and J.C.M. Hwang. "A physically-based transient SPICE model for GaAs MESFET's." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 607-610.

A physically-based transient SPICE model was developed for GaAs MESFETs. The model accounts for both trapping and detrapping effects hence can simultaneously simulate low-frequency dispersion and gate-lag characteristics. This is different from conventional models which can simulate either effect but not both. The present model was verified in terms of pulsed I-V characteristics and digitally-modulated RF carrier waveforms.

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Characterization and modeling of thermal dynamic behavior of AlGaAs/GaAs HBTs

Ke Lu and Xiangdong Zhang. "Characterization and modeling of thermal dynamic behavior of AlGaAs/GaAs HBTs." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 611-614.

This study presents a systematic investigation for the first time on the dynamic thermal impedance of AlGaAs/GaAs HBTs. A simple small-signal measurement technique is developed to measure the frequency domain relationship between the dissipation power and the HBT junction temperature. The technique provides a unique measurement tool to analyse device thermal structure, such as die attachment and heat-sink. A multi-section RC circuit is proposed in the paper to describe the thermal impedance. The agreements between measurement and simulation results are excellent. This investigation is useful in terms of modeling the HBT self-heating effect and its impact on HBT linearity or other temperature-sensitive performance.

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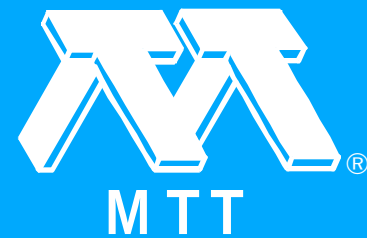


Abstracts

Ferrite and wire baluns with under 1 dB loss to 2.5 GHz

A. Riddle. "Ferrite and wire baluns with under 1 dB loss to 2.5 GHz." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 617-620.

This paper presents a ferrite and wire balun with performance similar to coaxial baluns. This balun makes two significant improvements over current technology: the wire impedance is adjusted for the ferrite and wire winding loading; and a trifilar wire is used to minimize skin effect losses. Insertion loss below 0.9 dB is achieved from 5 MHz to 2.5 GHz.



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Insertion loss analysis of small isolator for portable phones

S. Takeda. "Insertion loss analysis of small isolator for portable phones." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 621-624.

The insertion loss of lumped element isolator for portable phones was analyzed using the developed circuit simulator, which includes three loss factors: linewidth $/\text{spl } \Delta/H$ of garnets, resistance R of central conductors and dielectric loss, $\tan/\text{spl } \Delta/$ of capacitors. By comparison between the experimental results and calculations, the contribution ratios of $/\text{spl } \Delta/H$ and R towards insertion loss, in 7 mm square isolators at 941.5 MHz, were each determined to be almost 50%, and that of $\tan/\text{spl } \Delta/$ to be negligibly small.

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Abstracts

Thermostable stripline lumped element circulator for UHF applications

A.G. Schuchinsky. "Thermostable stripline lumped element circulator for UHF applications." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 625-628.

The paper reports on the design features and development of a thermostable stripline lumped element circulator operating in the above resonance mode. Improvements in insertion loss and temperature stability were achieved by virtue of a new integral topology for the conductors' crossover and a novel arrangement of the DC magnetic circuit. Circulator prototypes demonstrated excellent performance in the frequency range 70-400 MHz.



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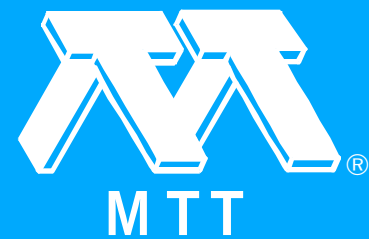
Finite-difference time-domain analysis of a stripline disc junction circulator

B.S. Yildirim and E.-B. El-Sharawy. "Finite-difference time-domain analysis of a stripline disc junction circulator." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 629-632.

In this paper, a finite-difference time-domain (FDTD) analysis of a stripline disc junction circulator is presented. Magnetic fields inside the finite-size ferrite disks are calculated using special updating equations derived from the equation of motion of the magnetization vector and Maxwell's curl equations in consistency. Frequency dependent circulator parameters are calculated over a wide band of frequencies with a single FDTD run.

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FDTD analysis of microwave circulators involving saturated magnetized ferrites

J. Lenge, A. Ahland, J. Kastner and D. Schulz. "FDTD analysis of microwave circulators involving saturated magnetized ferrites." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 633-636.

A three-dimensional FDTD approach for the analysis of microwave circulators is presented. The underlying theoretical fundamentals are introduced, including a model for saturated magnetized ferrite material. The detrimental effect of demagnetizing fields is examined and evaluated for several examples. The simulated scattering characteristics are compared with experimental results.

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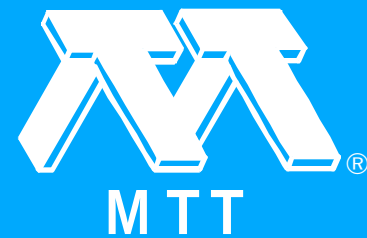


Abstracts

The new approach to designing W-band Y-junction circulator with small insertion loss

Ho Dong Kim, I. Kirsanov and N. Volobouev. "The new approach to designing W-band Y-junction circulator with small insertion loss." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 637-639.

The simple ferrite waveguide Y-junction W-band low loss circulator construction is realized. 0.15 dB loss level is achieved at the expense of microwave fields concentration in the ferrite area with homogeneous transversal magnetization.



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Space-wave-type leaky mode carrying dominant-mode-like modal current distributions

C.-K.C. Tzuang and Ching-Chyuan Lin. "Space-wave-type leaky mode carrying dominant-mode-like modal current distributions." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 643-646.

A recently explored non-zero cut-off leaky mode is reported to coexist with the well-known bound mode in a suspended microstrip placed in a large U-shaped conducting container to suppress any surface wave leakage. This new space-wave-type leaky mode is confirmed by rigorous full-wave modal investigations and three-dimensional scattering analyses. The new leaky mode bears strikingly similar modal current distributions and near-strip transverse electric field patterns to the bound mode. Thus, the new type of leaky mode is an indispensable companion to the bound mode for a suspended microstrip.

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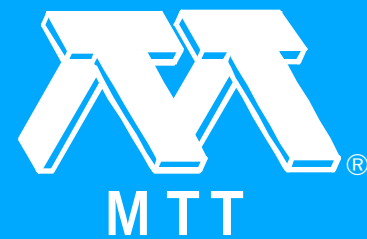


Abstracts

Unexpected contribution of nonphysical mode to the fields excited by a practical source in printed-circuit transmission lines

M. Tsuji, H. Takayama and H. Shigesawa. "Unexpected contribution of nonphysical mode to the fields excited by a practical source in printed-circuit transmission lines." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 647-650.

Contrary to ordinary belief, we report here for the first time that, on printed-circuit lines, some nonphysical solution (improper real solution in this paper) has a significant contribution to physical total fields excited by a practical source. Both the FDTD and GPOF methods numerically show the proofs.



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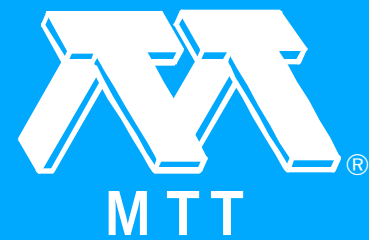


Abstracts

Mode-coupling phenomena of the even modes on microstrip line

Jyh-Wen Sheen, Tai-Lee Chen and Yu-De Lin. "Mode-coupling phenomena of the even modes on microstrip line." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 651-654.

Mode-coupling phenomena of the even modes on a microstrip line are presented in this paper. These phenomena occur when the dispersion curve of the microstrip line leaky dominant mode is close to those of the conventional microstrip line dominant mode or the microstrip line higher order modes. Interesting mode-coupling and mode evolution patterns are observed. Current distributions of the modes near the mode-coupling region are also shown. The ways to control the coupling region by the geometric parameters and to avoid the excitation of the microstrip leaky dominant mode in designing a leaky-wave antenna are discussed based on these mode patterns.



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Propagation and radiation characteristics of gyrotropic open structures in the presence of sources

P. Baccarelli, C. Di Nallo, F. Frezza, A. Galli and P. Lampariello. "Propagation and radiation characteristics of gyrotropic open structures in the presence of sources." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 655-658.

In this work a comprehensive investigation is carried out for a significant class of open structures with gyrotropic substrates concerning the effective capability to propagate and radiate power in the presence of suitable feeders. In our previous analyses of such structures, various situations were identified where peculiar nonreciprocal propagation and radiation behaviors could occur. On this basis, we wish to emphasize here important aspects of the excitation problem (e.g., the directional features of the radiation, gain and efficiency, etc.), which can affect the practical performance of the components. Thus, by means of new powerful and simple theoretical procedures, it is possible to develop fundamental investigations that provide qualitative and quantitative information in order to use such devices either as waveguiding structures or as leaky-wave type radiators.

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Leaky-wave characteristics of trapezoidally shaped NRD-guide suitable for design of millimeter-wave antenna

S.J. Xu, X.Y. Zeng, Ke Wu and K.M. Luk. "Leaky-wave characteristics of trapezoidally shaped NRD-guide suitable for design of millimeter-wave antenna." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 659-662.

Leaky-wave characteristics of NRD guide with various shapes of trapezoidal cross section are systematically modeled and analyzed by a method which combines effectively a multimode network theory with a mode-matching technique. Emphasis is laid on the investigation of parametric effect of trapezoidal dimensions on the leakage of NRD guide. Extensive numerical results are given to establish some useful guidelines for the design of a new type of NRD-guide leaky-wave antennas.

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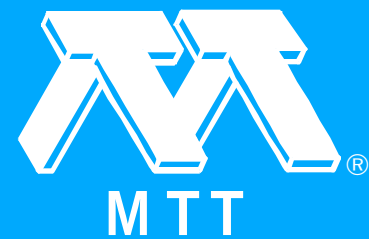


Abstracts

Eliminating surface currents with metallodielectric photonic crystals

D. Sievenpiper and E. Yablonovitch. "Eliminating surface currents with metallodielectric photonic crystals." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 663-666.

We report results on a new type of metallodielectric photonic crystal, which can act as an engineerable, artificial metal. These structures completely expel electromagnetic wave just as metals do. Like metals, they also support surface currents. By engineering the geometry of the surface, we have produced a structure that also has a band gap for the surface currents which overlaps the bulk band gap. This new material should be useful as a ground plane in low profile antenna applications.



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Characteristics of broadband InP millimeter-wave amplifiers for radiometry

E.J. Wollack and M.W. Pospieszalski. "Characteristics of broadband InP millimeter-wave amplifiers for radiometry." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 669-672.

The performance of InP HEMT (High-Electron Mobility Transistor) amplifiers is characterized in a direct detection 3.8 mm receiver over a temperature range of 50 to 300 K. The effects of low frequency noise up-conversion are observed in the total power response. The measured spectrum of gain fluctuations at room temperature is characterized by $\frac{\Delta G}{G} \propto \frac{1}{f^{\alpha}}$, with an index $\alpha \approx 0.9$ and $\frac{\Delta G}{G} \propto \frac{1}{f^6}$ per device used in the amplification chain. When the devices are cooled to 50 K, $\frac{\Delta G}{G}$ increases by a factor of 5. The measured receiver sensitivity is 3 mK Hz^{-1/2} at an ambient temperature of 300 K and 0.8 mK Hz^{-1/2} at 50 K. The measured sensitivity at room temperature is the best reported for a HEMT direct detection receiver in the 3 mm atmospheric window. At 50 K the observed receiver sensitivity is competitive with the performance of sub-Kelvin bolometric detectors or SIS junctions used for direct detection.



Abstracts

Noise temperature estimates for a next generation very large microwave array [HEMT LNAs]

S. Weinreb. "Noise temperature estimates for a next generation very large microwave array [HEMT LNAs]." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 673-676.

This paper estimates the noise temperature as a function of frequency for amplifiers covering the 1 to 10 GHz range utilizing state-of-the-art HEMT transistors operating at temperatures of 300 K, 80 K, and 20 K. The analysis includes the effect of loss and bandwidth of the input matching network.



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A comparison of topologies for single-ended millimeter-wave monolithic amplifier design

S. Nam, S. Miya, M. Ozaki and I.D. Robertson. "A comparison of topologies for single-ended millimeter-wave monolithic amplifier design." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 677-680.

The performance of five key single-ended monolithic millimetre wave amplifier topologies is compared with design, fabrication and measurements. This is the first such extensive comparative study of the special problems encountered when designing millimetre-wave amplifiers. The five different circuit topologies have been applied to the design of two-stage amplifiers using the same AlGaAs-GaN PHEMT foundry process in order to arrive at meaningful conclusions. The topologies included are the reactive matching technique, voltage shunt feedback, series feedback, lossy matching and a resonator type topology. Each one has shown its distinctive behaviour at millimetre-wave frequencies. The comparison has been performed with simulations and verified through measurements.

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Low noise broadband MMIC amplifier concept

Z. Nosal. "Low noise broadband MMIC amplifier concept." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 681-684.

Technique of the broadband, low-noise matching of the amplifier input by means of a lossless capacitive feedback is proposed. Bandwidth exceeding one decade with the noise figure on the order 1-1.5 dB and good input matching may be achieved with existing MMIC technologies, which is one of the best noise characteristics reported to date. Prototype 0.5-5 GHz amplifier achieves NF below 1.4 dB and good input matching.



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A compact coplanar W-band variable gain amplifier MMIC with wide control range using dual-gate HEMTs

A. Tessmann, W.H. Haydl, T. Krems, M. Neumann, H. Massler, L. Verweyen, A. Hulsmann and M. Schlechtweg. "A compact coplanar W-band variable gain amplifier MMIC with wide control range using dual-gate HEMTs." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 685-688.

A W-band variable gain amplifies MMIC with 37 dB gain at 94 GHz and a gain control range of over 70 dB has been developed. The circuit consists of four dual-gate HEMT stages, using a 0.15 μm AlGaAs-InGaAs-GaAs PM-HEMT technology. The chip was realized in coplanar technology and requires an area of only 1/spl times/3 mm/sup 2/. The resulting power gain density is 12 dB/mm/sup 2/ at 94 GHz.

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800 MHz-band low noise low distortion Si-MMIC front-end using BJT/MOSFET LNA and MOSFET mixer

N. Suematsu, M. Ono, S. Sugiyama, S. Kubo, M. Uesugi, K. Hasegawa, K. Hiroshige, Y. Iyama and O. Ishida. "800 MHz-band low noise low distortion Si-MMIC front-end using BJT/MOSFET LNA and MOSFET mixer." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 689-692.

Both low noise and low distortion characteristics are strongly desired for cellular terminal receiver application. In the case of Si-MMIC, BJT has superior feature in its low noise performance and MOSFET has it in low distortion performance. By using BJT amplifier as the 1st stage of LNA and MOSFET as the 2nd stage of LNA and a down mixer, both low noise and low distortion performance is achieved. The fabricated Si-MMIC front-end, which contains two-stage LNA and down mixer and LO amplifier, performs 3.7 dB NF, 16.7 dB conversion gain and -15.5 dBm IIP/sub 3/ with 3V/13.7 mA d.c. power and -10 dBm LO power.



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Microwave low-noise GaAs HBTs

H. Dodo, Y. Amamiya, T. Niwa, M. Mamada, S. Tanaka and H. Shimawaki. "Microwave low-noise GaAs HBTs." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 693-696.

In this paper we present our approach to improving microwave noise performance of HBTs. A minimum noise figure of 0.83 dB was obtained at 2 GHz by using an emitter guarding structure which improves the DC current gain particularly at low current densities. We also fabricated HBTs with regrown extrinsic base layers and InGaAs graded base layers which drastically reduce base contact resistance and base transit time, respectively. It is shown that this type of HBTs not only improve the noise-figure at X-band or Ku-band but also make the noise impedance matching easier.

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Three-dimensional MMIC architecture using low thermal impedance technology

D. Hill, M. Tutt, R. Yarborough, T. Budka and Tae Kim. "Three-dimensional MMIC architecture using low thermal impedance technology." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 699-702.

A novel architecture for monolithic microwave integrated circuits (MMICs) simultaneously provides significant reduction in die area and extremely efficient heat transfer, as evidenced by 2/spl times/2 mm/sup 2/ MMICs which deliver up to 40 W CW at 1.8 GHz.

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L-band 100-watts push-pull GaAs power FET

K. Ebihara, H. Takahashi, Y. Tateno, T. Igarashi and J. Fukaya. "L-band 100-watts push-pull GaAs power FET." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 703-706.

Over 100 W GaAs FET based device was developed. Using the push-pull configuration, this L-band high power GaAs MESFET achieved an output power of 102 W (50.1 dBm), 11.0 B power gain and 47% power added efficiency with drain-source voltage of 10 V at 2.2 GHz. In addition, operating with the drain-source voltage of 12 V, an output power of 125 W (51 dBm) was obtained. The developed FET will contribute to improve the performance of the SSPAs used in various base-station systems that require higher output power and low distortion.

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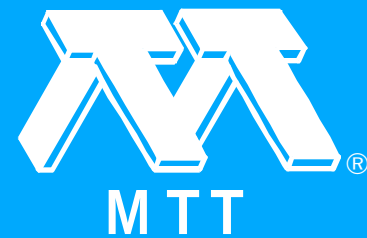


Abstracts

120 Watt, 2 GHz, Si LDMOS RF power transistor for PCS base station applications

A. Wood, W. Brakensick, C. Dragon and W. Burger. "120 Watt, 2 GHz, Si LDMOS RF power transistor for PCS base station applications." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 707-710.

The structure and performance of a 120 W, 2 GHz, Si RF LDMOS power transistor are described suitable for personal communication systems base station power amplifiers operating in the 1.8-2.2 GHz frequency band. The high gain (10.6 dB at 120 W CW, 2 GHz), and excellent linearity of this transistor, when operated in class-AB, (typically -30 dBc two-tone intermodulation distortion at 120 W PEP) makes it eminently suitable for amplification of digitally modulated signals.



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High-efficiency L and S-band power amplifiers with high-breakdown GaAs-based pHEMTs

J.A. Pusi, R.D. Widman, J.J. Brown, M. Hu, N. Kaur, M. BeZaire and L.D. Nguyen. "High-efficiency L and S-band power amplifiers with high-breakdown GaAs-based pHEMTs." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 711-714.

Performance and reliability data for harmonically-terminated, high-efficiency microwave power amplifiers designed from active harmonic loadpull data utilizing high breakdown voltage AlGaAs-InGaAs-GaAs pHEMTs are reported. Single stage MIC amplifiers fabricated with 2/spl times/25 mm gate width pHEMTs resulted in $P_{\text{sub out}}=20$ W and PAE=66% at 1.5 GHz and 2.2 GHz. Balanced hybrid amplifiers with these modules have been fabricated which have $P_{\text{sub out}}=40$ W and PAE=64%. To the authors knowledge, this is the highest combination of reliable output power and efficiency ever achieved with pHEMT devices. Single stage amplifiers fabricated with a single 5 mm or 10 mm pHEMT gave $P_{\text{sub out}}=2$ W and 4 W, respectively, with PAE=72%. All of these output powers are at power densities of 0.4 W/mm. These devices have undergone DC and RF lifetests with good results. This GaAs-based pHEMT device technology supports amplifier module designs in the 1-20 GHz frequency range.

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Low distortion and high efficiency 17 W power GaAs FETs for satellite communication system applications

H. Tsutsui, I. Takenaka, H. Takahashi, K. Asano, J. Morikawa, K. Ishikura and M. Kuzuhara. "Low distortion and high efficiency 17 W power GaAs FETs for satellite communication system applications." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 715-718.

We have developed a GaAs FET power amplifier that demonstrated a high power-added efficiency of 68% with 17.1 W output power and a 16 dB linear gain at 1.5 GHz. The developed 17 W amplifier also exhibited state of the art low distortion characteristics of less than -21 dBc NPR (Noise Power Ratio) at the 5 dB-output power back-off point from 2 dB-gain compression point. These excellent results are performed by optimizing the drain bias circuit as well as the internal matching network.

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An L band adaptive digital predistorter for power amplifiers using direct I-Q modem

E.G. Jeckeln, F.M. Ghannouchi and M.A. Sawan. "An L band adaptive digital predistorter for power amplifiers using direct I-Q modem." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 719-722.

This paper presents an L band experimental implementation of an adaptive digital predistorter (ADP) using direct I-Q modem for power amplifiers suitable to spectrally efficient mobile communication equipment. The linearizer, which is implemented in a digital signal processor (DSP) environment, performs the real time modeling (RTM) of the power amplifier to supply its AM-AM and AM-PM non-linearity characteristics. Experimental results demonstrate that the spectral spreading is reduced by 20 dB. The ADP achieve both power and spectral efficiencies and without the need for complex convergence algorithms and complex circuitry.

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A novel envelope-termination load-pull method for ACPR optimization of RF/microwave power amplifiers

J.F. Sevic, K.L. Burger and M.B. Steer. "A novel envelope-termination load-pull method for ACPR optimization of RF/microwave power amplifiers." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 723-726.

A novel load-pull method for envelope-termination characterization is presented. The method enables the source and load envelope terminations to be easily evaluated to further optimize the linearity/efficiency tradeoff of RF/microwave power transistors used in digital wireless communication systems with time-varying envelopes. Results are presented for a 53 mm low-voltage LDMOS transistor at 850 MHz. It is shown that the optimal envelope termination may in general be complex, in contrast to the commonly held belief that the envelope-termination must be approximately zero. A simplified Volterra series analysis is used to qualitatively explain how the envelope termination impacts linearity.

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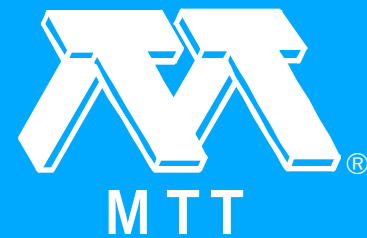


Abstracts

Simulation of multi-tone IMD distortion and spectral regrowth using spectral balance

N. Borges de Carvalho and J.C. Pedro. "Simulation of multi-tone IMD distortion and spectral regrowth using spectral balance." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 729-732.

Computer simulation of general microwave nonlinear circuits excited by a large number of input tones is addressed. The algorithm based on the spectral balance method, uses a new index vector technique which allowed the prediction of complex behavior such as spectral regrowth and noise power ratio performance of a class B power amplifier.



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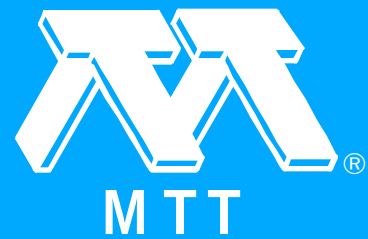


Abstracts

A nonlinear ARMA model for simulating power amplifiers

G. Chrisikos, C.J. Clark, A.A. Moulthrop, M.S. Muha and C.P. Silva. "A nonlinear ARMA model for simulating power amplifiers." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 733-736.

This paper presents an improved model for wideband simulation of nonlinear power amplifiers. The commonly used memoryless envelope model is limited to use on narrowband signals. The new model includes an auto-regressive moving average (ARMA) filter to improve performance predictions for wideband signals. Optimization of the model is performed using measurements of time-domain pulse envelopes. The new model is constructed for a 20 GHz helix traveling-wave tube amplifier (TWTA) and compared to the memoryless envelope model for predicting distortion with wideband signals.



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Residual second order intermodulation suppression in third order distortion generators

Wei Huang and R.E. Saad. "Residual second order intermodulation suppression in third order distortion generators." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 737-740.

Commonly used diode-based third order distortion generators produce residual second order distortion signals due to the unmatched statistical characteristics of the diodes. In this paper, a novel circuit technique is presented by which, in theory, the suppression of undesirable residual second order distortion is achieved. A theoretical analysis of the proposed novel circuit topology was carried out using Volterra series analysis. Simulated results show that the proposed technique possesses a residual second order intermodulation distortion (IM2) 35 dB lower than the one obtained with conventional architectures. Experimental results indicate that 20 dB cancellation is achievable.





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Efficient simulation of NPR for the optimum design of satellite transponders SSPAs

J. Lajoinie, E. Ngoya, D. Barataud, J.M. Nebus, J. Sombrin and B. Rivierre. "Efficient simulation of NPR for the optimum design of satellite transponders SSPAs." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 741-744.

It is now well known that the prediction of intermodulation distortions at the system level using the AM-AM and AM-PM characteristics of power amplifiers may be of very poor accuracy if amplifiers exhibit nonlinear low frequency dispersion effects (memory effects). This paper presents a new cost effective method for computing the noise power ratio (NPR) of power amplifiers at the circuit level, hence providing a more accurate prediction and the possibility to include the NPR as a direct optimisation objective in the design of amplifiers. The method is particularly well suited to the design of high efficiency solid state power amplifiers.

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Validation of a new nonlinear HEMT model by intermodulation characterization

Guoli Qu and A.E. Parker. "Validation of a new nonlinear HEMT model by intermodulation characterization." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 745-748.

A new HEMT model is presented. The second and third-order intermodulation products of HEMT amplifiers are investigated at low frequency (50 MHz) and high frequency (1 GHz) respectively. Simulations performed with SPICE agree well with measurements. The contribution of nonlinear capacitance to intermodulation distortion is investigated.

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Improved prediction of the intermodulation distortion characteristics of MESFETs and PHEMTs via a robust nonlinear device model

V.I. Cojocaru and T.J. Brazil. "Improved prediction of the intermodulation distortion characteristics of MESFETs and PHEMTs via a robust nonlinear device model." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 749-752.

The paper investigates the intermodulation distortion (IMD) prediction capabilities of the COBRA model by analysing the first, second and third order derivatives of the drain I/V model and the gate Q/V model. The model is extracted simply from DC and small-signal S-parameter data, without the need for complex low-frequency (VHF) measurements of harmonic output levels under low-load conditions, as proposed in previous studies. The computed main I/V characteristic and its derivatives are shown to be continuous over the entire bias plane, and are proven to give better results than other models available. Results of two-tone large signal tests for the case of a 0.2 /spl mu/m PHEMT process are presented, showing excellent agreement between simulated and experimental third and fifth intermodulation products.

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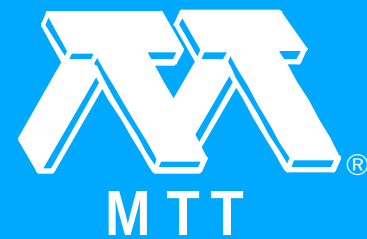


Abstracts

A 9.2 GHz microwave applicator for the treatment of menorrhagia

I.B. Feldberg and N.J. Cronin. "A 9.2 GHz microwave applicator for the treatment of menorrhagia." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 755-758.

We report on the design, analysis and clinical use of a 9.2 GHz medical applicator specifically developed for the purpose of endometrial ablation in the treatment of menorrhagia. The technique of endometrial ablation is introduced. Experimental and clinical trials are summarised.



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Study on diagnosis for tooth using millimeter-waves

N. Hoshi, Y. Nikawa, K. Kawai and S. Ebisu. "Study on diagnosis for tooth using millimeter-waves." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 759-762.

This paper presents applications of millimeter-waves for the characterization of teeth. This is done by measuring the complex permittivity over the frequency range from 0.04 to 40 GHz. These measurements have revealed that dental caries are significantly more lossy to microwaves and millimeter-waves than healthy tooth, and this difference can be used for dental diagnosis. The experimental results have been confirmed by using the Finite Difference Time Domain (FDTD) method at 35 GHz. In addition, higher frequency experiments have revealed that higher resolution for dental caries is possible by using a smaller applicator. It is concluded that millimeter-waves can be used for dental medical diagnosis.



Abstracts

Microwave tomography. Experimental imaging on two and three dimensional systems

S.Y. Semenov, R.H. Svenson, A.E. Souvorov, A.E. Bulyshev, A.G. Nazarov, Y.E. Sizov, A.V. Pavlovsky, V.G. Posukh and G.P. Tatsis. "Microwave tomography. Experimental imaging on two and three dimensional systems." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 763-765.

We have constructed two dimensional and three dimensional microwave tomographic systems. The quantitative experimental image reconstruction has been achieved in the 2D case in both low and high dielectric contrast cases. To reconstruct 3D images we generalized the Born approximation into the vector case. The images of the 3D mathematical models and experimental phantoms have been achieved in case of low contrast of dielectrical properties.



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Accuracy study of FDTD calculations of a dipole antenna irradiating a lossy sphere

W. Heyvaert, N. Ilijasevic and L. Martens. "Accuracy study of FDTD calculations of a dipole antenna irradiating a lossy sphere." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 767-770.

An accuracy study of electromagnetic calculations for the determination of fields inside the human head of the user of mobile telephone has been performed. Because of the simplicity of the set-up, we used a dipole antenna as radiator and a homogeneous lossy sphere as absorber of the fields. Even in this case we found that grid sizes of maximal 2.5 mm are needed for accurate SAR calculations. The effect of the antenna model and of the uncertainty of dielectric properties has also been studied.

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Cellular phones effects on otoacoustic emissions

G. Grisanti, C. Parlapiano, C.C. Tamburello, G. Tine and L. Zanforlin. "Cellular phones effects on otoacoustic emissions." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 771-774.

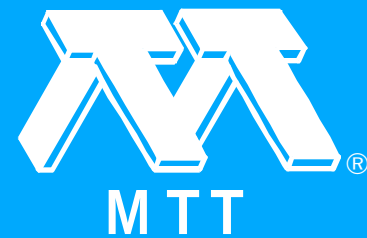
A study on bioelectromagnetic effects induced by the use of TACS phones, evidencing a variation of the natural response of the auditory system is presented. This study was performed applying a method based on the registration of the evoked otoacoustic emissions (transient and distortion products). The experimental results show that modulated electromagnetic fields modify the distortion products in about all the examined subjects.

Abstracts

A new design procedure for single-layer and two-layer 3-line baluns

Choonsik Cho and K.C. Gupta. "A new design procedure for single-layer and two-layer 3-line baluns." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 777-780.

This paper describes a design procedure for a class of 3-line baluns. It is shown that the balun can be considered as a combination of two identical couplers. Thus the method developed uses the design of couplers with an appropriate coupling factor for designing this class of baluns. This procedure has been implemented for 2-layer configurations and verified by comparison with results from a full-wave electromagnetic simulation.



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Three-port 3-dB power divider terminated by arbitrary impedances

Hee-Ran Ahn and I. Wolff. "Three-port 3-dB power divider terminated by arbitrary impedances." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 781-784.

The three-port power divider terminated by arbitrary impedances considered in this paper is very useful for small-sized circuit design. New design equations for three-port power divider are derived. They can be applied to the three-port power dividers with both arbitrary termination impedances and especially a 3-dB power division. On the basis of these design equations, simulations for the three port 3-dB power divider terminated by 45, 30 and 50 Ω were made using ideal transmission lines. Also, a microstrip three-port 3-dB power divider terminated by 30, 53 and 47 Ω was fabricated on an Al₂O₃ substrate ($\epsilon_r=10$ and $h=635 \mu\text{m}$) and it shows good agreement between experimental results and theoretical results.

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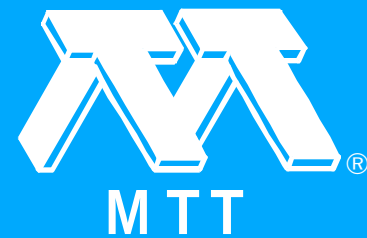


Abstracts

Wideband, planar, log-periodic balun

M. Basraoui and S.N. Prasad. "Wideband, planar, log-periodic balun." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 785-788.

This paper presents the design and performance characteristics of a new planar balun structure. The design is based on the log-periodic antenna theory. The design guidelines, as well as simulated and measured results are presented. It is shown that the new balun has greater than one octave bandwidth. The log-periodic balun will find applications in wireless communication circuits such as mixers, amplifiers and antennas.



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Abstracts

Planar transmission line transformer using coupled microstrip lines

Shih-Ping Liu. "Planar transmission line transformer using coupled microstrip lines." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 789-792.

A novel and simple configuration of the planar transmission line transformer using coupled microstrip lines is proposed. A design methodology is also presented. The simulated and measured results demonstrate broadband impedance transformation with good efficiency for RF and microwave circuit design. The effects of the deviation from the optimal characteristic impedance and transformation ratio are investigated as well.



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Abstracts

High Q on-chip passive components for UTSi(R) CMOS technology

M. Megahed, R. Benton, M. Stuber, L. Lo, M. Burgener, Xiaolan Wu and J. Canyon. "High Q on-chip passive components for UTSi(R) CMOS technology." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 793-796.

UTSi (Ultra-Thin Silicon) on insulator technology shows the promise of full integration of digital, analog, RF, and RF matching circuitry on a single chip. It is based on standard VLSI technology. The process features excellent isolation due to the dielectric substrate, high RF performance transistors, and high quality passive elements. This paper presents the performance of the UTSi passive elements. Measurement data for resistors and capacitors are reported, as well as inductors with high Q.



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Resonant coupling type microstrip line interconnect using a bonding ribbon and dielectric pad

M. Hotta, Yongxi Qian and T. Itoh. "Resonant coupling type microstrip line interconnect using a bonding ribbon and dielectric pad." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 797-800.

Resonant coupling type microstrip line interconnects using a bonding ribbon and dielectric pad have been designed and fabricated. The basic concept of this interconnect is the LC serial resonance of the pad capacitor and ribbon inductor. Both numerical simulation and experiment reveal low return loss and high efficiency connection at the predicted resonant frequency region, which can be readily shifted to higher frequencies by tuning the structural parameters. Furthermore, improvement in bandwidth of the interconnect is demonstrated by using a pad with higher dielectric constant.

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Design of planar, single-layer microwave baluns

D. Raicu. "Design of planar, single-layer microwave baluns." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 801-804.

This paper describes a microstrip balun as an elementary odd-mode launcher, cascaded with a transversely symmetric network acting as an even-mode stopband filter and an odd-mode impedance transformer. The proposed methodology is illustrated by the design of a rigorously two-dimensional balun with high performance in the range 2.1-3.6 GHz. Such a structure is easy to integrate in microstrip circuits, low cost and free of the parasitics affecting the high frequency operation of other baluns.

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Abstracts

A new enhanced coupling structure of microstrip ring resonator with two coupled lines and a slit

Ji-Yong Park and Jong-Chul Lee. "A new enhanced coupling structure of microstrip ring resonator with two coupled lines and a slit." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 805-808.

A new type of enhanced coupling structure of microstrip ring resonator with two coupled lines and a slit is suggested. The insertion and return losses are shown to be improved compared with those of conventional line-to-ring resonator. Also, it has an intensive suppression above the third harmonic which is very useful for its application to microwave circuits.



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Simultaneous realization of millimeter wave uniplanar shunt stubs and dc block

K. Rettak, G. Delisle and M. Boulmalf. "Simultaneous realization of millimeter wave uniplanar shunt stubs and dc block." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 809-812.

The exploitation of the potentialities linked to uniplanar technology for telecommunications is only at its beginning and even if significant advances have been realized, the context remains evolutive. This paper therefore proposes a new concept for the generation of millimeter wave uniplanar shunt stubs by means of slotline resonator instead of coplanar line resonators. Thus, the short end slotline stub has now the ability to be configured as shunt and series stubs, and therefore acts as a bandpass and bandstop filter respectively. This gives additional degrees of freedom to the design. Compared to the existing CPW short-end shunt stub, the advantages which may be derived from the use of the proposed framework are: additional degrees of freedom, lower radiation loss, larger bandwidth, high compactness and a reduction of the number of air bridges which are potentially expensive to build. Its worth noting that the new short end shunt stubs provides both bandpass behavior and dc blocking simultaneously which is not the case for the standard CPW shunt stub. Furthermore, the present paper proves that the capability to generate shunt stubs in slot line form allows one also to relax the limitations inherent to the realization of low and high impedance levels. In this way, various shunt stubs in slotline form with proposed geometries including rectangular and slot ring shapes are fabricated and accurate on-wafer measurements are performed over a large band of interest (1-50 GHz), The realization of these shunt stubs is detailed and also confirmed with experimental results.

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Accurate CAD of integrated band-pass and second harmonic band-reject microwave filters

M. Guglielmi. "Accurate CAD of integrated band-pass and second harmonic band-reject microwave filters." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 813-816.

In this paper we describe a procedure for the design of integrated band-pass and band-reject filters in rectangular waveguide. Following the procedure described, each resonant cavity produces one transmission and one rejection pole that can be positioned in frequency independently from each other. As a result a band-reject transfer function of the same order of the pass-band filter can be implemented to eliminate the second harmonic of the filter without increasing the size of the hardware. In addition to theoretical results measured data are also presented, indicating how the procedure, described can be effectively used to manufacture microwave filters which exhibit substantial second harmonic suppression.

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Modeling of couplings between double ridge waveguide and dielectric loaded resonator

Chi Wang and K.A. Zaki. "Modeling of couplings between double ridge waveguide and dielectric loaded resonator." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 817-820.

Full wave modeling of the coupling structure between a double ridge waveguide and dielectric resonator in a rectangular cavity through an iris is presented. Eigen modes of the double ridge waveguide, and the discontinuities of the structures are obtained by rigorous mode matching method. By applying the cascading procedure, the reflection coefficients of the coupling structure can be obtained. From the phase variation of the reflection coefficient and circuit theory, resonant frequency and input/output coupling of the structure are accurately determined. An equivalent circuit model of the resonant structure is established. The computed results are compared with those obtained by other methods and shown to be in good agreement, which verifies the theory.

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Synthesis of general topology multiple coupled resonator filters by optimization

W.A. Atia, K.A. Zaki and A.E. Atia. "Synthesis of general topology multiple coupled resonator filters by optimization." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 821-824.

A synthesis procedure, using optimization, for multiple coupled resonator filters having general topology and general response is described. The error function for the optimization is based on the values of the characteristic function at its zeros and poles. The optimization is performed directly on the element values of the coupling matrix. Convergence of the optimization is extremely fast and nearly independent of the starting coupling matrix. Examples of the design of practical filters with symmetric or asymmetric responses and topology are presented.

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High Q TE₀₁ mode DR cavity filters for wireless base stations

X.-F. Liang and W.D. Blair. "High Q TE₀₁ mode DR cavity filters for wireless base stations." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 825-828.

This paper summarizes the state-of-the-art of high Q TE₀₁ mode DR cavity filters for PCS wireless base station applications. The mode chart and cavity Q are computed for typical commercially-available DR materials. A new approach to suppress the spurious response of the DR cavity filter is proposed and the advantage is analyzed. Experimental 8-pole and 6-pole quasi-elliptic function filters show the typical performances. Special techniques on cross-coupling techniques are used to realize a three-pole elliptic function and a 5-pole canonical asymmetric filter. The 5-pole canonical asymmetric filter, we believe, has never been realized before.

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A miniaturized end-coupled bandpass filter using $\lambda/4$ hair-pin coplanar resonators

T. Tsujiguchi, H. Matsumoto and T. Nishikawa. "A miniaturized end-coupled bandpass filter using $\lambda/4$ hair-pin coplanar resonators." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 829-832.

A miniaturized end-coupled bandpass filter is realized by $\lambda/4$ hair-pin coplanar resonators. Attenuation poles at both sides of the passband are generated by a resonator arrangement to make a multi-pass circuit. The trial filter has 590 MHz 3 dB-bandwidth at 5.8 GHz and the insertion loss is 3.8 dB. The size is $3.5\lambda \times 3.75\lambda \times 0.4$ mm. It is applicable to MCM (multi-chip-module) using bare-chip mount.

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Abstracts

FDTD calculation of coupling coefficient between two resonators [band-pass filters]

I. Awai and Y. Oda. "FDTD calculation of coupling coefficient between two resonators [band-pass filters]." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 833-836.

A coupling coefficient is characterized in the time domain instead of the frequency domain commonly employed. The FDTD method is well suited to its time domain calculation, resulting in a fast and simple procedure. Various techniques unique to time-domain calculation are explained with practical examples.



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Abstracts

Distributed coupling in a circular dielectric disk resonator and its application to a square dielectric disk resonator to fabricate a low-profile dual-mode BPF

A.C. Kundu and I. Awai. "Distributed coupling in a circular dielectric disk resonator and its application to a square dielectric disk resonator to fabricate a low-profile dual-mode BPF." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 837-840.

A novel method is proposed to calculate the distributed coupling of a circular disk resonator. New theoretical expressions are devised to calculate it and its validity is justified by FD-TD analysis and experiments. This coupling concept is applied to square disk resonator to calculate its resonant frequency. We have fabricated two types of low-profile dual-mode bandpass filter using square dielectric disk resonator.



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Nonlinear behavior of electromagnetic waves in the YIG film microstrip line

M. Tsutsumi, T. Ueda and K. Okubo. "Nonlinear behavior of electromagnetic waves in the YIG film microstrip line." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 841-844.

The limiter and microwave soliton behavior were experimentally demonstrated in the microstrip line using the 20 μm thick yttrium iron garnet film substrate at S band. These nonlinear phenomena were explained by the strong coupling between quasi-TEM and magnetostatic forward volume wave modes at magnetic resonance frequency of γ/ω from an implicit dispersion relation of the stripline.

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Low TB radio SAW sensors incorporating chirped transducers and reflectors for wireless pressure sensing applications

T. Pankratz, H. Scherr, L. Reindl, C.C.W. Ruppel and R. Weigel. "Low TB radio SAW sensors incorporating chirped transducers and reflectors for wireless pressure sensing applications." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 845-848.

We report on the design and performance of two basic SAW delay line structures developed for a wireless pressure sensing system operating at 434 MHz. The pressure sensor has been fabricated in all-quartz-package (AQP) technology with the SAW structures being placed on a diaphragm inside the hermetically sealed cavity. Both SAW structures show a linear phase although they both incorporate chirped SAW components for enhancing the sensor sensitivity. They have low time-bandwidth (TB) products of 2 and 11, respectively. We attained an improvement of the sensor sensitivity by factors of up to 20 compared to sensors employing non-dispersive SAW components.

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Understanding and modeling the non-monotonic attenuation behavior of PIN limiter diodes

R.H. Caverly and G. Hiller. "Understanding and modeling the non-monotonic attenuation behavior of PIN limiter diodes." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 849-852.

A commonly observed and unexplained behavior in limiter and switch circuits using PIN diodes is that attenuation may unexpectedly remain constant and even decrease with increasing input power or DC forward bias. This paper demonstrates that this anomalous, non-monotonic behavior is attributed to an interaction of the forward biased PIN diode capacitive reactance with any parasitic inductance in series with the junction. A model based on these principles is presented and verified with experimental microwave performance data that should prove useful to the designer.

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New compact double balanced monolithic down-converter application to a single chip MMIC receiver for satellite equipment

*J.F. Villemazet, J. Dubouloy, M. Soulard, J.C. Cayrou, E. Husse, B. Cogo and J.L. Cazaux.
"New compact double balanced monolithic down-converter application to a single chip MMIC receiver for satellite equipment." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 853-856.*

This paper proposes a new compact double balanced mixer architecture suitable for a satellite repeater. The size of the proposed mixer has been divided by more than 5 compared to the previous generation currently used in the 14/12 GHz satellite repeaters. Thanks to its small size, about 1 mm/sup 2/, this mixer was integrated in a single chip MMIC receiver, including 5 different functions.

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Unbalance effects of an antiparallel diode pair on the virtual local leakage in an even harmonic mixer

K. Itoh, K. Kawakami, O. Ishida and K. Mizuno. "Unbalance effects of an antiparallel diode pair on the virtual local leakage in an even harmonic mixer." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 857-860.

An even harmonic mixer (EHM) with an antiparallel diode pair (APDP) is an effective technique for low spurious transmitters especially in the millimeter-wave region, since APDP can suppress the virtual LO leakage that locates nearby a desired RF signal. The purpose of this study is to clarify unbalance effects of an APDP on the virtual local leakage. For this purpose, fundamental formulas are indicated in this paper. As a result of the analysis, two conclusions are given: (a) due to unbalance on parasitic resistance of the APDP, the virtual LO leakage is increased by increment of LO power; (b) due to unbalance on built-in voltage of the APDP, the virtual LO leakage is decreased by increment of LO power. Measured results indicate good agreement with presented formulas.

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A K band DRO in coplanar layout with dry and wet etched InP HEMTs

H.C. Duran, U. Lott, H. Benedickter and W. Bachtold. "A K band DRO in coplanar layout with dry and wet etched InP HEMTs." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 861-864.

A DRO operating in the frequency range of 23.2-24.8 GHz was designed using InGaAs-InAlAs-InP HEMTs with dry and wet etched gate recess. The oscillator consisted of an MMIC in coplanar waveguide technology and an externally coupled mechanically tunable DR mounted on a microstrip line. An output power of 12 dBm and a phase noise of -107 dBc/Hz at 100 kHz offset from the carrier were measured. The achieved power efficiency was 21%.

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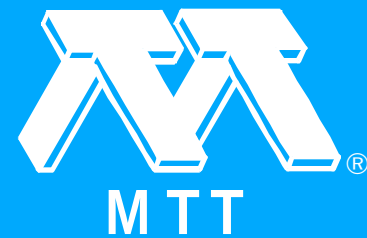


Abstracts

The distributed oscillator at 4 GHz (1998 Vol. II [MWSYM])

L. Divina and Z. Skvor. "The distributed oscillator at 4 GHz (1998 Vol. II [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 865-868.

This paper describes design and experimental verification of a tunable oscillator based on a distributed amplifier in microwave band. The oscillator met design expectations, being capable of continuous tuning over the range 1 to 3.5 GHz with good spectral purity.



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Broadband monolithic analog phase shifter and gain circuit for frequency tunable microwave active filters

A. Cenac, L. Nenert, L. Billonnet, B. Jarry and P. Guillon. "Broadband monolithic analog phase shifter and gain circuit for frequency tunable microwave active filters." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 869-872.

In this paper, a lossless variable gain and analog transmission type phase shifter is presented. The final function of this original monolithic circuit is to be introduced in a ring resonator planar filter to tune the frequency response and to compensate for the intrinsic losses of the resonators.



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Abstracts

A stability-ensuring procedure for designing high conversion-gain frequency doublers

I. Schmale and G. Kompa. "A stability-ensuring procedure for designing high conversion-gain frequency doublers." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 873-876.

This paper presents a new general procedure for designing optimum conversion gain class B FET frequency doublers. For the first time, the two key design variables, i.e. the reflection coefficients of the input and output matching networks, $\Gamma_{IN,2f_0}$ and Γ_{OMN,f_0} , can be independently swept without risking device oscillation and hence simulator nonconvergence. This permits the designer to directly select the best parameters for maximum but insensitive conversion gain. Exemplary conversion gain contours typical for HEMTs and MESFETs are finally presented.



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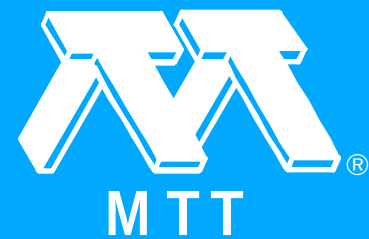
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Millimeter-wave monolithic balanced BPSK modulator using a miniaturised backward-wave coupler

T. Gokdemir, S. Nam, A.E. Ashtiani, I.D. Robertson and U. Karacaoglu. "Millimeter-wave monolithic balanced BPSK modulator using a miniaturised backward-wave coupler." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 877-880.

A miniature parallel-coupled microstrip coupler has been realised at millimeter-wave frequency using capacitor compensation at the ends. The coupler has been used in a very compact BPSK modulator as an example of application. The balanced modulator employs reflection-type topology and measures 0.7/spl times/0.9 mm excluding RF-on-wafer probe pads.

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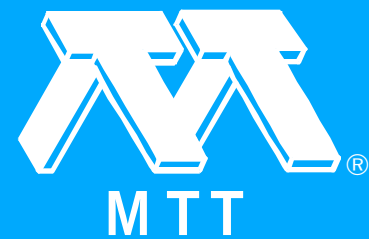
FDTD analysis of a quasi-planar MM-wave frequency doubler

W. Thiel and W. Menzel. "FDTD analysis of a quasi-planar MM-wave frequency doubler." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 881-884.

A quasi-planar frequency doubler based on the junction of a coplanar waveguide and a finline using two silicon Schottky diodes mounted across this junction is analyzed. The extended Finite Difference Time Domain (FDTD) method is used with a newly developed excitation scheme for harmonic waves feeding a defined power with the proper field distribution into the circuit. This harmonic signal is fed to the diodes via the coplanar line. The output signal, containing even harmonics only, is analyzed on the finline and compared to measurements. Operating frequencies are 20 to 25 GHz and 40 to 50 GHz, respectively.

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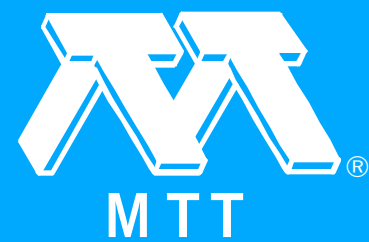
A modified matrix pencil moment method for multimode waveguide discontinuities analysis

L. Kadril, P. Pannier, C. Seguinot, P. Kennis and F. Huret. "A modified matrix pencil moment method for multimode waveguide discontinuities analysis." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 885-888.

This paper presents an original approach to analyze multimode waveguide discontinuities. The generalized scattering parameters are determined by a Matrix Pencil Moment Method (MPMM) associated with efficient numerically multimode matched loads placed at each physical port of the discontinuities. The analysis of both microstrip-coupled lines and coplanar lines asymmetric discontinuities is presented and successfully compared to experiments and available published results.

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A simple method to correct the reflection error of absorbing boundary condition in the FDTD analysis of waveguides

Zhian Lin and K. Naishadham. "A simple method to correct the reflection error of absorbing boundary condition in the FDTD analysis of waveguides." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 889-892.

The recent progress in absorbing boundary conditions (ABCs), especially Berenger's perfectly matched layer (PML), promises to be very attractive for microwave circuit and packaging full-wave analysis using the FDTD method. However, in waveguides, multimodal and dispersive waves exist, which makes it difficult to minimize the error from absorbing boundary reflection. Several studies have shown that no single ABC, including the PML, is effective in absorbing energy having widely varying transverse distributions and group velocities. The possibility of excitation of evanescent modes by input spectral content below the cutoff frequency complicates the design of the ABC. In this paper, an efficient and simple method, the geometry rearrangement technique (GRT), is implemented to minimize the boundary truncation error in a waveguide. Numerical illustration of the propagation constant in a rectangular waveguide, terminated with Mur's first-order ABC, demonstrates the effectiveness of GRT in correcting the ABC-induced reflection error for waveguide problems.

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Abstracts

Finite difference quasi-TEM mode analysis of coupled coplanar lines used in (M)MIC directional couplers

M. Naghed, B. Hopf and I. Wolff. "Finite difference quasi-TEM mode analysis of coupled coplanar lines used in (M)MIC directional couplers." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 893-896.

An accurate and efficient quasi-static finite difference field calculation is applied to multiple coupled coplanar lines. The characteristics of propagating quasi-TEM modes are derived from the charge and surface current distribution on conductors. Coplanar couplers of different center frequencies and coupling factors are designed and realized on ceramic and GaAs substrates. The scattering matrix of couplers is calculated utilizing the characteristics of quasi-TEM modes propagating along the coupled coplanar lines. Numerical results are compared with measurements showing good agreement.



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Abstracts

Modification of the 3D-TLM scattering matrix to model nonlinear devices in graded and heterogeneous regions

L. Cascio and W.J.R. Hoefer. "Modification of the 3D-TLM scattering matrix to model nonlinear devices in graded and heterogeneous regions." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 897-900.

In this paper we propose a modification of the TLM stub-loaded SCN scattering matrix to analyze three-dimensional problems including nonlinear active and passive devices in graded and heterogeneous regions. The nonlinear behavior of the lumped circuit is decoupled from the impulse scattering at the nodes, yielding a general and systematic methodology to embed arbitrary nonlinear devices into the TLM mesh. The method has been validated for both one-dimensional examples with traditional CAD circuit simulators (SPICE) and 3D problems. The modeling results have been compared with measurements available in the literature.



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Simple equivalent circuit modeling of small apertures in transmission line matrix (TLM) method

G. Tardioli and W.J.R. Hoefer. "Simple equivalent circuit modeling of small apertures in transmission line matrix (TLM) method." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 901-904.

A technique to incorporate a small aperture model into the Transmission Line Matrix (TLM) code based on Bethe's small hole coupling theory is presented. Electrically small apertures are modeled as electric and magnetic dipoles. A link between these equivalent dipoles and a simple equivalent circuit is found and implemented in the TLM mesh. The method has been validated by calculating the first resonant frequency of two cavities coupled by a narrow aperture, and by comparing the results with those obtained by TLM analysis with increasingly denser meshes. The obtained results confirm the validity of the approach and the high potentiality in terms of accuracy and savings in memory and CPU time requirements.

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Comparison between FDTD graded grids

R.C. Tupynamba and A.S. Omar. "Comparison between FDTD graded grids." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 905-908.

The traditional FDTD discretization of the Maxwell equations in which all cells are equal has been proved not to be efficient in many cases. These cases include the structures in which the field intensities are not uniformly distributed in the computation domain. However, the direct use of graded discretization grids inserts a first order error in the conventional difference equations. Many authors have proposed solutions for this problem. In the present work, some of these solutions are reviewed, implemented and evaluated. The solution proposed by the authors in a previous paper has proved to give better results in terms of accuracy and stability for greater length ratio between neighbouring cells.

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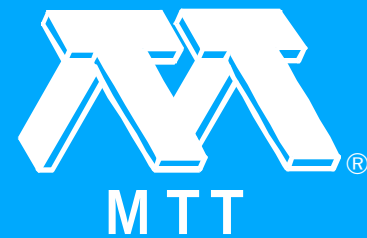


Abstracts

The design of parallel coupled line filter with arbitrary image impedance

*Dal Ahn, Chul-Soo Kim, Min-Ho Chung, Dwong-Hwan Lee, Dae Won Lew and Heon Jin Hong.
"The design of parallel coupled line filter with arbitrary image impedance." 1998 MTT-S
International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 909-912.*

In this paper, new design equations are presented to implement a parallel-coupled line filter with arbitrary image impedance. These equations are more accurate than the conventional design method. They have an advantage that the designer can control the coupled line width and gap. Hence they are applicable to the design of parallel-coupled line BPFs using high dielectric material. Also, they can be applied to fin-line waveguide filters and hairpin line filters.



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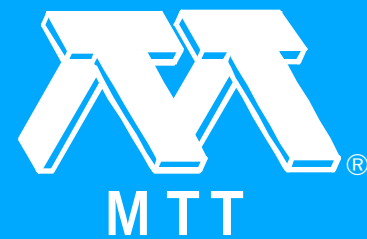


Abstracts

Analysis of waveguide E-plane discontinuities and components based on planar-circuit approach

M. Kishihara, T. Kawai, Y. Kokubo and I. Ohta. "Analysis of waveguide E-plane discontinuities and components based on planar-circuit approach." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 913-916.

This paper presents a new analytical technique for analyzing and designing various waveguide E-plane discontinuities and components based on the E-plane planar-circuit approach. This procedure is straightforward and accessible because of its formalism which is founded on circuit theory utilizing a "magnetic" mode impedance matrix. Moreover, since only a reasonably short computation time is required for the calculation of relatively complicated structures such as an E-plane corner and T-junction with one or more circular posts for broadband matching in their junction areas, we can readily optimize the circuit configuration of such waveguide components by a personal computer, for instance.



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Waveguide step discontinuities revisited by the generalized network formulation

M. Mongiardo, P. Russer, M. Dionigi and L.B. Felsen. "Waveguide step discontinuities revisited by the generalized network formulation." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 917-920.

We consider the classical problem of waveguide step discontinuities from the perspective of the generalized network formulation. The latter has recently been introduced for systematically dealing, in an efficient and rigorous manner, with electromagnetic field representations and computations in complex structures. The approach is based on the topological partitioning of the complex structure into several subdomains joined together by interfaces. The suggested framework accommodates the use of different analytical/numerical methods (hybridization), the choice of alternative Green's functions and the selection of appropriate field quantities at the boundary between different regions. By using the generalized network formulation in the step discontinuity example, we note that it is possible to select alternative Green's functions with improved convergence properties with respect to those commonly used. In addition, a new canonical representation of the step discontinuity is derived and better insight is obtained on the relationship between integral equation formulations and mode-matching techniques for the analysis of step discontinuities.

Click on title for a complete paper.



Abstracts

Fast and rigorous CAD of phase delay equalizers by mode matching techniques including losses

R. Keller, W. Hauth, F.-J. Goertz, F. Arndt, T. Sieverding and U. Papziner. "Fast and rigorous CAD of phase delay equalizers by mode matching techniques including losses." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 921-924.

A fast and reliable analysis and optimization tool for complex waveguide structures, such as phase delay equalizers, is presented. The circuits are analyzed by the rigorous mode matching technique combined with nodal analysis. Losses are calculated with the perturbation method under full consideration of the field patterns at working conditions. Together with a sophisticated gradient optimization procedure, phase delay equalizers have been designed and realized. Mechanical tolerances have been taken into account. The theory is verified by measurements.



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Abstracts

Analysis of 3-D cylindrical structures using the finite difference time domain method

N. Dib, T. Weller and M. Scardelletti. "Analysis of 3-D cylindrical structures using the finite difference time domain method." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 925-928.

Recently, there has been a growing interest in using cylindrical transmission line structures in microwave applications. In this paper, the Finite Difference Time Domain (FDTD) method is used to characterize and dimensional cylindrical coplanar waveguide (CCPW) geometries. Specifically, a CCPW series stub and a three-section CCPW filter are studied theoretically and experimentally. Absorbing boundary conditions are employed to truncate the mesh at the end walls and the outer radial boundary.



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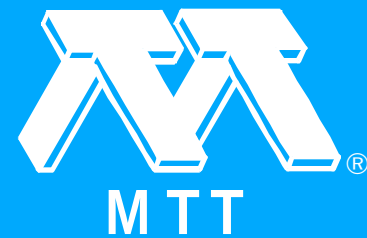


Abstracts

Arbitrarily oriented perfectly matched layer in the frequency domain

Xiaoming Xu and R. Sloan. "Arbitrarily oriented perfectly matched layer in the frequency domain." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 929-932.

An arbitrarily oriented PML is introduced by using complex space mapping, for more flexible meshing of microwave engineering problems. The PML can be oriented in any direction. The discussion is extended to two-direction PMLs for matching the interface between one-direction PMLs, and three-direction PMLs for two-direction ones. Numerical result is presented.



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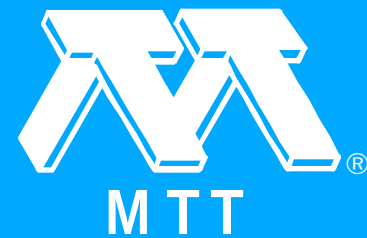


Abstracts

Accurate broadband characterization of transmission lines

Y.C. Shih and K.S. Kong. "Accurate broadband characterization of transmission lines." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 933-936.

This paper reports a sensitivity analysis of the transmission-line parameters versus the measured S-parameters of a single line element. The results lead to a simple procedure to (1) extract the small parasitic capacitance or inductance of discontinuities, (2) obtain accurate, broadband characteristic impedance of the transmission line, and (3) estimate error bounds of the measured line parameters.



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Abstracts

A frequency/time domain characterization technique for frequency-translating devices

N. Boulejfen, F.M. Ghannouchi and A.B. Kouki. "A frequency/time domain characterization technique for frequency-translating devices." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 937-940.

A novel approach and a new measurement setup for the characterization of frequency translating devices (FTD) are proposed. The proposed approach allows for an automated, one-step full characterization of FTDs by measuring both the magnitudes and phases of the incident and reflected waves at all signal ports. The application of the proposed approach and the developed measurement setup to the characterization of a double balanced mixer is presented.



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Modeling of correlated noise in RF bipolar devices

S. Martin, R. Booth, Y.-F. Chyan, M. Frej, D. Goldthorp, K.H. Lee, S. Moinian, K. Ng and P. Subramaniam. "Modeling of correlated noise in RF bipolar devices." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 941-944.

An RF noise model is proposed for high frequency bipolar transistors considering partial correlation of shot and thermal noise sources. For frequencies $f \ll f_T$ expressions are derived for input noise voltage, noise current and correlation impedance. The model is verified with data obtained from a 0.5 μm BiCMOS technology developed for RF wireless applications.

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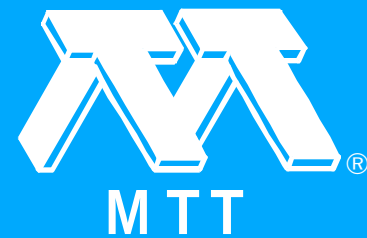


Abstracts

A new time-domain measurement technique for microwave devices

A.A. Moulthrop, M.S. Muha, C.P. Silva and C.J. Clark. "A new time-domain measurement technique for microwave devices." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 945-948.

A new time-domain measurement technique for repetitive microwave signals is described. The microwave signal is converted to baseband before measurement, improving the accuracy compared to measurements at the carrier frequency. Applications include nonlinear device and modulator measurements, for the purpose of model generation and verification.



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Abstracts

High-resolution electro-optic mapping of near-field distributions in integrated microwave circuits

K. Yang, G. David, S. Robertson, J.F. Whitaker and L.P.B. Katehi. "High-resolution electro-optic mapping of near-field distributions in integrated microwave circuits." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 949-952.

A field mapping system based on external electrooptic sampling has been developed in order to determine all components of the electric near-field distribution of guided microwaves with high spatial resolution. The capabilities of the setup are demonstrated by 2D-measurements of normal and tangential fields in a microwave distribution network.



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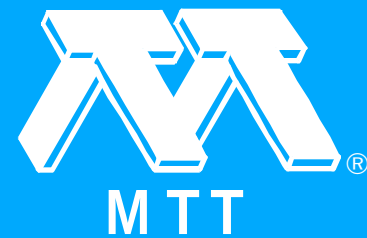


Abstracts

A novel vector network analyzer (1998 Vol. II [MWSYM])

K. Hoffmann and Z. Skvor. "A novel vector network analyzer (1998 Vol. II [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 953-956.

A calibration procedure for perturbation two-port vector network analyzer is presented. It consists of a variable perturbation two-port placed between a device under test and a scalar network analyzer. A measured vector reflection coefficient is determined on the basis of amplitude only readings. A full correction of systematic errors is possible. The new principle was experimentally confirmed in the frequency band up to 14 GHz.



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Membrane probe technology for non-destructive thin-film material characterization

A. Pham, A. Mathis, J. Laskar, A.F. Peterson and L. Hayden. "Membrane probe technology for non-destructive thin-film material characterization." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 957-960.

We present the design and development of the membrane probe prototype for nondestructive characterization of thin-film materials. This material membrane probe (MMP) is designed with multiple polyimide coplanar wave guide transmission lines (CPW), which enable effective and accurate on-wafer Thru-Reflect-Line calibration. This MMP significantly improves upon the calibration integrity and measurements over previous results. We have measured dielectric properties of various materials at microwave frequencies and conclusively demonstrate that the MMP can be used to nondestructively characterize thin-film materials.

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Abstracts

In situ microwave characterization of insulator thin films for interconnects of advanced circuits

B. Flichet, C. Bermond, P. Ferrari and G. Angenieux. "In situ microwave characterization of insulator thin films for interconnects of advanced circuits." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 961-964.

An accurate and simple method to in-situ characterize the dielectric constant of insulator thin films is developed. Optimized devices under test are capacitive patches where insulator film is set in the future operational configuration. Dielectric constant is extracted by an optimization procedure based upon subnanosecond time domain reflectometry measurement and simulation. ϵ_r is given into a 100 MHz-10 GHz frequency bandwidth.



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Abstracts

Near-field scanning microwave microscopy: measuring local microwave properties and electric field distributions

B.J. Feenstra, C.P. Vlahacos, A.S. Thanawalla, D.E. Steinhauer, S.K. Dutta, F.C. Wellstood and S.M. Anlage. "Near-field scanning microwave microscopy: measuring local microwave properties and electric field distributions." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 965-968.

We describe the near-field scanning microwave microscopy of microwave devices on a length scale much smaller than the wavelength used for imaging. Our microscope can be operated in two possible configurations, allowing a quantitative study of either material properties or local electric fields.



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Calibration of short range FMCW-radars with network analyzer calibration techniques

T. Hauschild and R. Knochel. "Calibration of short range FMCW-radars with network analyzer calibration techniques." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 969-972.

FMCW-radars can be used as sensors in the short range, in order to locate and determine reflections of targets by amplitude and phase. Such sensors have to be accurate, fast and inexpensive. The paper describes how these goals can be reached by applying a single channel system and establishing complex measurement capability. This is done by using the Hilbert transform and by removing the time domain system error using techniques similar to those applied for vector network analyzers. Details of the system implementation are given and results are compared to network analyzer measurements.

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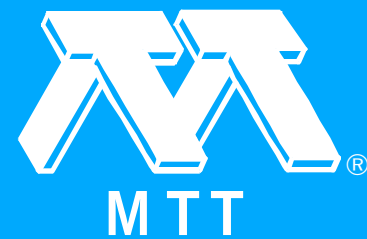


Abstracts

Influence of some imperfect system performances on linearizers

Qiming Ren and I. Wolff. "Influence of some imperfect system performances on linearizers." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 973-976.

In this paper the effect of demodulator errors on predistortion techniques and the effect of output return losses of power amplifiers as well as the return loss of load and power combiner on LINC linearization technique are studied. The simulations show that for Cavers' predistorter only a DC offset will affect the ACI (Adjacent Channel Interference). Gain imbalance and phase imbalance of the demodulator have little effect on the ACI. For Nagata's predistortion system, although the predistorter is also misadjusted because of errors, the ACI will not deteriorate. But owing to these errors, BER of both systems will deteriorate. The output return losses of amplifiers and the return loss of load can also deteriorate the performance of LINC linearizer while the isolation resistor can improve it.



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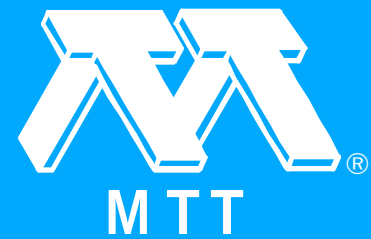


Abstracts

Self-tracking duplex communication link using integrated retrodirective antennas

S.L. Karode and V.F. Fusco. "Self-tracking duplex communication link using integrated retrodirective antennas." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 977-980.

A new type of active retrodirective antenna array for full duplex transceiver applications is presented in this paper. The architecture of a dual frequency retrodirective array normally used only for returning an encoded signal to its originating source has been modified to now include a receive function. The usefulness of this new architecture is demonstrated by constructing a bi-directional communication link based on two identical architectures operating in conjunction with a single pilot signal.



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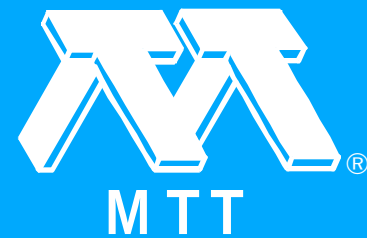


Abstracts

Low cost UTSi technology for RF wireless applications

M. Megahed, M. Burgener, J. Cable, R. Benton, D. Staab, M. Stuber, P. Dennies and R. Reedy. "Low cost UTSi technology for RF wireless applications." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 981-984.

Ultra Thin Silicon (UTSi) IC technology has been developed for RF, analog, and digital signal applications. The technology is based on low cost CMOS VLSI technology with fully integrated passive components. The insulating substrate provides high isolation and high quality passive components, paving the way for on-chip matching elements. For the first time, excellent high-speed/high-frequency performance is simultaneously demonstrated by the highly integrated UTSi technology.



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Ferroelectric films: nonlinear properties and applications in microwave devices

A. Kozyrev, A. Ivanov, V. Keis, M. Khazov, V. Osadchy, T. Samoilova, O. Soldatenkov, A. Pavlov, G. Koepf, C. Mueller, D. Galt and T. Rivkin. "Ferroelectric films: nonlinear properties and applications in microwave devices." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 985-988.

Small signal dielectric properties (ϵ' , $\tan \delta$) of highly oriented ferroelectric SrTiO₃ and (Ba,Sr)TiO₃ films at 1 MHz, 3 GHz, 10 GHz, and 20 GHz were investigated. Microstrip resonator with tunable planar ferroelectric capacitor was the object of investigation for resonator response to elevated single tone microwave (MW) power (up to 100 W), to two-tone MW power (intermodulation distortion measurements) and to video pulse voltage. As a result, speed of resonator tuning and MW loss variation were measured. 1.9 GHz phase-shifter and 20 GHz tunable filter operating at T=300 K are presented.

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A statistical relationship for power spectral regrowth in digital cellular radio

K.G. Gard, H. Gutierrez and M.B. Steer. "A statistical relationship for power spectral regrowth in digital cellular radio." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 989-992.

A method is presented for calculating the spectral regrowth generated by a digitally modulated carrier passed through a nonlinear microwave circuit. Spectral regrowth is calculated from the probability density function (pdf) of the modulation amplitude and a complex power series nonlinear model based on measured AM-AM and AM-PM data of a nonlinear device. Calculation of spectral regrowth allows efficient evaluation of the impact of modulation format on spectral regrowth.

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A 94 GHz aperture-coupled micromachined microstrip antenna

G.P. Gauthier, L.P. Katehi and G.M. Rebeiz. "A 94 GHz aperture-coupled micromachined microstrip antenna." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 993-996.

In this paper, we present an aperture-coupled micromachined microstrip antenna operating at 94 GHz. The design consists of two stacked silicon substrates: (1) the top substrate, which carries the microstrip antenna, is micromachined to improve the radiation performance of the antenna, and (2) the bottom substrate, which carries the microstrip feed line and the coupling slot. The measured return loss is -17 dB at 91 GHz for a 10-dB bandwidth of 11%. The radiation patterns show a measured front-to-back ratio of -10 dB at 91 GHz. The micromachined microstrip antenna is an efficient solution to the vertical integration of antenna arrays at millimeter-wave frequencies.

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Novel active antenna amplifying arrays

Yao-Chou Yang, Shyh-Jong Chung and Kai Chang. "Novel active antenna amplifying arrays." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 997-1000.

This paper presents a novel idea that the power is fed from the patch antenna coupler to form a five-element Chebyshev active antenna FET amplifying linear array. An equivalent lumped element circuit was developed to model the mutual coupling having good agreement with experiments. The power level coupled to the transmission line can be controlled by adjusting the length and the gap of the transmission line. The active patch-fed antenna coupler array has the advantages of a single input port, no power divider required, good and controllable radiation patterns, ease of bias, and compactness.

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Abstracts

Low profile, 2D-scanning MMW antenna controlled by two currents

E.F. Zaitsev, A.B. Gouskov, A.S. Cherepanov, G.A. Yufit, M.R. Beltran and Y.S. Khodorovsky. "Low profile, 2D-scanning MMW antenna controlled by two currents." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1001-1002.

The design of planar phased array made on the basis of controlled waveguiding FDF structure (ferrite-dielectric-ferrite) has been represented. Main difference of this antenna type from those described earlier is that 2D-beam scanning is provided by means of two control currents only. Experimental sample of 8-mm antenna has been fabricated and its parameters have been measured.



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A new optical-microwave double mixing method

T. Berceli and G. Jaro. "A new optical-microwave double mixing method." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1003-1006.

High sensitivity reception is a crucial problem of optical communications. A significant improvement is obtained by a new approach applying a double optical-microwave mixing method for this purpose. The new approach provides 20 dB higher mixing product in a narrow band.

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Self-bias control of electroabsorption waveguide modulator

G.L. Li, R.B. Welstand, J.T. Zhu and P.K.L. Yu. "Self-bias control of electroabsorption waveguide modulator." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1007-1010.

For analog fiber optic links using electroabsorption modulators, the correlation between the RF link gain and the modulator photocurrent is investigated both theoretically and experimentally. Based on this correlation, a self-bias control scheme of the electroabsorption modulator for maximum RF link gain is proposed. This scheme can simplify the bias control of modulator arrays.

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Abstracts

A novel K-band tunable microstrip bandpass filter using a thin film HTS/ferroelectric/dielectric multilayer configuration

G. Subramanyam, F. Van Keuls and F.A. Miranda. "A novel K-band tunable microstrip bandpass filter using a thin film HTS/ferroelectric/dielectric multilayer configuration." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1011-1014.

We report on YBCO/strontium titanate (STO) thin film K-band tunable bandpass filters on lanthanum aluminate substrates. The 2 pole filters were designed for a center frequency of 19 GHz and 4% bandwidth. Tunability is achieved through the nonlinear DC electric field dependence of the relative dielectric constant of STO (ϵ_{rSTO}). Center frequency shifts greater than 2 GHz were obtained at a 400 V bipolar DC bias at temperatures below 77 K, with minimal degradation in the insertion loss of the filters.



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Abstracts

A novel approach to modeling the nonlinear propagation characteristics of HTS planar transmission lines

G.M. Coutts, R.R. Mansour and S.K. Chaudhuri. "A novel approach to modeling the nonlinear propagation characteristics of HTS planar transmission lines." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1015-1018.

The paper presents a model for characterizing nonlinear effects in High Temperature Superconductor (HTS) transmission lines. The model is based on a recursive time domain approach. The changes in both the propagation and attenuation constants due to nonlinear effects are included in the analysis. The model accurately predicts the variation of the third order intercept (TOI) with respect to line width and length. The validity of the model has been verified by comparison with experimental results.



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Abstracts

A two-mode dielectric rod resonator method for measuring surface impedance of high-T/sub c/ superconductors

Y. Kobayashi and H. Yoshikawa. "A two-mode dielectric rod resonator method for measuring surface impedance of high-T/sub c/ superconductors." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1019-1022.

A novel technique is proposed to measure the surface impedance $Z_{\text{sub } s/}$ of high-T/sub c/ superconductors at microwave frequency by using two resonant modes in a dielectric rod resonator, the TE/sub 021/ and TE/sub 012/ modes. The repeatability of measurement is superior to the conventional method using two dielectric resonators.



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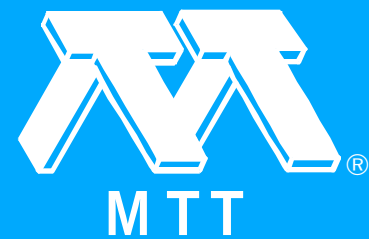
New classes of microstrip resonators for HTS microwave filters applications

F. Rouchaud, V. Madrangeas, M. Aubourg, P. Guillon, B. Theron and M. Maignan. "New classes of microstrip resonators for HTS microwave filters applications." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1023-1026.

The rapid growth of mobile communication means creates a great interest for the use of the superconducting technology, especially for base station and satellite communication systems. Planar devices with HTS films allow one to conceive narrowband filters with very low loss and small dimensions. A novel class of cross shaped planar resonators is proposed for superconducting applications. This includes dual-mode and single-mode resonators. A four pole elliptic function filter at 4 GHz is realized and measured at room temperature. Theoretical and experimental results are presented.

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Tunable superconducting band-stop filters

S.S. Gevorgian, E.F. Carlsson, E.L. Kollberg and E. Wikborg. "Tunable superconducting band-stop filters." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1027-1030.

Electrically tunable notch filters based on bulk single crystal SrTiO/sub 3/ (STO) parallel-plate resonators with High Temperature Superconducting (HTS) electrodes are reported. The filters operate at temperatures below 90 K. The center frequency, located in the range 0.5-2.0 GHz, can be controlled with an applied voltage, in some cases more than 100%. Filters are designed for operation at high microwave power levels in advanced wireless communication systems.

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Design of cryogenic (4.2 K) X-band HEMT oscillator for Josephson voltage standard

Moon-Que Lee, Sangwook Nam, Kyung-Whan Yeom and Kyu-Tae Kim. "Design of cryogenic (4.2 K) X-band HEMT oscillator for Josephson voltage standard." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1031-1034.

A new oscillator configuration for a Josephson voltage standard is proposed and designed by a novel method. An analytic design procedure is presented for six general configurations of oscillators with two loads. The power splitting relationship between two loads is derived with respect to the reactive (lossless) embedding element. A HEMT oscillator is designed in X-band for the Josephson voltage standard and tested at room and cryogenic temperatures. There is a significant improvement in C/N ratio if it is operated at cryogenic temperature (4.2 K).

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Micro-coplanar striplines-new transmission media for microwave applications

K. Goverdhanam, R.N. Simons and L.P.B. Katehi. "Micro-coplanar striplines-new transmission media for microwave applications." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1035-1038.

In this paper a new transmission line for microwave applications, referred to here as the Micro-Coplanar Stripline (MCPS), is introduced. The propagation characteristics, such as, characteristic impedance ($Z_{\text{sub } 0}$) and effective dielectric constant (ϵ_{eff}) for a range of MCPS geometries have been modeled using the Finite Difference Time Domain (FDTD) technique and presented here. Also, preliminary experimental results on the performance of an MCPS-Microstrip transition and an MCPS-fed patch antenna are presented. The results indicate several potential applications of the MCPS line in microwave integrated circuit technology.

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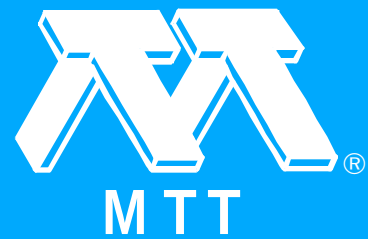


Abstracts

Thin film tunnels versus air-bridges in coplanar waveguide discontinuities

E.A. Soliman, P. Pieters and E. Beyne. "Thin film tunnels versus air-bridges in coplanar waveguide discontinuities." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1039-1042.

In this paper, a new method for the suppression of the slot line (odd) mode in the CPW based microwave circuits is presented. The proposed method replaces the costly and mechanically unstable air-bridges. It uses an under pass (tunnel) on an intermediate metalization layer below the CPW line and above the substrate. This method is convenient for MCM-D technology in which thin films are deposited over the substrate to support the required interconnects. The method has been applied to a band reject filter and compared with the case of air bridges.



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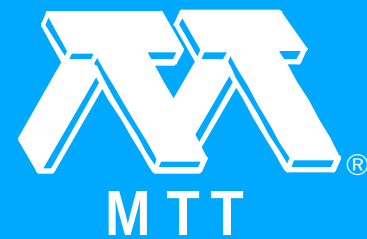


Abstracts

Power-combining grids for frequency tuning and beam control applications

Liang Quan Sun and R.M. Weikle, II. "Power-combining grids for frequency tuning and beam control applications." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1043-1046.

Two new quasi-optical power combining architectures are presented. A coplanar waveguide (CPW)-fed bowtie antenna array is used to combine the outputs of 16 FET's at 4.7 GHz with a DC-to-RF conversion efficiency of 17%. The arms of the bowtie antennas provide space to accommodate planar tuning and matching networks. A second power-combining array, consisting of 16 FET chips, uses integrated varactors for frequency tuning at 20 GHz. Experimental results for both types of power-combining grid are presented.



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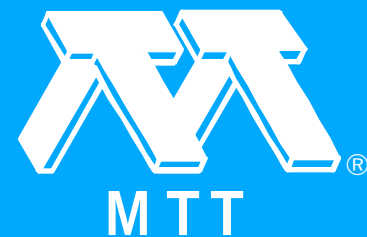


Abstracts

A low-cost active transceiving antenna

A.K.Y. Lai and J.H.H. Ng. "A low-cost active transceiving antenna." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1047-1050.

This paper investigates the design of a compact injection locked active transceiving antenna. This transceiver is well suited for low power and low cost wireless applications. A center-slotted square patch antenna, two bipolar transistors and a dual gate FET are used. The antenna operates at 1.4 GHz with 4.39 dB gain and a maximum usable sensitivity of -97 dBm.



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Abstracts

A new mixer for sensor applications

I. Angelov, H. Zirath and J. Svedin. "A new mixer for sensor applications." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1051-1054.

A new configuration of a gate mixer associated with a dual-polarized patch antenna was experimentally investigated for the first time. A gain of 5-7 dB was obtained at local oscillator (LO) power of -17 dBm at the device terminals. The new configuration with low pumping power can significantly simplify the design of the LO sensor chain compared to the ordinary configuration which consumes 3-8 dBm per device.



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A direction sensitive, integrated, low cost Doppler radar sensor for automotive applications

R.H. Rasshofer and E.M. Biebl. "A direction sensitive, integrated, low cost Doppler radar sensor for automotive applications." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1055-1058.

We fabricated and tested an integrated, low cost, W-band Doppler radar sensor, capable to provide direction sensitive velocity information. The front-end consists of an active integrated antenna in self-mixing operation and a surface-wave coupled, mixing rectenna, providing full homodyne I/Q-detection. In the front-end, we employed only low cost silicon monolithic millimeter wave integrated circuits (SIMMWIC). Measured results show excellent performance of the sensor.

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Abstracts

Finite element method for rigorous design of microwave devices using photonic band gap structures

B. Lenoir, D. Baillargeat, S. Verdeyme and P. Guillon. "Finite element method for rigorous design of microwave devices using photonic band gap structures." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1061-1064.

In this paper, we present theoretical and experimental analyses of microwave devices using photonic band gap materials. These analyses are applied to design volumic or planar microwave filters. The experiments were conducted at 9-14 GHz to validate the concept which could be applied to millimeter frequency band (60 GHz) filters.



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Abstracts

Microwave properties of coplanar transmission lines and filters on diamond from 1-120 GHz

F. Steinhagen, W.H. Haydl, T. Krems, W. Marsetz, R. Locher, C. Wild, P. Koidl, A. Hulsmann, T.v. Kerssenbrock and P. Heide. "Microwave properties of coplanar transmission lines and filters on diamond from 1-120 GHz." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1065-1068.

The properties of coplanar transmission lines (CPWs) and -filters on polycrystalline diamond substrates are investigated over the frequency range from 1-120 GHz. Experimental results obtained for different geometries are in good agreement with theoretical predictions. Coplanar transmission line technology was applied to flip-chip diamond substrates for power amplifier MMICs.



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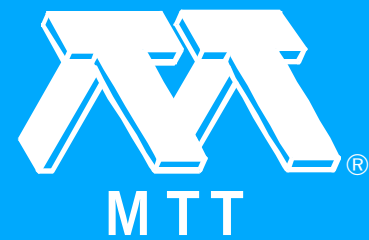


Abstracts

Theoretical and experimental investigation of bias and temperature effects on high resistivity silicon substrates for RF applications

A.C. Reyes, S.M. El-Ghazaly and M. Dydyk. "Theoretical and experimental investigation of bias and temperature effects on high resistivity silicon substrates for RF applications." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1069-1072.

Theoretical and experimental comparisons show that the RF characteristics of a CPW in Schottky contact with a HR Si substrate are bias independent for all practical temperatures, up to 100/spl deg/C. Bias dependence on the RF characteristics of the transmission line are noticed above 100/spl deg/C when the ohmic dielectric loss of the HR Si becomes the dominant loss mechanism on the coplanar structures under study. This is a direct result of the increase of intrinsic carrier density.



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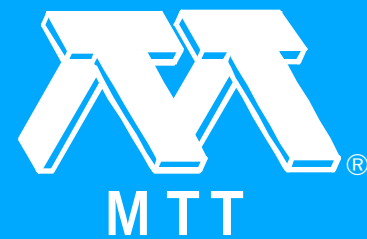


Abstracts

Near and far field characterization of radiation from ultra-fast electronic systems

K.A. Remley, A. Weisshaar, S.M. Goodnick and V.K. Tripathi. "Near and far field characterization of radiation from ultra-fast electronic systems." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1073-1076.

A numerical technique combining the FDTD method with a spatial transformation technique, the Kirchhoff surface integral, is proposed for determination of near and far field radiation from microwave, millimeter wave, or ultra-fast electronic systems. This technique is shown to be extremely accurate, and is often more computationally expedient than use of the FDTD alone. The technique is applied to characterize radiation from structures with inhomogeneous material parameters, offering a more accurate portrait of radiative fields than has been previously reported.



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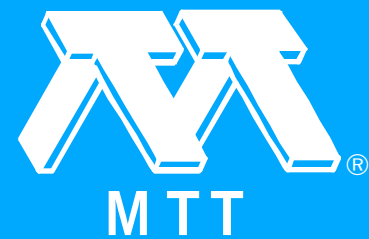
Edge element modeling of 3D interconnection structures

Jilin Tan, Guangwen Pan and B.K. Gilbert. "Edge element modeling of 3D interconnection structures." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1077-1080.

In this paper, we apply the local potential concept to construct a functional for the finite element method (FEM) with 3D structures. The corresponding boundary conditions at the planes of incidence and transmittance for hybrid modes are derived. These conditions take into account both the transverse and longitudinal field components of the propagating signals. Employing these boundary conditions, in conjunction with the absorbing boundary conditions (ABC) and/or the boundary conditions of the first and third kind, a 3D asymmetrical functional is implemented as a hybrid vector edge element method. Numerical examples are presented for air bridges and lossy transmission lines, connected by a through-hole via. The equivalent frequency dependent circuit parameters are then extracted from the field solutions. Laboratory measurements and data comparison with previous published results strongly support the newly developed theoretical work.

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Millimeterwave characteristics of flip-chip interconnects for multi-chip modules

W. Heinrich, A. Jentzsch and G. Baumann. "Millimeterwave characteristics of flip-chip interconnects for multi-chip modules." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1083-1086.

Electromagnetic simulations and measurement data of flip-chip transitions are presented. First-order effects are identified and design criteria for mm-wave multi-chip interconnects are derived. In coplanar environment, the flip-chip scheme provides interconnects with excellent low-reflective properties. For conductor-backed structures, the suppression of parasitic modes represents the key issue.

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Abstracts

Development of a package utilizing an electromagnetic coupling structure

S. Koriyama, K. Kitazawa and M. Fujii. "Development of a package utilizing an electromagnetic coupling structure." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1087-1090.

We have developed a new package for millimeter wave systems. This package employs a feed-through, which utilizes an electromagnetic coupling structure. The chosen electromagnetic coupling structure for the package consists of microstrip line/slot/microstrip line and has a low insertion loss. The insertion loss at the electromagnetic coupling part is estimated to be about 0.3 dB at 60 GHz when the structure is made from conventional alumina material. The package is produced by means of ordinary lamination technology which involves tape casting, printing, laminating and co-firing. High performance is compatible with low cost in this package, and it is suitable for new and big markets utilizing millimeter wave frequencies.



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Abstracts

Avoiding cross talk and feed back effects in packaging coplanar millimeter-wave circuits

T. Krems, A. Tessmann, W.H. Haydl, C. Schmelz and P. Heide. "Avoiding cross talk and feed back effects in packaging coplanar millimeter-wave circuits." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1091-1094.

The impact of the packaging configuration on cross talk and feed back effects caused by parasitic substrate modes is investigated for coplanar millimeter-wave circuits. It is demonstrated theoretically and by means of several circuit examples that both the mounting configuration and the thickness of the semiconductor substrate of coplanar MIMICs have to be chosen appropriately, in order to avoid circuit degradation or even failure.



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RF performance of a 77 GHz monolithic CPW amplifier with flip-chip interconnections

K. Maruhashi, M. Ito, H. Kusamitsu, Y. Morishita and K. Ohata. "RF performance of a 77 GHz monolithic CPW amplifier with flip-chip interconnections." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1095-1098.

This paper describes the RF performance of a 77 GHz coplanar waveguide (CPW) monolithic three-stage amplifier connected to an alumina substrate using flip-chip technology. Key issues discussed here cover the substrate, MMIC and bonding structures to realize a good amplifier operation at this frequency. The flip-chip mounted GaAs monolithic amplifier exhibited a gain higher than 15 dB at around 77 GHz.

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Abstracts

The thermal benefits of diamond enhanced plastic packages for microwave applications

M. Gomes-Casseres. "The thermal benefits of diamond enhanced plastic packages for microwave applications." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1099-1102.

The superior material properties of diamond combined with the economics of plastic packaging provide the ultimate thermal management solution. A GaAs power amplifier dissipating 20 W has been demonstrated in a diamond enhanced plastic package. In addition, a dramatic improvement in the electrical performance of a coplanar flip chip MMIC in plastic has been achieved.



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Development of millimeter wave multi-layer organic based MCM technology

A. Pham, A. Sutono, J. Laskar, V. Krishnamurthy, H.S. Cole and T. Sitnik-Nieters.
"Development of millimeter wave multi-layer organic based MCM technology." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1103-1106.

We present the design and development of multi-layer organic based MCM's for use at millimeter wave frequencies. In this technology, we utilize a multi-layer interconnect using a vertical stacked via process. We experimentally develop and analyze an equivalent circuit model for this multi-layer interconnect to millimeter wave frequencies. We demonstrate that this vertical interconnect has ultra low parasitics and can be used to realize high performance modules at millimeter wave frequencies.

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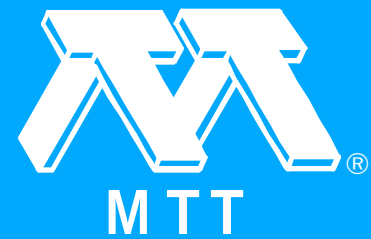


Abstracts

Class E high-efficiency power amplifiers, from HF to microwave

N.O. Sokal. "Class E high-efficiency power amplifiers, from HF to microwave." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1109-1112.

Class E power amplifiers achieve significantly higher efficiency than for conventional class B or C. Class E operates the transistor as an on/off switch and shapes the voltage and current waveforms to prevent simultaneous high voltage and high current in the transistor; that minimizes the power dissipation, especially during the switching transitions. In the published low-order class-E circuit, a transistor performs well at frequencies up to about 70% of its frequency of good class-B operation. An unpublished higher-order class E circuit operates well up to about double that frequency. The paper covers circuit operation, explicit design equations for the low-order class E circuit, optimization principles, and experimental results.



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Abstracts

A low-cost class-E power amplifier with sine-wave drive

J.F. Davis and D.B. Rutledge. "A low-cost class-E power amplifier with sine-wave drive." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1113-1116.

We present a 400 W class-E amplifier for industrial applications. The transistor is the International Rectifier IRFP450LC power MOSFET. The amplifier operates at 13.56 MHz and uses a drive level of 12 W to attain a drain efficiency of 86% and an overall efficiency of 84%. All harmonics are more than 40 dB below the carrier.



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Capabilities of low-cost high voltage RF power MOSFETs at HF and VHF

R. Frey. "Capabilities of low-cost high voltage RF power MOSFETs at HF and VHF." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1117-1120.

Plastic packaged power MOSFETs have found increasing acceptance in all fields of power electronic applications including new high power applications in the frequency range of 1 to 30 MHz. RF power sources for AM broadcasting, medical, industrial and semiconductor processing demand from hundreds to many kilo-Watts of power. In this paper, we compare the standard offerings of several vendors with a new line of inexpensive plastic packaged RF MOSFETs. MOSFET design, package layout, measurement circuits and performance characteristics are presented.

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Abstracts

A novel high frequency single-sideband transmitter using constant-envelope modulation

R.L. Campbell. "A novel high frequency single-sideband transmitter using constant-envelope modulation." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1121-1124.

A technique for single-sideband generation has been developed that obtains the desired output as the sum of three or more constant envelope signals. The summation may be performed by a passive summing network, or in space as the output of an antenna array in a particular direction. This paper describes a practical implementation of the technique, with lower sideband output at 7.2 MHz. Four constant-envelope signals from hard-limiting differential amplifiers drive a passive combiner to obtain +16 dBm peak-envelope-power lower-sideband. All undesired outputs are suppressed more than 30 dB. System requirements for high-power high-efficiency operation are discussed.



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Abstracts

Ultra linear/feedforward amplifier design

D. Myer. "Ultra linear/feedforward amplifier design." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1125-1127.

The proliferation of cellular and personal communication networks burdens an already overcrowded frequency spectrum. These systems require modern RF power amplifiers to maintain high levels of spectral efficiency for minimized adjacent channel interference. Amplifiers must maintain ultra linear transfer functions to achieve spectrally efficient operation. Several amplifier architectures (including feedforward) capable of ultra linear operation are illustrated, compared and analyzed.



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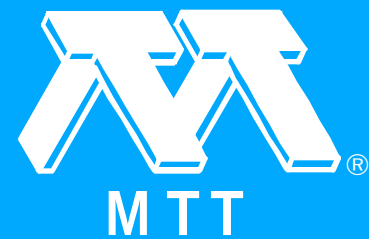


Abstracts

Harmonic balance analysis for systems with circuit-field iterations

C.E. Christoffersen, M.B. Steer and M.A. Summers. "Harmonic balance analysis for systems with circuit-field iterations." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1131-1134.

A state variable implementation of harmonic balance circuit analysis for spatially distributed systems is developed. The equations are formulated with the minimum number of unknowns and error functions starting from the modified nodal admittance matrix of the linear part of the circuit. The program uses advanced numerical techniques, such as automatic differentiation to calculate the Jacobian of the system and it is compatible with port-based network descriptions which occur with electromagnetic modeling.



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Global time-domain full-wave analysis of microwave FET oscillators and self-oscillating mixers

Min Chen, W.R. Deal, B. Houshmand and T. Itoh. "Global time-domain full-wave analysis of microwave FET oscillators and self-oscillating mixers." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1135-1138.

The global time-domain nonlinear analysis of microwave FET oscillators and self-oscillating mixers using the extended FDTD technique is presented. Employing the concept of equivalent current/voltage sources, the device-wave interaction is characterized and incorporated into the FDTD time-stepping algorithm. Consequently, investigation of highly nonlinear phenomena, such as injection locking and intermodulation, can be accomplished by utilizing a large-signal device circuit model. Theoretical results are validated by experiments.

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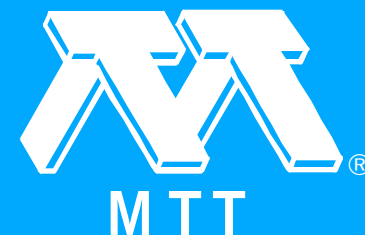


Abstracts

RF power detector using a silicon MOSFET

M. Ratni, B. Huyart, E. Bergeault and L. Jallet. "RF power detector using a silicon MOSFET." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1139-1142.

This paper presents a novel approach for RF power measurements using a silicon MOSFET. It describes linear and nonlinear models of the RF MOSFET for results prediction. It shows a thorough comparison between predicted and measured results. The detector demonstrates a better sensitivity than biased Schottky diode detectors that we have measured.



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An X-band 2 kW CW GaAs FET power amplifier for continuous wave illuminator application

H. Ashoka, J. Ness, A. Robinson, M. Gourlay, J. Logan, P. Woodhead and D. Reuther. "An X-band 2 kW CW GaAs FET power amplifier for continuous wave illuminator application." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1149-1152.

The development of a solid state power amplifier (SSPA) for a continuous wave illuminator (CWI) application at X-band is described. The amplifier produces 2 kW of CW output power at 1 dB gain compression over a 2.5 percent bandwidth with a DC-RF efficiency better than 15 percent. Low-loss power combining is implemented using a hybrid serial and corporate combiner structure in waveguide medium. The SSPA has been designed to operate in environmental conditions specified for naval military vessels.

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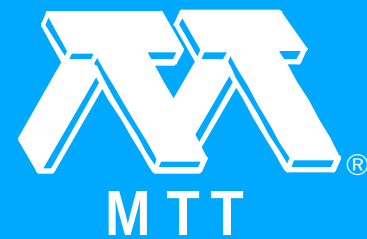


Abstracts

The design and analysis of multi-megawatt distributed single pole double throw (SPDT) microwave switches

S.G. Tantawi and M.I. Petelin. "The design and analysis of multi-megawatt distributed single pole double throw (SPDT) microwave switches." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1153-1156.

We present a design methodology and analysis for an SPDT switch that is capable of handling hundreds of megawatts of power at X-band. The switch is designed for application in high power RF systems in particular future linear colliders. In these systems switching needs to be fast in one direction only. We use this to our advantage to reach a design for a super high power switch. In our analysis we treat the problem from an abstract point of view. We introduce a unified analysis for the microwave circuits irrespective of the switching elements. The analysis is, then, suitable for different kinds of switching elements such as photoconductors, PIN diodes, and plasma discharge in low-pressure gases.



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Abstracts

Use of a magnetron as a high-gain, phased-locked amplifier in an electronically-steerable phased array for wireless power transmission

M.C. Hatfield, J.G. Hawkins and W.C. Brown. "Use of a magnetron as a high-gain, phased-locked amplifier in an electronically-steerable phased array for wireless power transmission." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1157-1160.

A conventional microwave oven magnetron is combined with a ferrite circulator to create a high-gain phase-locked amplifier with independent control of frequency and power output. The intended application is for electronically-steerable phased arrays for wireless power transmission.



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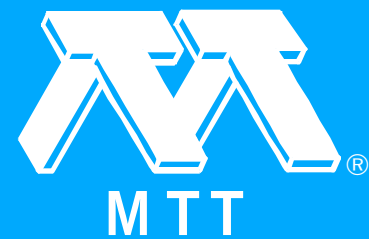


Abstracts

A novel oscillating rectenna for wireless microwave power transmission

J.O. McSpadden, R.M. Dickinson, Lu Fan and Kai Chang. "A novel oscillating rectenna for wireless microwave power transmission." 1998 MTT-S International Microwave Symposium Digest 98.2 (1998 Vol. II [MWSYM]): 1161-1164.

A new concept for solid state wireless microwave power transmission is presented. A 2.45 GHz rectenna element that was designed for over 85% RF to DC power conversion efficiency has been used to oscillate at 3.3 GHz with an approximate 1% DC to RF conversion efficiency. The RF radiation was obtained from the same circuit by supplying the DC output with reverse polarity DC power.



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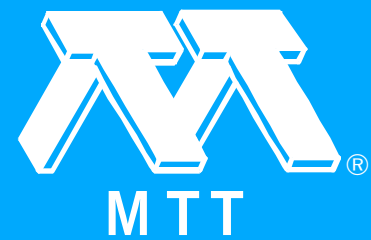
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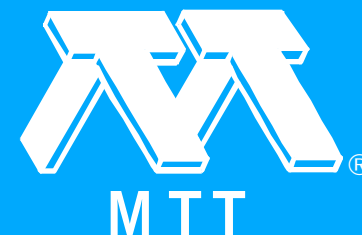
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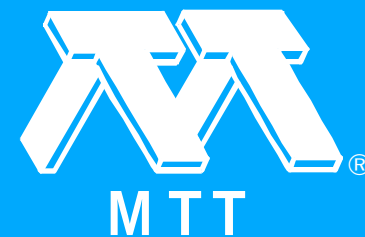
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Abstracts

Technical Program Schedule (1998 Vol. III [MWSYM])

"Technical Program Schedule (1998 Vol. III [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): vi-xiii.



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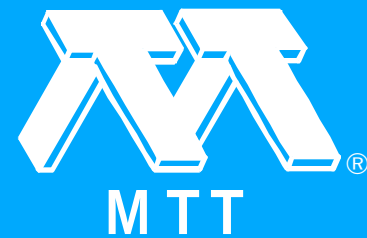


Abstracts

Frequency hopping evanescent mode filter

J. Sherman. "Frequency hopping evanescent mode filter." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1169-1172.

This paper describes a novel high speed varactor tuned evanescent (EV) mode hopping filter operating at C-Band. The 6 /spl mu/sec tuning speed is compatible with military frequency-hopping applications. Loss compensation is provided by variable gain MMIC amplifiers between 3-pole filter sections.



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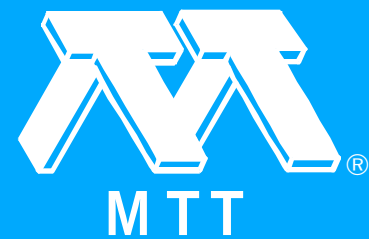
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Optimization of noise performance for various topologies of microwave active recursive filters

Ezzedine, M. Delmond, L. Billonnet, B. Jarry and P. Guillon. "Optimization of noise performance for various topologies of microwave active recursive filters." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1173-1176.

This article deals with the improvement of the noise figure for three topologies of microwave active recursive filters. We show how, using a noise wave formalism, the noise factor of these filters can be effectively minimized by using appropriate unbalanced power dividers/combiners and an amplifier. A comparison between the different topologies is given. We start from measured results and validate our approach with simulated examples.

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A GaAs MMIC active filter with low noise and high gain

S.-S. Sabouri. "A GaAs MMIC active filter with low noise and high gain." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1177-1180.

An active image rejection filter applying actively coupled passive resonators is presented. The filter has very low noise and high insertion gain, which may eliminate the use of an LNA in front-end applications. The filter is applicable as a single block LNA and image rejection filter in cordless and mobile telephone systems working around 2 GHz, e.g. DECT and DCS-1800 systems. The GaAs MMIC chip area is 3.3 mm²/sup 2/. The filter has 12 dB insertion gain, 45 dB image rejection, 6.2 dB SSB noise figure and consumes 13 mW power from a 3 V supply.

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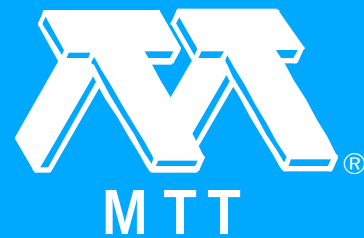


Abstracts

Low loss micromachined filters for millimeter-wave telecommunication systems

P. Blondy, A.R. Brown, D. Crost and G.M. Rebeiz. "Low loss micromachined filters for millimeter-wave telecommunication systems." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1181-1184.

This paper describes the design and the realization of two membrane supported microstrip millimeter-wave planar bandpass filters. Both filters exhibit transmission zeros and a 2.3 dB port-to-port insertion loss for the 37 GHz 3.5% bandwidth 2-pole filter and a 1.5 dB insertion loss for a 60 GHz 8% bandwidth 4-pole filter. The use of membrane technology allows a significant reduction of insertion loss, combined with a reproducible, low cost fabrication process.



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Micromachined filters on synthesized substrates

R.F. Drayton, S. Pacheco, J.G. Yook and L.P.B. Katechi. "Micromachined filters on synthesized substrates." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1185-1188.

Effective frequency spectrum usage requires high performance filters with a sharp cut-off frequency and high stopband attenuation. Stepped impedance lowpass designs achieve this with large ratios of high and low impedance values. In high index materials, however, such as Si (11.7) and GaAs (12.9), these ratios are around 5 which significantly limit filter performance. This paper presents the use of Si micromachining to produce synthesized substrates with stepped-impedance low filter designs. Of the two designs, one offers a reduction of the low impedance value while the other offers an increase of the high impedance value to produce $Z_{\text{sub H}}/Z_{\text{sub L}}$ ratios that are 1.5 to 2 times larger than conventional designs.

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Abstracts

A design of novel asymmetrically coupled CPW bandpass filter using TEM analysis

Jun-Seok Park, Juno Kim, Dal Ahn, Jae-Bong Lim and Tatsuo Itoh. "A design of novel asymmetrically coupled CPW bandpass filter using TEM analysis." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1189-1192.

The new coplanar waveguide (CPW) bandpass filter with an asymmetric structure is proposed. The proposed filter is designed based on TEM analysis technique. It has quarter wavelength CPW couplers so that the physical dimension and radiation loss can be improved. A compact three-pole bandpass filter is designed and fabricated to prove the validity of the design method. The measured results show good agreement with the simulated characteristics.



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A new miniature uniplanar lowpass filter using series resonators

K. Hettak and G. Delisle. "A new miniature uniplanar lowpass filter using series resonators." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1193-1196.

A new variant of miniature uniplanar lowpass filter suitable for use as a building block for communication systems is investigated. A combination of CPW series resonators and low impedance line sections is used to form this lowpass filter. This is made possible by the potential power offered by the uniplanar technology in terms of the wide range of flexibility and scope for innovation. Furthermore, this alternative structure removes a number of limitations inherent to the conventional configuration. Compared to ladder type built from the cascade of alternate high and low impedance line sections, several advantages are pointed out: very wide stopband with low number of elements (no spurious responses up to 25 GHz), high cutoff rates, low insertion loss, lower radiation loss, high compactness (a significant 35% reduction of the circuit area when compared to ladder type) and additional degrees of freedom by the inclusion of the series CPW series resonators in the filter design. However, to fully benefit from these resonators, it is necessary to have reliable models of each constitutive element of the lowpass filter. It has been shown that the relative flexibility of the space domain integral equation method makes it an attractive tool for the analysis and design of these complex circuits. A principle of achieving these high-quality circuits is described and also confirmed by experimental and theoretical results, which are in good agreement up to 40 GHz. The combination of a series resonators with low impedance line sections gives a new powerful technique for the design of miniature lowpass suitable for monolithic millimetric integrated circuits.

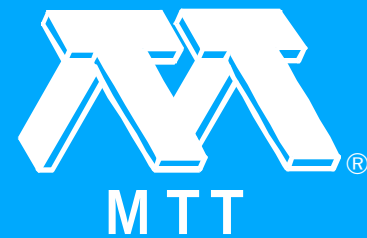


Abstracts

Miniature P-code GPS translator

J. Smuk, P. Blount, C. Trantanella and M. Shifrin. "Miniature P-code GPS translator." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1199-1202.

A GaAs MMIC chip set and its integration into a P-code GPS translator for use in tracking high speed objects is presented. The translator provides over 125 dB of transmission gain with 3.5 dB noise figure, occupies 18 cm², survives 16000 G mechanical shock and operates from -40/spl deg/C to 85/spl deg/C.



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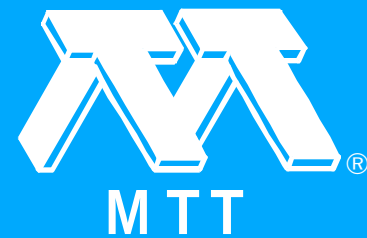


Abstracts

A broadband linearizer for Ka-band satellite communication

W.-M. Zhang and C. Yuen. "A broadband linearizer for Ka-band satellite communication." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1203-1206.

A compact, broadband linearizer has been developed at Space Systems Loral for Ka-band communication satellite (20 GHz down link). The pre-distortion type linearizer is capable of providing up to 10 dB gain compensation and 80 degree phase compensation, and is suitable for a broadband communication satellite.



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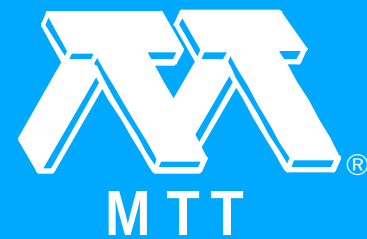


Abstracts

Procedure for measurements and statistical processing of upstream channel noise in HFC-networks

K. Haelvoet, J. Vandenbruaene, E. Claus, K. De Kesel and L. Martens. "Procedure for measurements and statistical processing of upstream channel noise in HFC-networks." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1207-1210.

A promising candidate for the growing bandwidth requirements of interactive multimedia services are hybrid fiber-coax CATV networks. They are however very susceptible to noise-funneling. We present a measurement method and statistical postprocessing for both ingress and impulse noise that is independent of the modulation and access technique used. The impact of ingress noise is evaluated for a TDMA/FDMA and CDMA access technique to illustrate this.



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Novel microwave vibration monitoring system for industrial power generating turbines

M. Wagner, A. Schulze, M. Vossick, C. Stephelbauer, R. Weigel, N. Vortmeyer and P. Heide. "Novel microwave vibration monitoring system for industrial power generating turbines." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1211-1214.

A novel microwave sensor system for real-time monitoring of turbine blade vibrations is reported. The self-calibration of the sensor modules, a key feature of the implemented concept, is based on adaptive frequency tuning of the microwave source. By using this calibration, degradation of the measurement performance caused by temperature drift and dirt deposit is compensated. During pilot runs with a 65 MW gas turbine the microwave system proved to give excellent measurement results.

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Integrated 5.8 GHz phased array antenna, for electronic toll collection

G. Villino, C. Passmann, D. Mansen, C. Brenzel and T. Wixforth. "Integrated 5.8 GHz phased array antenna, for electronic toll collection." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1215-1218.

An integrated 3/spl times/8 element phased array receiving antenna combined with a 4/spl times/8 element transmit antenna for 5.8 GHz DSRC D_edicated S_hort R_ange C_ommunication has been built. The number of analog phaseshifters and antenna elements has been optimized to meet the specific requirements of the application and of the DSRC-standard. A sophisticated concept for the integration of analog beamformer, RF-chain, and array antenna has been developed to enable a design of the complete antenna system on a thin multilayer structure. The size of the whole antenna is 280 mm/spl times/400 mm/spl times/20 mm.

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High spectral purity millimetre-wave modulated optical signal generation using fibre grating lasers

F.N. Timofeev, S. Bennett, R. Griffin, P. Bayvel, A.J. Seeds, R. Wyatt, R. Kashyap and M. Robertson. "High spectral purity millimetre-wave modulated optical signal generation using fibre grating lasers." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1221-1224.

Millimetre-wave optical signal generation by heterodyning two semiconductor fibre grating lasers is demonstrated for the first time. The resulting beat signal, has an extremely narrow linewidth (<100 kHz), is continuously tuneable (0-40 GHz) and exhibits negligible chirp under direct 2.6 Gbit/s modulation.

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Optically powered remote optical field sensor system using an electroabsorption-modulator

R. Heinzlmann, A. Stohr, M. Groz, D. Kalinowski, T. Alder, M. Schmidt and D. Idger.

"Optically powered remote optical field sensor system using an electroabsorption-modulator."
1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1225-1228.

A novel optical sensor system is presented, where the remote transceiver unit is based upon a high-speed electroabsorption (EA) waveguide modulator. The proposed sensor concept allows bi-directional operation, by using the EA-modulator not only as a modulator element to receive signals from the antenna but also as a detector element to transmit signals to the antenna. For optimum dynamic range and highest sensitivity the EA-modulator is biased. The voltage necessary for this is provided from an integrated fiber-coupled photovoltaic cell (PVC) array in order not to reduce the overall EMC of the sensor.





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Third-order intermodulation distortion in an optical downconverter

P.D. Biernacki, L.T. Nichols and R.D. Esman. "Third-order intermodulation distortion in an optical downconverter." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1229-1232.

The first two-tone measurements of third-order intermodulation in a wide-band (1-18 GHz) optical downconverter utilizing cascaded Mach-Zehnder modulators are presented. Intermodulation originates in the RF modulator and is downconverted along with the fundamentals to intermediate frequencies (IF). The third-order intercept in the IF band is measured and agrees well with theory.

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Distributed velocity-matched 1.55 μm InP travelling-wave photodetector for generation of high millimeterwave signal power

M. Alles, U. Auer, F.-J. Tegude and D. Jager. "Distributed velocity-matched 1.55 μm InP travelling-wave photodetector for generation of high millimeterwave signal power." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1233-1236.

A novel travelling-wave (TW) photo-detector for operation at 1.3/1.55 μm is fabricated using InP MMIC technology. The results of an optoelectronic simulation are discussed, where photoconductivity effects and phase-matching due to slow-wave effects are included. Theoretical and experimental results of power conversion efficiencies are finally presented.

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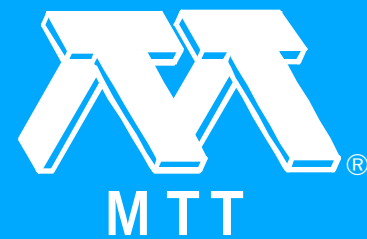


Abstracts

High power, high frequency traveling wave heterojunction phototransistors with integrated polyimide waveguide

D.C. Scott, D.P. Prakash, H. Erlig, D. Bhattacharya, M. Ali and H.R. Fetterman. "High power, high frequency traveling wave heterojunction phototransistors with integrated polyimide waveguide." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1237-1240.

A high power, high speed phototransistor has been demonstrated using a traveling wave structure with an integrated polyimide optical waveguide. In our configuration, optical power transfer is distributed along the length of the device via leaky mode coupling of light from the polyimide waveguide to the active region of the phototransistor. The traveling wave electrode design allows for an electrically long structure while maintaining high bandwidths. Due to the increased absorption volume, the optical power handling capabilities of the TW-HPT are improved over that of conventional lumped element HPT detectors. The experimental results show no compression of the fundamental at 60 GHz up to 50 mA of DC photocurrent.



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Tapered slot antenna integrated with velocity-matched distributed photodetector

Bo-Shiou Ke, Tai Chau, Yongxi Qian, Ming-Chiang Wu and Tatsuo Itoh. "Tapered slot antenna integrated with velocity-matched distributed photodetector." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1241-1244.

We propose and demonstrate the integration of tapered slot antenna (TSA) and velocity-matched distributed photodetector (VMDP) which is potentially useful for millimeter-wave power combining and phased arrays, as well as RF front-ends for analog fiber optic links. The concept is confirmed by photomixing and antenna measurement with an X-band prototype, and is readily scalable to higher frequencies where the inherent tremendous bandwidth of optics can be fully employed.



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InP-based Gilbert Cell phase detector for generation of stable dense wavelength division multiplexing channel offsets using an optical phase-locked loop

P.G. Goetz, H. Eisele, K.C. Syao, K. Yang and P. Bhattacharya. "InP-based Gilbert Cell phase detector for generation of stable dense wavelength division multiplexing channel offsets using an optical phase-locked loop." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1245-1248.

A Gilbert Cell phase detector for use in an integrated optical phase-locked loop (OPLL) was designed and fabricated using p-i-n/HBT layer structure optimized for photoreceivers. This phase detector was employed in an OPLL designed for producing stable dense wavelength division multiplexing (DWDM) channel offsets. Offsets of 1.4 to over 10 GHz were achieved.





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A wavelet based time domain moment method for the analysis of three-dimensional electromagnetic fields

M. Werthen and I. Wolff. "A wavelet based time domain moment method for the analysis of three-dimensional electromagnetic fields." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1251-1254.

A novel time domain simulation approach for analyzing real three-dimensional (3-D) passive microwave structures is presented. The electromagnetic fields of the structure under investigation are expanded into a hierarchical system of wavelets and scaling functions for all three dimensions leading to a stable, multiscale algorithm. By neglecting small wavelet coefficients and thereby reducing the computational effort, this method is equivalent to a finite difference in time domain scheme with a time dynamic space adaptive grid. An overview of the main ideas and advantages of this new method as well as the results of two numerical examples are given.

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Electromagnetic propagation into reinforced-concrete walls

E. Richalot, M. Bonilla, M.F. Wong, V. Fouad-Hanna, H. Baudrand and J. Wiart.
"Electromagnetic propagation into reinforced-concrete walls." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1255-1258.

A 3D finite element method with decomposition on Floquet's modes is presented to study the transmission parameters of building walls. The influences of gratings in concrete walls, of wall dimensions, and of the electromagnetic excitation with single field of a plane wave or with diffuse field, on wall transmission properties are then studied by this method.

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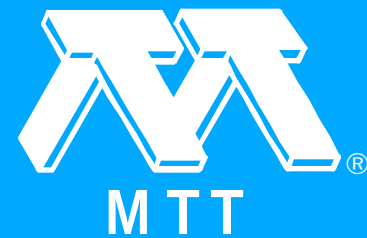


Abstracts

Design of photonic band-gap substrates for surface waves suppression

R. Coccioli and T. Itoh. "Design of photonic band-gap substrates for surface waves suppression." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1259-1262.

Suppression of unwanted surface waves supported by a grounded dielectric slab can be achieved by periodically loading the substrates to create a forbidden frequency band for propagation. Approximate formulas for designing such loading are given and verified by means of a numerical full-wave analysis.



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Electromagnetic field coupling to multiconductor transmission lines in multi-layered media

I. Erdin, R. Khazaka and M. Nakhla. "Electromagnetic field coupling to multiconductor transmission lines in multi-layered media." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1263-1266.

An accurate and efficient method for the analysis of incident field coupling to traces in inhomogenous media is described. The method is based on the application of physical optics in combination with the boundary matching technique. In addition to accounting for the inhomogeneity of the medium, this method provides significant CPU improvement over conventional techniques.



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Efficient analysis of microstrip radiation by the TLM integral equation (TLMIE) method

L. Plerantoni, S. Lindenmeier and P. Russer. "Efficient analysis of microstrip radiation by the TLM integral equation (TLMIE) method." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1267-1270.

Microstrip lines are widely used in microwave and millimeter-wave integrated circuits. In this paper we present an accurate analysis of the EM near and far field radiated by a microstrip line. The EM analysis is developed by a novel method, the Transmission Line Matrix Integral Equation (TLMIE) method. This method combines the advantages of the TLM method, which is very flexible for the modeling of general structures with arbitrary shapes, and the advantages of the integral equation (IE) method, which allows one to incorporate the treatment of large free space regions.

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Abstracts

Fast subgrid FD-TD matrix pencil technique for the rigorous analysis of resonant 3D microwave structures

J. Ritter and F. Arndt. "Fast subgrid FD-TD matrix pencil technique for the rigorous analysis of resonant 3D microwave structures." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1271-1274.

An improved FD-TD technique is described for the rigorous analysis of highly resonant 3D microwave structures, such as dielectric resonator filters. The method is based on a recursive subgrid procedure, utilizes a robust orthogonalization technique, and employs the matrix pencil algorithm for the frequency-transformation. The S-parameters are extracted from least-square-solutions of over-determined systems of equations for each port. The efficiency and accuracy of the presented FD-TD technique is demonstrated by the example of LANGER's dielectric resonator reference filter. The analysis of modified filters with up to four dielectric resonators illustrates the flexibility of the method.



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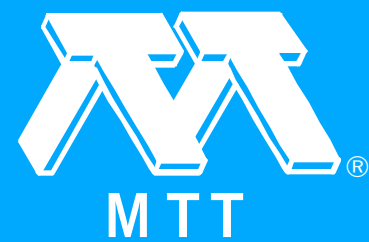
Efficient hybrid mode-matching/-finite-element (MM/FE) method for the design of waveguide components and slot radiators

R. Beyer and F. Arndt. "Efficient hybrid mode-matching/-finite-element (MM/FE) method for the design of waveguide components and slot radiators." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1275-1278.

A hybrid mode-matching/finite-element (MM/FE) method is introduced for the rigorous design and optimization of waveguide components and radiators of arbitrary cross-section. The FE formulation for general cylindrical and conical waveguides, respectively, leads to a fast and direct sparse matrix eigenvalue procedure. Based on the MM technique in combination with a spherical wave expansion for the free space, a system of equations of low order for the coefficients of incident and scattered waves in the feeding waveguide is obtained by which the generalized scattering matrix as well as near- and far-field patterns can be calculated. The hybrid method combines advantageously the flexibility of the FE method with the efficiency of the MM technique. Its versatility is demonstrated at the optimum design of a septum polarizer which is directly combined with a conical circular waveguide horn, and the optimization of a slot-array element. The theory is verified by measurements.

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Design of embedded passive components in Low-Temperature Cofired Ceramic on Metal (LTCC-M) technology

A. Fathy, V. Pendrick, G. Ayers, B. Geller, Y. Narayan, B. Thaler, H.D. Chen, M.J. Liberatore, J. Prokop, K.L. Choi and M. Swaminathan. "Design of embedded passive components in Low-Temperature Cofired Ceramic on Metal (LTCC-M) technology." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1281-1284.

This Sarnoff-developed technology combines conventional Low-Temperature Cofired Ceramic (LTCC) technology and a clad metal base to provide constrained sintering, ruggedness, improved thermal path, and complex cavities with metal ground. Constrained sintering leads to almost zero shrinkage in the x-y plane during the firing operation allowing the accurate placement of embedded components such as resistors, capacitors, transmission lines, etc. This paper describes the development of CAD models for the design and analysis of embedded LTCC-M components. Models were verified by fabricating and testing LTCC-M test coupons for resistors, capacitors, and transmission lines. Results were compared with both EM simulation and circuit modeling. These CAD models operate within the industry standard HP Communications Design Suite utilizing its existing library models; an efficient and cost effective approach. Models, test results, range of validity of these models, and design guidelines are presented.



Abstracts

Design and performance of UHF band inductors, capacitors and resonators using LTCC technology for mobile communication systems

W. Eurskens, W. Wersing, S. Gohlke, V. Wannemacher, P. Hild and R. Weigel. "Design and performance of UHF band inductors, capacitors and resonators using LTCC technology for mobile communication systems." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1285-1288.

We report on basic passive components integrated into ceramic substrate and on the performance of a finite element software package. The inductors of different types in a range of 1 nH to 10 nH show moderate dependence on frequency. Spurious resonances indicate coupling of neighboring structures. Shunt capacitors between 6 pF and 128 pF have resonances in contrast to the series capacitors depending on the ground plane. Stripline and lumped element resonators at 1 GHz showed Q factors around 100 and 50 respectively. Fair agreement of measurement and simulation was observed.



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3D microwave modules for space applications

P. Monfraix, P. Ulian, C. Drevon, S. George, A.C. Vera, C. Tronche, J.L. Cazaux, O. Llopis and J. Graffeuil. "3D microwave modules for space applications." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1289-1292.

This paper describes the design, manufacturing and measurement of 3D microwave modules. The vertical interconnection between stacked circuits is based on an shielded homogeneous coplanar line with a 90/spl deg/ vertical structure. The fabrication of these modules is in relation with the "MultiChip Module Vertical" technology, originally developed for digital applications. The electrical measurement in the Ku-band demonstrates very good results.

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An embedded transmission line micro-ball grid array X-band power amplifier

T. Budka, L. Stiborek, L. Heinrich and C. Kyhl. "An embedded transmission line micro-ball grid array X-band power amplifier." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1293-1296.

This paper describes an electronic packaging topology using embedded transmission line (ETL) monolithic microwave integrated circuits (MMIC) that have been flip-chip mounted on a beryllia (BeO) micro-ball grid array (/spl mu/BGA) ceramic carrier with a z-axis interconnect material. Small signal S-parameters are presented at each stage during the assembly process and negligible frequency shifts are observed due to the flip-chip packaging before and after encapsulation. Increased gains of 2.0 dB with the unencapsulated and 2.2 dB with the encapsulated packaged part are observed compared to the on-wafer measurements at 10 GHz under the same bias conditions.

Click on title for a complete paper.



Abstracts

Methodology for creating embedded transmission line 90/spl deg/ bend and shunt capacitor models

B. Heimer and T. Budka. "Methodology for creating embedded transmission line 90/spl deg/ bend and shunt capacitor models." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1297-1300.

This paper describes a technique for creating embedded transmission line (ETL) 90/spl deg/ bend and high current handling shunt capacitor models for monolithic microwave integrated circuits (MMICs). This procedure is generally applicable and may be used to develop working scaleable models for new MMIC topologies. Using the method outlined below, a unique design library may be easily constructed to offer a more complete and accurate modeling capability than may be presently available with commercial microwave CAD tools.



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NRD guide couplers combined with microwave integrated circuits in side-by-side alignment

T. Goi, S. Kawasaki, T. Itoh and T. Yoneyama. "NRD guide couplers combined with microwave integrated circuits in side-by-side alignment." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1301-1304.

This paper describes a hybrid integration technologies with an NRD guide and planar circuits. The proposed circuit is a coupler which consists of two NRD guide dielectric rods attached to a microstrip line planar circuit in the rod side wall. A leakage signal from one NRD guide can travel to the other NRD guide through a surface wave propagating in the coupler planar circuit. The coupling at 9.86 GHz was improved by 20.1 dB using a tapered microstrip line and amplified to 27.2 dB by the FET planar circuit, compared with the NRD coupler with a simple planar dielectric slab.

[Click on title for a complete paper.](#)



A new planar type dielectric resonator for microwave filtering

S. Moraud, S. Verdeyme, P. Guillon, P. Ulian and B. Theron. "A new planar type dielectric resonator for microwave filtering." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1307-1314.

This paper is devoted to high electrical performance resonator realization for multilayer filter applications. A partially metallized substrate is shielded in a metallic cavity and excited by coplanar lines directly integrated on the dielectric resonator. This structure is suitable for high frequency filtering and power applications, and presents the advantage that it can be easily manufactured. Moreover, a new coupling technique without tuning is presented to realize a 2-pole filter. Experiments are performed to verify the theoretical design.





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K-band planar type dielectric resonator filter with high-/spl epsiv/ ceramic substrate

T. Hiratsuka, T. Sonoda, K. Sakamoto and Y. Ishikawa. "K-band planar type dielectric resonator filter with high-/spl epsiv/ ceramic substrate." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1311-1314.

A new planar type dielectric resonator filter, named TE/sub 010/ mode dielectric filter, is proposed for high-speed data communication systems. The filter was manufactured with precise photolithography process on the high-/spl epsiv/ (high-dielectric-constant) ceramic substrate. The small filter with low loss and high selectivity characteristics has been realized at 19 GHz.

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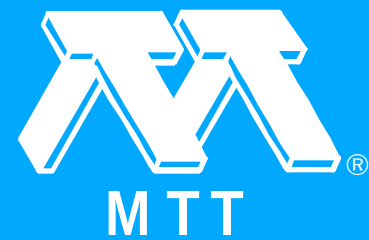


Abstracts

Dielectric combline resonators and filters (1998 Vol. III [MWSYM])

C. Wang, K.A. Zaki, A.E. Atia and T. Dolan. "Dielectric combline resonators and filters (1998 Vol. III [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1315-1318.

By replacing the inner conductor of the conventional combline resonator with a high ϵ_r dielectric rod, higher unloaded Q of the resonator can be expected. Resonant frequency, unloaded Q and coupling coefficient of the resonator are obtained by rigorous mode matching method. An 8-pole elliptic function dielectric combline resonator filter is designed. Good frequency responses are obtained.



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Abstracts

High-temperature superconductor-shielded high power dielectric dual-mode filter for applications in satellite communications

S. Schornstein, I.S. Ghosh and N. Klein. "High-temperature superconductor-shielded high power dielectric dual-mode filter for applications in satellite communications." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1319-1322.

We introduce a novel high-temperature superconductor (HTS)-shielded dual-mode resonator based on the degenerated fundamental mode of a dielectric hemisphere. By employing coupling with electric probes and dual-mode splitting with dielectric rods, we have built an HTS-shielded dual-mode two-pole filter at a center frequency of 6.4 GHz with a bandwidth of 0.4% and an insertion loss of 0.02 dB.



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Abstracts

Novel helical resonator filter structures

S.J. Fiedziuszko and R.S. Kwok. "Novel helical resonator filter structures." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1323-1326.

Helical resonator filters are well-known and widely used at lower microwave frequencies. Two novel helical resonator filter configurations for applications in wireless and satellite communication systems are described in this paper. This includes miniature filters utilizing single mode, high dielectric constant material loaded helical resonators, as well as higher order dual mode helical resonator loaded cavities. Both configurations can be used to realize advanced filters with non-adjacent couplings. The basic filter configurations are discussed and experimental results are presented.



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Abstracts

Synthesis of delay filters

D. Chambers and Y. Huang. "Synthesis of delay filters." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1327-1330.

A procedure is proposed for the design of delay filters. Both minimum phase and non-minimum-phase cases are included. Design examples show that the agreements between the results obtained by theory and experiment are excellent.



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Abstracts

DC-to-mm-wave absolute potential measurements inside digital microwave ICs using a micromachined photoconductive sampling probe

G. David, J.F. Whitaker, T.R. Weatherford, K. Jobe, S. Meyer, M. Bustamante, W. Goyette, S. Thomas, III and K. Elliott. "DC-to-mm-wave absolute potential measurements inside digital microwave ICs using a micromachined photoconductive sampling probe." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1333-1336.

A micromachined photoconductive sampling probe is used to determine detailed wave forms at different circuit nodes and corresponding propagation delays from within an InP HBT frequency divider operating at 2.7 GHz. The results demonstrate for the first time the capability of photoconductive probes for absolute-voltage, DC-coupled potential measurements in integrated circuits.



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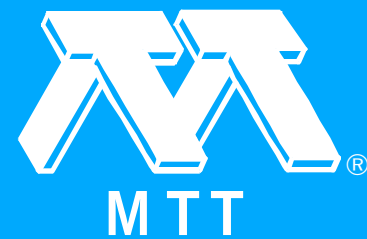


Abstracts

Mapping the thickness of conducting layers by a mm-wave near-field microscope

A.F. Lann, M. Golosovsky, D. Davidov and A. Frenkel. "Mapping the thickness of conducting layers by a mm-wave near-field microscope." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1337-1340.

We describe a quantitative contactless technique of mapping resistivity of conducting films using a 80 GHz near-field scanning probe. We report (i) a capacitive method of maintaining constant probe-sample separation; (ii) a quantitative measurements of near-field mm-wave reflectivity of conducting films.



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Localized circuit probing with a combined Schottky diode/scanning force microscope

D.W. Van Der Weide, V. Agrawal, T. Bork and P. Neuzil. "Localized circuit probing with a combined Schottky diode/scanning force microscope." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1341-1344.

We present the first scanned probe Schottky diode used as a detector of microwave power. This technique enables direct sensing of local fields without the use of a high frequency receiver, and it can accommodate simultaneous measurement of sample topography, as well. Applications for this probe range from field mapping on planar filters to failure analysis of MMIC's.

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Accurate extraction method for 1/f-noise parameters used in Gummel-Poon type bipolar junction transistor models

F.X. Sinnesbichler, M. Fischer and G.R. Olbrich. "Accurate extraction method for 1/f-noise parameters used in Gummel-Poon type bipolar junction transistor models." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1345-1348.

In SPICE Gummel-Poon models one 1/f-noise source describes the low frequency noise behaviour of bipolar junction transistors (BJTs). In this paper we present a method to extract the respective model parameters from measured 1/f-noise data without the requirement of exactly determining the corner frequency $f_{sub c}$, i.e. the frequency at which the 1/f-noise equals the device noise floor. This novel method is applicable to low-noise as well as to very noisy devices. We present results of different active devices. Verification of the extracted model parameters is done in an oscillator application. Measured and calculated phase noise results agree within measurement accuracy of ± 2 dB.

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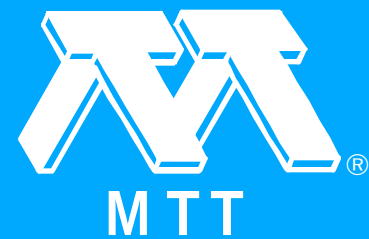


Abstracts

W band silicon dielectric resonator for semiconductor substrate characterization

P. Blondy, D. Cros, P. Guillon, F. Balleras and C. Massit. "W band silicon dielectric resonator for semiconductor substrate characterization." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1349-1352.

This paper is about the use of planar millimeter wave whispering gallery dielectric resonator modes for material characterization. Experimental results and theoretical ones obtained with finite element method permit to determine electromagnetic characteristics of a material like silicon. The results on loss factor are compared to basic electromagnetic theory. It is shown that high resistivity silicon dielectric resonators could be used to build high Q millimeter wave resonators.



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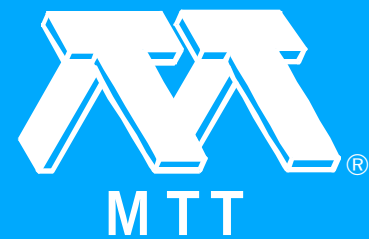
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Measurement of the broadband microwave absorption and shielding characteristics of a conductive polymer

K. Naishadham and P. Chandrasekhar. "Measurement of the broadband microwave absorption and shielding characteristics of a conductive polymer." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1353-1356.

Conducting polymers (CPs), a new class of organic materials displaying high conductivity/weight ratios, have evinced much interest recently in applications involving microwave absorption and EMI shielding. Prior microwave measurements on CPs have been limited to single frequencies or narrow bands, thin films, and permittivity measurements. In this communication, we report the first cumulative broadband measurements and computations of all microwave parameters of a CP relevant for practical application, namely, conductivity, absorption, complex permittivity, shielding and reflection. The specific CP selected is poly(aniline) (P(ANi)) doubly doped with two unique sulfonate dopants. Measurements have been carried out over a 2 to 18 GHz frequency band, on bulk P(ANi), using coaxial line techniques. Comparison with prior results on CPs shows high microwave attenuation for this polymer.

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Analytical expressions of transient thermal response of self-heating semiconductor devices

Y. Zhu, J.K. Twynam, M. Yagura, M. Hasegawa, Y. Eguchi, A. Yamada, E. Suematsu, K. Sakuno, H. Sato and N. Hashizume. "Analytical expressions of transient thermal response of self-heating semiconductor devices." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1357-1360.

Analytical expressions of the transient thermal response of self-heating devices have been derived based on a feedback amplifier circuit model yielding accurate methods to extract the thermal time constant in both the time and frequency domains. The transient thermal responses of GaInP/GaAs HBT were measured and explained using the expressions derived.

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Abstracts

New array capabilities by photonic beamforming

R.D. Esman, M.Y. Frankel and P.J. Matthews. "New array capabilities by photonic beamforming." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1363-1366.

A large number of organizations are currently developing concepts in photonic beamforming. We briefly review the growth and then present an updated and expanded motivation for photonic beamforming in terms of current system expectations. Fortunately, many experiments in the literature demonstrate the enormous potential for photonic techniques to meet the growing demands. Current photonic capabilities and limitations based on dispersion are presented.



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Abstracts

Optically controlled serially fed phased array radar

Yian Chang, H.R. Fetterman, B. Tsap, A.F.J. Levi, D.A. Cohen and I.L. Newberg. "Optically controlled serially fed phased array radar." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1367-1370.

We have developed and tested a new optically controlled serially fed system suitable for phased array radar applications. This system uses a serial-feed concept that represents a new departure, in radar applications, that will yield a major simplification in both optical and microwave components. Unlike many systems, which use a parallel approach, our system with both phase and true time delays requires but a single tunable laser, modulator and time delay element.



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Beam-forming network characteristics of spatial optical signal processing array antenna for multibeam reception

O. Shibata, K. Inagaki and Y. Karasawa. "Beam-forming network characteristics of spatial optical signal processing array antenna for multibeam reception." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1371-1374.

We have experimentally investigated the basic characteristics of a beam-forming network in a spatial optical signal processing array antenna for multibeam reception. In this experiment, two RF signals, which were simulated multibeam antenna receiving signals from different directions, were separated according to the signal arrival direction in the optical domain. The obtained results generally agreed with calculated values.

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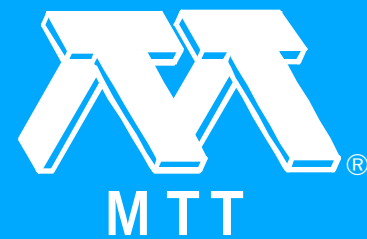


Abstracts

Ultimate beam capacity limit of fibre grating based true-time-delay beam-formers for phased arrays

R.A. Minasian and K.E. Alameh. "Ultimate beam capacity limit of fibre grating based true-time-delay beam-formers for phased arrays." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1375-1378.

A new grating based beam-former is presented which can synthesise a large number of beams with the minimum number of interconnects. A partitioned WDM grating topology is also described which removes the frequency and beat noise limits, and results are presented for the ultimate capacity of grating true-time-delay beam-formers.



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Optical beamforming network based on chirped fiber gratings continuously variable true-time-delay lines

J.L. Corral, J. Marti and J.M. Fuster. "Optical beamforming network based on chirped fiber gratings continuously variable true-time-delay lines." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1379-1382.

A novel approach of true-time delay optical feeder for phased-array antennas is proposed and demonstrated. A compact size continuously variable true time delay unit is achieved by employing a reduced tuning-range tunable laser and one wide bandwidth chirped fiber grating as dispersive element. The dispersion-induced distortion and bandwidth limitation have been studied and two different optical modulation schemes (AM, SSB+C) have been considered and measured, proving to solve the mentioned effects. A high resolution performance (5.3 ps) is obtained employing narrow tuning bandwidth lasers with a wavelength stability of 0.005 nm and a 4 nm bandwidth chirped grating.

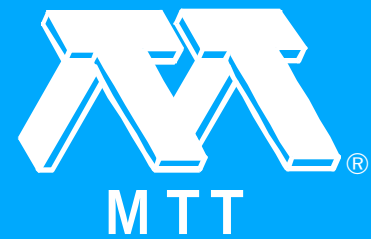


Abstracts

All-optically controlled beam-scanning array for antenna remoting applications

W.R. Deal, T. Jung, M.C. Wu and T. Itoh. "All-optically controlled beam-scanning array for antenna remoting applications." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1383-1386.

In this work, a beam-scanning array for antenna remoting via an optical link is presented. Optical control over the main beam is accomplished through the use of a photosensitive resonator. Experimental data shows a total scan angle up to 36/spl deg/ can be achieved with this optical technique.



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Abstracts

Microwave phase conjugation using optically interconnected phased arrays

Yian Chang, H.R. Fetterman, I.L. Newberg and S.K. Panaretos. "Microwave phase conjugation using optically interconnected phased arrays." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1387-1390.

A new technique has been developed to achieve phase conjugation in the microwave and millimeter wave regime. Using optically interconnected microwave mixing circuits in conjunction with one-dimensional array antennas, two-dimensional free space phase conjugation at 10.24 GHz has been observed and verified by directly measuring the electric field amplitude and phase distribution under various conditions.



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Abstracts

Formulation of a Haar-wavelet-based multi-resolution analysis similar to the 3-D FDTD method

M. Fujii and W.J.R. Hoefer. "Formulation of a Haar-wavelet-based multi-resolution analysis similar to the 3-D FDTD method." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1393-1396.

A 3-D multi-resolution analysis procedure similar to the FDTD method is derived using Haar-wavelets. The method is validated by analyzing several 3-D rectangular resonators with inhomogeneous dielectric loading. It is also applied to the analyses of microstrip low pass filters with open boundaries, and their S-parameters are extracted. The results are compared with those of the traditional FDTD method.



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Abstracts

Nonlinear circuit characterization using a multiresolution time domain technique (MRTD)

L. Roselli, E.M. Tentzeris and L.P.B. Kateh. "Nonlinear circuit characterization using a multiresolution time domain technique (MRTD)." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1397-1400.

The MRTD scheme is applied to the modeling of nonlinear circuits. Specifically, the implementation of passive and active elements is discussed. The results are compared to those obtained by use of the commercial CADs to indicate considerable savings in memory and computational time.



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Abstracts

Time domain characterization of coupled electromagnetic/thermal phenomena for material processing

M. Righi, J.L. Herring and W.J.R. Hoefer. "Time domain characterization of coupled electromagnetic/thermal phenomena for material processing." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1401-1404.

A time domain model based on the Transmission Line Matrix (TLM) method for the RF drying of wood in a vacuum kiln is presented. The model is capable of addressing critical issues for the material processing industry such as drying time, penetration of the electromagnetic field into the material and evaluation of critical location where arcing may occur. The control and optimization of all of these variables leads to a highly efficient drying process yielding dry wood faster and with a higher quality compared to traditional convection drying. In addition the modeling of mass transfer and heat diffusion processes allows us to monitor temperature and moisture pressure in the wood sample so that critical values are not exceeded.



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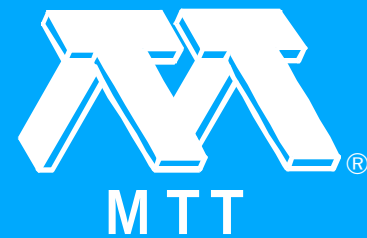


Abstracts

A fully integrated multiconductor model for TLM (1998 Vol. III [MWSYM])

A. Wlodarczyk, V. Trenkic, R. Scaramuzza and C. Christopoulos. "A fully integrated multiconductor model for TLM (1998 Vol. III [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1405-1408.

A fully integrated model of coupling between the electromagnetic field and multiconductor cabling is developed using the transmission line matrix (TLM) method. In this model, the multiconductor cables are represented by multiconductor transmission lines which connect to the general TLM mesh.



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Abstracts

A systematic approach to the problem of equivalent circuit model generation

T. Mangold and P. Russer. "A systematic approach to the problem of equivalent circuit model generation." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1409-1412.

We present a general method for the generation of lumped element equivalent circuits for linear passive reciprocal distributed microwave circuits from time domain scattering parameters. The method was applied to model a Wilkinson power divider. The applicability of the generated circuit model in transient network simulation is demonstrated.



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Analysis of MQW and anisotropic guided wave structures using a full-wave 2D TLM-based FD-TD method

Zhizhang Chen, Man Leung Lui, P. Berini and Ke Wu. "Analysis of MQW and anisotropic guided wave structures using a full-wave 2D TLM-based FD-TD method." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1413-1416.

A 2D full-wave TLM (transmission-line-matrix) technique was reported before for the analysis of arbitrarily shaped guided wave structures. However, the computations involve the operations on the third spatial step Δz . In this paper, another 2D full-wave TLM-based method is presented where no third spatial dimension operations are required at all. The method is derived by assuming the field variation of $e^{-j\beta z}$ along the z -direction (the propagation direction) in the 3D TLM based finite-difference time-domain (FD-TD) method. As a result, a truly two-dimensional scheme is developed with both electric and magnetic components condensed at every numerical grid point. The method was applied to a microstrip line deposited on an anisotropic substrate and a multiple quantum well (MQW) structure where the dielectric constant of the MQW substrate varies with spatial positions. The numerical results agree well with the results obtained from other techniques, and therefore validate the effectiveness of the 2D technique based on the TLM principle.

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Abstracts

Partially prism-gridded FDTD analysis for layered structures of transversely curved boundary

Chieh-Tsao Hwang and Ruey-Beei Wu. "Partially prism-gridded FDTD analysis for layered structures of transversely curved boundary." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1417-1420.

A partially prism-gridded FDTD analysis is presented to deal with layered structures with curved boundary in transverse directions. It is applied to calculate the scattering parameters of vias in multilayer packaging. The good agreement of the results with those by other methods verifies the accuracy of this analysis.



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Abstracts

A modified feed-forward technique for mixer linearization

T.J. Ellis. "A modified feed-forward technique for mixer linearization." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1423-1426.

The technique of feed-forward correction for increased linearity is commonly used in amplifier design, especially in commercial cellular systems where there are strict requirements on intermodulation performance for multi-carrier signals. This paper introduces a modified version of the original feed-forward concept that can be applied to mixer design. A 2 GHz mixer designed and fabricated using this new technique showed a 33 dB reduction in the intermodulation products when the feed-forward system was activated. With the same levels of feed-forward performance common in today's amplifiers, this technique can be used to significantly lower the intermodulation products of a mixer.



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A new FET frequency multiplier

M. Jonsson, H. Zirath and K. Yhland. "A new FET frequency multiplier." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1427-1430.

A new FET frequency multiplier is presented. The FET multiplier works in a similar way as a resistive mixer. The FET can be operated either as a series or a parallel switch. The multiplier has essentially no DC power dissipation and its stability properties are good, since the drain-to-source bias-voltage is zero. The multiplier is insensitive to device parameter variations. Different configurations are analysed. The preliminary measurements show a conversion loss of 4.5 dB. The authors believe that the conversion efficiency can be further improved.

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Distributed broadband frequency translator

P. Akkaraekthalin, S. Kee and D.W. Van Der Weide. "Distributed broadband frequency translator." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1431-1434.

We present the first frequency translator based on a nonlinear transmission line (NLTL) phase shifter. Rather than excite shock waves on the NLTL in large signal mode, we use its voltage-variable delay to modulate the phase of a 0.5-3.0 GHz microwave signal, incorporating both amplitude and phase linearization. This enables coherent heterodyning with 42 dBc carrier and spurious suppression. The technique has significant applications in both instrumentation and sensing.

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A compact subharmonically pumped MMIC self oscillating mixer for 77 GHz applications

M.J. Roberts, S. Iezekiel and C.M. Snowden. "A compact subharmonically pumped MMIC self oscillating mixer for 77 GHz applications." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1435-1438.

A novel 77 GHz MMIC self oscillating mixer is presented with measured results. The mixer achieves mixing and doubling simultaneously using a single pHEMT. The mixer exhibits a measured conversion loss of 12 dB at 77 GHz and an average measured conversion loss of 15 dB from 70 to 85 GHz which compares well with simulated results.

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Abstracts

Low cost coplanar 77 GHz single-balanced mixer using ion-implanted GaAs Schottky diodes

R. Shimon, D. Caruth, J. Middleton, H. Hsia, M. Feng, J. Mondal and S. Moghe. "Low cost coplanar 77 GHz single-balanced mixer using ion-implanted GaAs Schottky diodes." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1439-1442.

A W-band single-balanced mixer and W-band LO amplifier, suitable for automotive collision-avoidance radar, have been designed and fabricated using a 0.18 μm direct ion-implanted GaAs MESFET process developed at the University of Illinois at Urbana-Champaign. As a downconverter with an LO frequency of 77 GHz and an RF frequency of 77.1 GHz, the coplanar rat-race mixer achieves a conversion loss of 14.7 dB at an LO power of +3.5 dBm. The coplanar LO amplifier exhibits 5 dB of gain over a 4 GHz bandwidth centered at 77 GHz.



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A millimeter-wave broadband monolithic even harmonic image rejection mixer

K. Kawakami, M. Shimozawa, H. Ikematsu, K. Itoh, Y. Isota and O. Ishida. "A millimeter-wave broadband monolithic even harmonic image rejection mixer." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1443-1446.

This paper describes a millimeter-wave broadband monolithic even harmonic image rejection mixer with a ring connected anti-parallel diode pair. This mixer employs an even harmonic mixer with a ring connected anti-parallel diode pair to reduce the LO leakage. Also it employs the balanced type mixer with the Marchand balun to broaden the frequency range. Furthermore, the configuration of the image rejection mixer can suppress the image components. The chip size of the developed millimeter-wave broadband monolithic mixer is 1.2 mm/spl times/2.9 mm on a GaAs substrate. Conversion loss is less than 15.9 dB and image rejection ratio is more than 12.5 dB from 24 to 44 GHz. Broadband characteristics can be achieved by the proposed configuration.

Click on title for a complete paper.



Microwave regenerative dividers with low phase noise

E.S. Ferre-Pikal and F.L. Walls. "Microwave regenerative dividers with low phase noise." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1447-1450.

We demonstrate regenerative divide-by-two (halver) circuits with very low phase modulation (PM) noise at input frequencies of 18.4 GHz and 39.8 GHz. The PM noise of the 18.4 to 9.2 GHz divider pair was $/\text{spl Lscr}/(10 \text{ Hz}) = -134 \text{ dB}$ below the carrier in a 1 Hz bandwidth (dBc/Hz) and $/\text{spl Lscr}/(10 \text{ MHz}) = -166 \text{ dBc/Hz}$, and the PM noise of the 39.8 GHz to 19.9 GHz divider pair was $/\text{spl Lscr}/(10 \text{ Hz}) = -122 \text{ dBc/Hz}$ and $/\text{spl Lscr}/(10 \text{ MHz}) = -167 \text{ dBc/Hz}$.





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A Ka-band monolithic quasi-optic amplifier

E.A. Sovero, J.B. Hacker, J.A. Higgins, D.S. Deakin and A.L. Sailer. "A Ka-band monolithic quasi-optic amplifier." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1453-1456.

Recent advances in the development of a Ka-band quasi-optic amplifier are reported. The amplifier consists of a two-dimensional array of PHEMT power amplifiers, each of which is coupled to individual input and output slot antennas. The array of 112 amplifiers (49 mm total gate periphery) is organized into pairs operating in push-pull between a 7/spl times/8 array of input slots and an 8/spl times/8 array of orthogonal output slots. The total chip size is 12.8 mm by 13.4 mm and has a thickness of 75 /spl mu/m. It is fabricated with standard MMIC processing techniques. The amplifier provided gain from 37.5 GHz to 39.5 GHz with a peak gain approaching 9 dB at 38.6 GHz. The maximum measured output power is 29 dBm.

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20 watt spatial power combiner in waveguide

Nai-Shuo Cheng, A. Alexanian, M.G. Case and R.A. York. "20 watt spatial power combiner in waveguide." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1457-1460.

In this paper, we present the continued effort in the development of broadband waveguide-based spatial combiners. A 20 W result at X-band is reported. The combiner was implemented by using eight commercial GaAs MMIC amplifiers in a rectangular waveguide environment. A new combiner design is proposed to alleviate, if not eliminate, various technical problems and further improve the power performance. Resulting simplification in analysis also enable us to better characterize the combining circuits. The preliminary result suggests promising outlook in performance improvement.

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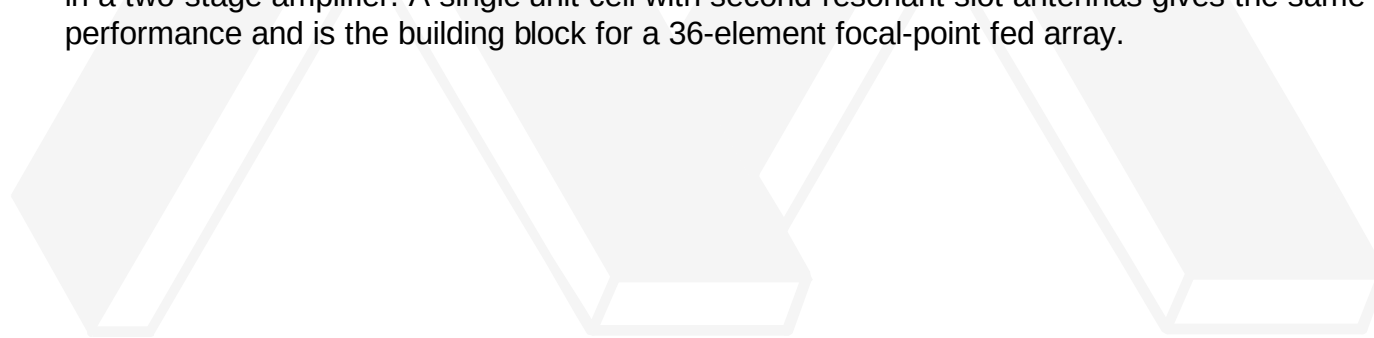
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A 10-GHz high-efficiency lens amplifier array

E.W. Bryerton, M.D. Weiss and Z. Popovic. "A 10-GHz high-efficiency lens amplifier array." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1461-1464.

The design of a 36-element quasi-optical amplifier for high-power and high-efficiency transmission at 10 GHz is presented. The following steps are taken in the design procedure: (1) design and characterization of a single high-efficiency CPW amplifier; (2) comparison to a saturated class-A amplifier; (3) design of a driver stage and testing of a two-stage CPW amplifier; (4) design of antennas and passive unit cell; (5) testing of active unit cell; (6) testing of passive lens array; and (7) construction and testing of active lens amplifier array. This systematic procedure enables us to ensure stability, calibrate properly, and measure power-combining efficiency as a function of the number of elements. A high-efficiency amplifier with 275 mW of output power, 48% power-added efficiency, and 6.4 dB saturated gain at 10.1 GHz gives 200 mW output power, 35% power-added efficiency, and 13 dB of saturated power gain in a two-stage amplifier. A single unit cell with second-resonant slot antennas gives the same performance and is the building block for a 36-element focal-point fed array.



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A CPW fed microstrip patch quasi-optical amplifier array

S. Ortiz, T. Ivanov and A. Mortazawi. "A CPW fed microstrip patch quasi-optical amplifier array." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1465-1468.

A CPW fed microstrip patch quasi-optical power combining amplifier array is introduced. The amplifier array uses CPW fed patches for both input and output antennas. This structure is not only compatible with MMIC implementations but can also provide a greater bandwidth for the patch antennas. A 4/spl times/4 amplifier array was designed and fabricated at X-band. Theoretical and experimental results are presented.

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Abstracts

Analysis and measurement of hard horn feeds for the excitation of quasi-optical amplifiers

M.A. Ali, S. Ortiz, T. Ivanov and A. Mortazawi. "Analysis and measurement of hard horn feeds for the excitation of quasi-optical amplifiers." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1469-1472.

Measurement and analysis of hard horn feeds for excitation of quasi-optical amplifiers has been performed. A computer program based on the mode matching technique has been developed in order to determine the aperture field distribution for pyramidal hard horns. This program can be used to optimize a hard horn's field distribution and bandwidth. Simulation and measurement results for a 31 GHz hard horn feed are presented.



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Abstracts

An integrated electromagnetic and nonlinear circuit simulation environment for spatial power combining systems

M.A. Summers, C.E. Christoffersen, A.I. Khalil, S. Nakazawa, T.W. Nutesont, M.B. Steer and J.W. Mink. "An integrated electromagnetic and nonlinear circuit simulation environment for spatial power combining systems." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1473-1476.

An integrated electromagnetic and circuit simulation environment is developed for the simulation of spatial power combining systems. The analysis incorporates surface modes, nonuniform excitation and full nonlinear effects. The simulation tools are used to predict the performance of a 2 by 2 quasi-optical grid amplifier.



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W-band on-wafer load-pull measurement system and its application to HEMT characterization

E. Alekseev, D. Pavlidis and C. Tsironis. "W-band on-wafer load-pull measurement system and its application to HEMT characterization." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1479-1482.

An on-wafer large-signal characterization system has been developed for W-band frequency applications. The system is computer-controlled and employs a high-precision electromechanical W-band tuner. Its application to obtaining constant output power and gain contours as well as power saturation characteristics of submicron InP-based HEMTs is demonstrated at 77 GHz and 102 GHz.



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Characterization of W-band MMIC power amplifier using on-wafer pulsed power test

D.C. Yang, J.M. Yang, H. Wiang and P. Huang. "Characterization of W-band MMIC power amplifier using on-wafer pulsed power test." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1483-1486.

A facile technique based on pulsed power test has been developed to characterize W-band MMIC power amplifiers and optimize their gain and PAE (power added efficiency) on-wafer. By suppressing thermal effects usually associated with conventional on-wafer tests, the pulsed power technique makes it possible to not only establish device binning criteria but also eliminate in-module bias tuning. It thus provides significant cost savings in volume production environments.

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Accuracy of lumped-element calibrations for four-sampler vector network analyzers

R.B. Marks, J.A. Jargon and D.K. Rytting. "Accuracy of lumped-element calibrations for four-sampler vector network analyzers." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1487-1490.

Several lumped-element calibrations have been proposed for four-sampler vector network analyzers. This paper offers the first assessment of their accuracy in the face of imperfectly defined standards. We discover significant error and introduce a new calibration that offers demonstrably improved accuracy.

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Complete 3-port measurement of microwave mixers using a non-linear vectorial network analyser

Y. Rolain, P. Vael, W. Van Nioer and A. Barel. "Complete 3-port measurement of microwave mixers using a non-linear vectorial network analyser." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1491-1494.

The microwave vectorial network analyser for nonlinear devices has been extended to allow full 3-port calibrated characterisation of microwave devices with 2-ports operating up to 50 GHz and 1 port up to 4 MHz. The new setup uses 6 synchronised digitizers to simultaneously measure the incident and reflected waves impinging the device, both in amplitude and phase. Measurements of the complex spectra of the conversion products of a mixer excited by a variable power LO at 4 GHz and IF at 1 MHz are proposed.

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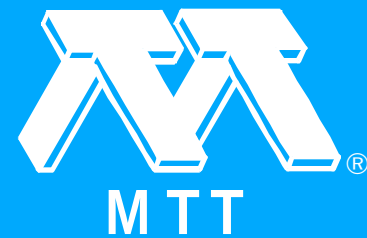


Abstracts

Measuring transistor dynamic load lines and breakdown currents under large-signal high-frequency operating conditions

J. Verspecht and D. Schreurs. "Measuring transistor dynamic load lines and breakdown currents under large-signal high-frequency operating conditions." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1495-1498.

The "Nonlinear Network Measurement System" accurately measures dynamic loadlines and breakdown currents of microwave transistors under high-frequency large-signal operating conditions. This measurement capability allows the designer to find optimal operating conditions for a given device without the need for large-signal models. Measuring RF breakdown currents allows the designer to tackle reliability issues in a way not possible before.



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A microwave multisine with known phase for the calibration of narrowbanded nonlinear vectorial network analyzer measurements

A. Barel and Y. Rolain. "A microwave multisine with known phase for the calibration of narrowbanded nonlinear vectorial network analyzer measurements." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1499-1502.

A method is proposed to generate an RF multi-tone (up to 10 GHz) calibration signal with a very narrow harmonic spacing (down to 100 KHz) and a known phase relation between tones. This signal is requested for the phase calibration of a nonlinear vectorial network analyzer on a dense grid, as occurs when modulated signals are measured. The phase relation is traceable to a nose-to-nose calibrated microwave sampling oscilloscope.



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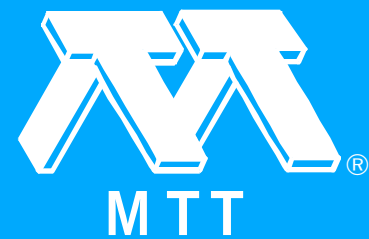
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A single six-port based automated network analyzer

S. Khouaja and F.M. Ghannouchi. "A single six-port based automated network analyzer." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1503-1506.

A single six-port automated network analyzer (SPANNA) is developed built and tested over UHF, L and S band. The SPANNA includes a six-port junction operated as two differential channels receiver, and a test set which comprises a network of switches and directional couplers. By comparison to previous developed six-port based network analyzers, the SPANNA uses only one single six-port junction and can perform simultaneous power and S parameter measurements with adjusted test-port impedances.

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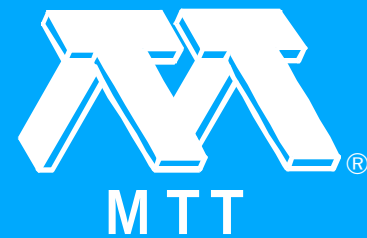


Abstracts

Broadband millimeter-wave fiber-radio network incorporating remote up/downconversion

G.H. Smith and D. Novak. "Broadband millimeter-wave fiber-radio network incorporating remote up/downconversion." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1509-1512.

A high capacity full-duplex millimeter-wave fiber-radio network which incorporates remote up and downconversion is demonstrated. This technique minimizes fiber dispersion-induced phase noise, allowing higher-order modulation formats to be incorporated which increase network capacity and spectral efficiency. Remote up and downconversion also enables lower cost components to be employed throughout the network.



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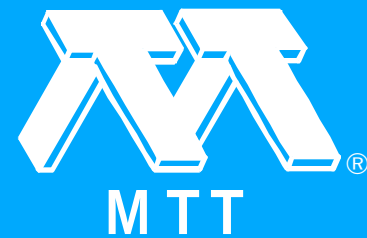


Abstracts

A wireless LAN at 60 GHz - novel system design and transmission experiments

K. Kojucharow, H. Kaluzni, M. Sauer and W. Nowak. "A wireless LAN at 60 GHz - novel system design and transmission experiments." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1513-1516.

A novel system design for a wireless LAN simplifying the base station and transponder complexity is proposed. It advantageously uses the WDM technology for simultaneous modulation of optical carriers with a master oscillator signal. Transmission experiments under realistic conditions prove the concept by achieving BER<10⁻⁹ at 50 MBit/s.



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Intrinsic microwave phase noise of fiber-optic links

P.J. Matthews and R.D. Esman. "Intrinsic microwave phase noise of fiber-optic links." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1517-1520.

Measurements of the residual, single-sideband microwave phase noise added by a fiber-optic link are presented. The measurements are made without the use of RF amplifiers and therefore show the true residual phase noise of the link for the first time. Measurements of 1.3 /spl mu/m and 1.55 /spl mu/m externally-modulated links indicate a very low residual phase noise.

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Photonic remoting of the receiver of an ultra-high dynamic range radar

J.E. Roman, L.T. Nichols, K.J. Williams, R.D. Esman, G.C. Tavik, M. Livingston and M.G. Parent. "Photonic remoting of the receiver of an ultra-high dynamic range radar." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1521-1524.

Fiber optic links have been designed and built to remote the antenna of a radar with ultra-high dynamic range, the AN/SPQ-9B ADM. The links tested successfully in receive configuration without significantly degrading the radar's 83 dB SNR. These results demonstrate that photonic technology can meet the phase noise requirements for remoting modern radars.

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Abstracts

New carrier generation approach for fiber-radio systems to overcome chromatic dispersion problems

A. Hilt, A. Vilcot, T. Berceli, T. Marozsak and B. Cabon. "New carrier generation approach for fiber-radio systems to overcome chromatic dispersion problems." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1525-1528.

A new approach for the generation of millimeter wave (MMW) carriers in fiber-radio systems is presented. A subharmonic of the carrier is transmitted to the radio nodes over the fiber-optic network. At each base station the MMW carriers are generated by a phase locked oscillator (PLO) using harmonic mixing technique. Due to the subharmonic reference transmission, chromatic dispersion in the optical path is avoided. Further advantage is the inherent possibility of channel selection to avoid radio interference between adjacent transmitters.



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Compensation of fiber dispersion in an optical mm-wave system in the 60 GHz-band

C.G. Schaffer, F.H. Lubeck, R.-P. Braun, G. Grosskopf and F. Schmidt. "Compensation of fiber dispersion in an optical mm-wave system in the 60 GHz-band." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1529-1532.

In a 60 GHz fiber optic microwave transmission system the fiber dispersion of the link is compensated with a length adjustment in the dual wavelength source. The required precision of the length differences lies in the cm-range.

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Propagation in a circular waveguide periodically loaded with dielectric disks

S. Amari, R. Vahldieck, J. Bornemann and P. Leuchtman. "Propagation in a circular waveguide periodically loaded with dielectric disks." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1535-1538.

The propagation properties of angular independent modes in a circular waveguide periodically loaded with thick dielectric disks were accurately determined using the Coupled-Integral-Equation Technique (CIET). The propagation constants of the Floquet modes are determined from the classical eigenvalues of square matrix thereby considerably reducing CPU times. The approach allows efficient determination of propagating, evanescent as well as complex modes in this type of structures.

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High-Q rectangular cavities and waveguide filters using periodic metalo-dielectric slabs

H. Contopanagos, N.G. Alexopoulos and E. Yablonovitch. "High-Q rectangular cavities and waveguide filters using periodic metalo-dielectric slabs." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1539-1542.

We obtain the exact solution of Maxwell's equations for the fields in rectangular waveguide or cavity loaded with metalo-dielectric slabs of arbitrary thicknesses and permittivities, placed periodically along the longitudinal direction. For cavity applications, we find significant Q-factor enhancements in the microwave regime, relative to cavities made of bulk conductor walls. For waveguide filters, the system allows frequency multiplexing with very competitive filter lengths.

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Abstracts

MOL-mode analysis with precise resolution by an enhanced and generalized line algorithm

R. Pregla. "MOL-mode analysis with precise resolution by an enhanced and generalized line algorithm." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1543-1546.

A new algorithm based on the Method of Lines for computation of eigenmodes in waveguides for microwave and millimeter frequencies is proposed and substantiated. The algorithm uses discretization lines in different directions and in some regions of the guide cross-section in two perpendicular directions. This enables a precise computation of the fields and propagation parameters. The algorithm allows analysis of complex waveguide structures.



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Analysis of MMIC junctions and multiports by the method of lines

L. Vietzorreck and R. Pregla. "Analysis of MMIC junctions and multiports by the method of lines." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1547-1550.

The approach based on the method of lines for the analysis of cascaded MMIC elements is substantially extended for investigations of 4-port components. Instead of a three-dimensional discretization, two crossed two-dimensional discretization line systems are employed for the modeling of the central region. S-parameters of various multiports, T-junctions and crossings containing air-bridges, are calculated.



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Mesh grading and cutoff frequencies in the frequency-domain TLM method

J. Hesselbarth and R. Vahldieck. "Mesh grading and cutoff frequencies in the frequency-domain TLM method." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1551-1554.

The Frequency-Domain Transmission Line Matrix (FDTLM) method is extended to the calculation of cutoff frequencies in waveguides. The influence of mesh grading on the accuracy of the solutions is analyzed for different kinds of nodes, showing clear differences in numerical dispersion between them. Analytical solutions give further insight into the behaviour of the FDTLM method.

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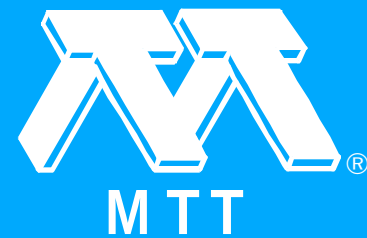


Abstracts

A full-wave approach to the modeling of discontinuities of real conductors in planar lossy lines for MMIC applications

M. Farina and T. Rozzi. "A full-wave approach to the modeling of discontinuities of real conductors in planar lossy lines for MMIC applications." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1555-1558.

We present a full-wave approach to the analysis of discontinuities of real conductors in planar lines, where conductor losses, as well as their finite thickness, are rigorously taken into account. The computational load is quite independent of the number of the dielectric layers composing the substrate, making the model particularly suitable to the analysis of discontinuities in MMIC circuits.



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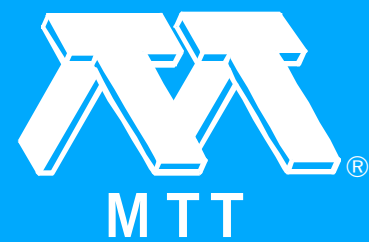
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An impedance matrix transformation for planar circuit integral equation solvers

F. Cervelli, M. Mongiardo and L. Tarricone. "An impedance matrix transformation for planar circuit integral equation solvers." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1559-1562.

We describe an efficient analysis of planar circuits which makes use of a state-of-the-art integral equation approach in conjunction with a new bandwidth reduction algorithm. The MPIE (mixed-potential integral equation) is formulated by considering the recently introduced closed form expressions for the Green's functions; standard roof-top basis functions are used during the discretization of the Method of Moments. The matrix sparseness introduced by a thresholding procedure has proven sufficient for the application of an effective bandwidth reduction algorithm which yields, in all the considered cases, a significant reduction of computer effort (maximum speed-ups of about 18 times).

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Abstracts

A simplified MPIE analysis for planar circuits with N-fold rotational symmetry and lumped elements

Yung-Jinn Chen, Yi-Hsin Pang and Ruey-Beei Wu. "A simplified MPIE analysis for planar circuits with N-fold rotational symmetry and lumped elements." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1563-1566.

By applying the idea of discrete Fourier transform to exploit the structural rotational symmetry, a simplified MPIE full wave analysis is proposed to handle planar circuits with lumped elements. Applications to a symmetrical five-port circuit and power combiner demonstrate the numerical efficiency and accuracy of this technique.



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Micromechanical electrostatic K-band switches

S. Pacheco, C.T. Nguyen and L.P.B. Katehi. "Micromechanical electrostatic K-band switches." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1569-1572.

Two novel designs of micromechanical capacitive switches using serpentine and cantilever springs for low actuation voltage applications are reported. Both designs also incorporate an electrode situated above the switching structure in order to provide system stability. DC measurements indicate pull-in voltages of 14 and 16 V, with RF isolation of better than -30 dB up to 40 GHz.

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An MMIC active phase shifter using a variable resonant circuit

K. Hayashi and M. Muraguchi. "An MMIC active phase shifter using a variable resonant circuit." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1573-1576.

An MMIC active phase shifter using a variable resonant circuit is described. Phase can be changed with a constant amplitude by varying the resonant circuit's reactance. More than 100/spl deg/ phase shift and -4/spl plusmn/1-dB insertion loss was obtained from 2.2 GHz to 2.8 GHz. The chip size is less than 1.0 mm/sup 2/.

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Digital vector control chip set at Q band for communication phased array

M. Lajugie, H. Brouzes and F. Villain. "Digital vector control chip set at Q band for communication phased array." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1577-1580.

Two chips have been developed for vector control at Q band. The five bit-360/spl deg/ MMIC true phase shifter and the six bit -32 dB attenuator have been manufactured and tested in 0.25 /spl mu/m P-HEMT (UMS, PH25 Process). Maximum measured errors on single bits are 4/spl deg//2 dB. Combined insertion loss stays below 15 dB. Communication phased array system are made possible using such MMICs.

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An analogue frequency-division approach for subharmonic generation in microwave VCOs

Xiangdong Zhang and I. Gresham. "An analogue frequency-division approach for subharmonic generation in microwave VCOs." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1581-1584.

An effective and simple technique for frequency division is introduced to generate subharmonic signal in wireless VCO circuits, thus eliminating the need for expensive digital prescalers. In this approach, frequency division is realised by injection locking an RC oscillator (multivibrator) at microwave frequencies. This technique is compact efficient and MMIC compatible. The feasibility of this approach was demonstrated using a GaAs HBT RC oscillator driven by a HBT MMIC VCO operating at 4 GHz. The RC oscillator can be effectively injection locked without observable additive phase-noise degradation and generates a subharmonic clock signal at 250 MHz, corresponding to a division ratio (N) of 16. The division ratio can be varied by changing the frequency of the RC oscillator. Nonlinear simulation results and analysis are also presented to explain the operating mechanism.

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Subharmonically injection locked 94 GHz MMIC HEMT oscillator using coplanar technology

S. Kudszus, W.H. Haydl, M. Neumann, A. Bangert and A. Hulsmann. "Subharmonically injection locked 94 GHz MMIC HEMT oscillator using coplanar technology." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1585-1588.

A coplanar subharmonically injection locked VCO for 94 GHz with a tuning range of 4.5 GHz was developed, using 0.15 μm AlGaAs-InGaAs-GaAs PM-HEMTs. A phase noise of -71 dBc/Hz at 1 MHz offset from the carrier was measured for the unlocked VCO. Using 3rd/subharmonic injection locking, a phase noise of -106 dBc/Hz at 1 MHz offset (-91 dBc/Hz at 100 KHz offset) for the locked VCO with a locking range of 1 GHz was achieved.

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Abstracts

The dielectric resonator power combiner oscillator: a new design for micro- or millimeter-wave development

A.A. Sayyah and D.W. Griffin. "The dielectric resonator power combiner oscillator: a new design for micro- or millimeter-wave development." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1589-1592.

Field effect type transistor oscillators are formed on the surface of a shielded rectangular dielectric resonator and synchronised via the dielectric LSM-mode resonance. Their combined outputs are coupled via a monolithic-compatible structure into a standard output line or guide. Measured DC-to-RF conversion efficiencies up to 35% validate the new concepts and design method.



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Abstracts

A method for computing adjacent-channel spectral energy in cellular power amplifiers

S. Pinsky. "A method for computing adjacent-channel spectral energy in cellular power amplifiers." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1595-1598.

The requirements for energy efficiency in cellular RF power amplifiers necessitate their operation in regions of significant nonlinear distortion, with a resultant regrowth of undesired adjacent-channel spectral products that must be maintained within specified limits. This paper presents a method for predicting adjacent-channel spectral regrowth based on single-tone distortion curves that are easily measured in the laboratory and readily simulated in SPICE. The method affords a practical approach to predicting adjacent-channel power that has proven very useful for designing power amplifiers for cellular service under the IS-54 standard.



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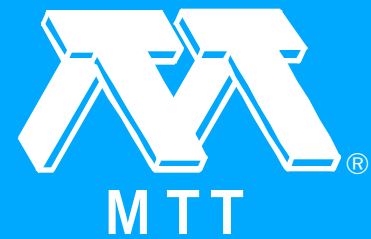


Abstracts

Signal and noise analysis of large microwave front-ends by the inexact-Newton harmonic-balance technique

V. Rizzoli, F. Matri and C. Cecchetti. "Signal and noise analysis of large microwave front-ends by the inexact-Newton harmonic-balance technique." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1599-1602.

The analysis of complex front-ends containing many nonlinear devices and supporting signal waveforms with many spectral components can be efficiently handled by the harmonic-balance technique coupled with Krylov-subspace methods. The paper extends this approach to the computation of the front-end noise figure in the presence of a strong interfering signal.



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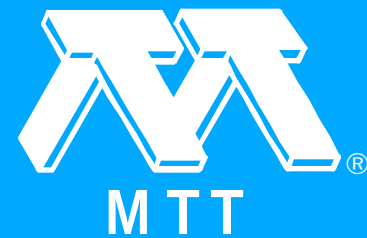


Abstracts

A nonlinear model of the power MESFET including temperature and breakdown effects

V. Rizzoli, A. Costanzo, C. Cecchetti and A. Chiarini. "A nonlinear model of the power MESFET including temperature and breakdown effects." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1603-1606.

The paper discusses a new large-signal MESFET model based on DC, S-parameter and nonlinear measurements. Physical constraints incorporated in the constitutive relations guarantee the model consistency in large-signal operation and improve the reliability of the parameter extraction process. Forward and reverse (breakdown) gate conduction effects are modeled from nonlinear data. Extensive comparisons with experimental results are presented.



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A simplified large-signal HBT model for RF circuit design

Ke Lu, Xiangdong Zhang and G.N. Henderson. "A simplified large-signal HBT model for RF circuit design." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1607-1610.

A simplified version of UCD HBT model has been presented in this paper. Two nonlinear resistors in UCD model are replaced by linear resistors. Three new nodes are added to the model which allows one to model the thermal interaction between emitter fingers in a multi-cell power HBT. A scaling factor is also included. All model parameters can be extracted by a group of standard DC and small-signal S-parameters measurements. Large-signal measurement results, such as power-sweep and intermodulation at several different bias points are used to verify the new model. The agreement between simulated and measured results is excellent.

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Abstracts

Effect of input harmonic terminations on high efficiency class-B and class-F operation of PHEMT devices

P.M. White. "Effect of input harmonic terminations on high efficiency class-B and class-F operation of PHEMT devices." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1611-1614.

Device level harmonic balance simulations are used to show that very high efficiency can be achieved in PHEMT class-B and class-F amplifiers if efforts are made to provide proper input as well as output harmonic terminations. The simulations use a gate capacitance model which accurately describes the C_{gs} versus V_{gs} dependence for the PHEMT and are illustrated with waveform and dynamic loadline plots which relate directly to the idealized textbook view of high efficiency operation.



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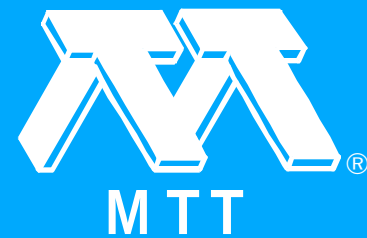


Abstracts

Sample-balance analysis of nonlinear autonomous circuits

P.J.C. Rodrigues and D. Mendes, Jr.. "Sample-balance analysis of nonlinear autonomous circuits." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1615-1618.

This paper presents a robust approach for the analysis of nonlinear microwave autonomous circuits. A new formulation of the Sample-Balance (SB) equation for autonomous circuits completely suppresses the undesirable degenerate (DC) solution. Three techniques are combined to solve the SB equation: "signal synchronization", "harmonic stepping", and pseudo arc-length continuation. An example illustrates the excellent convergence properties obtained.



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A novel distortion analysis method for amplifiers considering frequency characteristics

K. Horiguchi, K. Yamauchi, K. Mori, M. Nakayama and T. Takagi. "A novel distortion analysis method for amplifiers considering frequency characteristics." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1619-1622.

This paper proposed a novel distortion analysis method for amplifiers considering frequency characteristics. In this method, a frequency-dependent nonlinear amplifier is represented with a model, which consists of a frequency-independent nonlinear amplifier and input/output filters. Time-domain analysis using a single-carrier method, which uses single-carrier amplitude and phase distortion of an amplifier, is carried out for the frequency-independent amplifier, and frequency-domain analysis is applied to the filters. We calculate the third-order intermodulation of a GaAs MESFET amplifier with this method and the harmonic balance method. The results are in good agreement.

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Improvements on a GaAs MESFET model for nonlinear RF simulations

F. Ellinger, J. Kucera and W. Baechtold. "Improvements on a GaAs MESFET model for nonlinear RF simulations." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1623-1626.

A modified GaAs MESFET-model has been developed to improve accuracy over a large bias range, particularly within the linear region. The enhancements consist of a modified Statz equation for the gate charge to improve the modeling of the gate drain capacitance, and an equation for the bias dependent drain source resistance for exact modeling of the dispersive output conductance.

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A simple and systematic method for the design of tapered nonlinear transmission lines

A. Jrad, P. Ferrari, C. Fuchs, A. Dominjon, J.W. Tao, B. Flechet and G. Angenieux. "A simple and systematic method for the design of tapered nonlinear transmission lines." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1627-1630.

In this paper, we present an original method, simple to implement, rapid and systematic for the conception of Nonlinear Transmission Lines (NLTL) for shock wave generation. This method is based on SPICE simulations and allows the synthesis of hybrid or monolithic NLTLs.

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Abstracts

Improved analytical analysis of noise figures in HEMT mixers

Won Ko and Youngwoo Kwon. "Improved analytical analysis of noise figures in HEMT mixers." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1631-1634.

An analytical analysis of noise figures in HEMT mixers is presented. Improved method was developed to evaluate the noise correlation. A simplified analytical expression for noise figure of HEMT mixer was also derived. The contribution of each noise source at various frequencies was represented in a phasor form to permit physical understanding of noise mechanism. The modeled noise figure was compared with the measured data, yielding a good agreement.



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Characterizing the gate to source nonlinear capacitor role on FET IMD performance

J.A. Garcia, A. Mediavilla, J.C. Pedro, N.B. Carvalho, A. Tazon and J.L. Garcia.

"Characterizing the gate to source nonlinear capacitor role on FET IMD performance." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1635-1638.

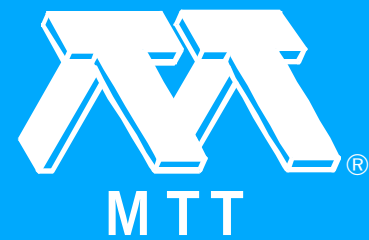
This paper discusses the gate to source nonlinear capacitor contribution on small signal intermodulation distortion (IMD) performance of FET devices. The second and third order coefficients for the $C_{gs}(V_{gs})$ Taylor-series expansion, experimentally extracted with a simplified one-sided version of our previously proposed test set-up, are shown to be responsible for some detected differences on IMD behaviour at high frequencies.

Abstracts

A fully-distributed heterostructure-barrier-varactor nonlinear-transmission-line frequency tripler

Ming Li and R.G. Harrison. "A fully-distributed heterostructure-barrier-varactor nonlinear-transmission-line frequency tripler." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1639-1642.

The discrete symmetric heterostructure barrier varactor (HBV) was previously developed as an unbiased frequency-tripling device that needed no second-harmonic idler circuit. Other work investigated nonlinear transmission lines (NLTLs) using discrete varactors attached to linear guiding structures. Fully-distributed Schottky-varactor NLTLs were excessively lossy. This paper explores NLTLs based on fully distributed HBV structures. Using both a modified FDTD method and numerical integration, it is shown that such NLTLs can provide efficient tripling over a wider range of input bandwidth than is possible with fixed-tuned triplers.



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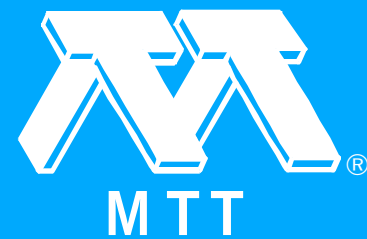


Abstracts

Record power added efficiency, low voltage GOI (GaAs On Insulator) MESFET technology for wireless applications

P. Parikh, J. Ibbetson, U. Mishra and J. Pusk. "Record power added efficiency, low voltage GOI (GaAs On Insulator) MESFET technology for wireless applications." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1643-1646.

A record high power added efficiency is obtained from a GaAs On Insulator (GOI) MESFET. Al/sub 2/O/sub 3/ obtained by the wet oxidation of Al/sub 0.98/GaAs in steam, is used as the insulating buffer layer. The insulating buffer results in elimination of buffer leakage and enhanced charge control. 0.35 μ m gate length GOI MESFETs exhibit a PAE of 72% at a drain voltage of 3 Volts at 4 GHz.



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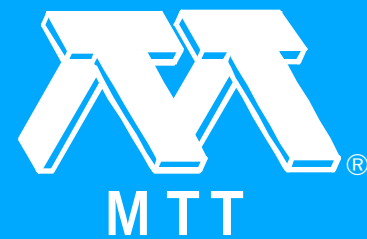


Abstracts

Increased efficiency in QAM power amplifiers

D.R. Conn and R.N. Hemmers. "Increased efficiency in QAM power amplifiers." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1647-1650.

A dynamic biasing procedure designed to improve the average dc-rf conversion efficiency of power amplifiers employing multi-level modulation schemes such as QAM is investigated. In this technique, the gate bias voltage is adjusted in accordance with the phasor currently being transmitted. Simulations show promising results for a 1 W class-A mode power amplifier. A system to address the distortion issue and dynamic bias control is proposed.



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A 2.4 V single supply pseudomorphic MODFET MMIC power amplifier for digital cordless phones

T. Yokoyama, M. Nishijima, T. Kuniyama, S. Yamamoto and O. Ishikawa. "A 2.4 V single supply pseudomorphic MODFET MMIC power amplifier for digital cordless phones." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1651-1654.

A 2.4 V single supply pseudomorphic MODFET MMIC power amplifier has been developed for 1.9 GHz Japanese Personal Handy-phone System (PHS). The MMIC exhibits very low current of 146 mA and low adjacent channel leakage power ratio of 55 dBc at output power of 20.5 dBm and 2.4 V single supply.

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Abstracts

An improvement of IM and power of high power amplifiers using RC-paralleled circuits with frequency selectivity

Y. Tarui, S. Ogura, K. Seino and Y. Itoh. "An improvement of IM and power of high power amplifiers using RC-paralleled circuits with frequency selectivity." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1655-1658.

This paper describes the design method to improve IM and power of high power amplifiers by employing a RC-paralleled circuit with frequency selectivity in the design of input matching circuits. The RC-paralleled circuit decreases gain at low frequencies where the power level of inter-modulated signals becomes high, leading to a significant improvement of IM and power.



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1 watt compact Ka-band MMIC power amplifiers using lumped element matching circuits

M. Komaru, H. Hoshi, H. Kurusu, Y. Notani, T. Katoh, T. Ishida, T. Oku, T. Ishikawa and Y. Mitsui. "1 watt compact Ka-band MMIC power amplifiers using lumped element matching circuits." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1659-1662.

A compact MMIC chip set for Ka-band communication systems has been developed. A two stage power MMIC amplifier using only lumped elements and narrowly spaced lines for the matching circuit delivers 1.44 watt at 30 GHz with a very small die size of 1.94 mm/spl times/2.0 mm. The designing scheme is confirmed to be useful for cost reduction.

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Abstracts

Development of cryogenic load-pull analysis: power amplifier technology performance trends

E. Gebara, J. Laskar, M. Harris and T. Kikel. "Development of cryogenic load-pull analysis: power amplifier technology performance trends." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1663-1666.

On-wafer load-pull measurements at cryogenic temperatures are made for the first time on FET power amplifier structures to demonstrate the improved performance when operated at reduced temperatures. Measurements from 300 K to 17 K demonstrate improvements in both efficiency (40-80%) and output power (1.0-2.7 dB). These results demonstrate that advanced device technologies that are optimized for cooled operation may provide significantly enhanced system performance and reliability with a minimal increase in prime power.



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Improvement of efficiency and linearity of a harmonic-control amplifier by envelope controlled bias voltage

D. Smely, B. Ingruber, M. Wachutka and G. Magerl. "Improvement of efficiency and linearity of a harmonic-control amplifier by envelope controlled bias voltage." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1667-1670.

The concept of a half sinusoidally driven class A harmonic control amplifier (hHCA) for a center frequency of 1.6125 GHz is expanded by a dynamic bias control, that uses the DC drain current of the driver stage for an envelope detection of the input signal. At two-tone stimulus the control of drain voltage and drain current of the power stage according to the envelope of the input signal improves either intermodulation distortion distance (IMDD) by 10 dB or raises overall power-added efficiency (PAE) for two-tone signals to 60%, a value similar to single-tone excitation.

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X-band InGaP PHEMTs with 70% power-added efficiency

Ming-Yih Kao, E.A. Beam, III, P. Saunier and W.R. Frensley. "X-band InGaP PHEMTs with 70% power-added efficiency." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1671-1674.

This paper describes the low-noise and power performance of InGaP/InGaAs PHEMTs lattice-matched to GaAs substrates. The 0.15-/spl mu/m/spl mu/m/spl times/600-/spl mu/m PHEMTs exhibited extrapolated $f_{sub\ t}$ and $f_{sub\ max}$ of 70- and 150-GHz, respectively. At 10-GHz, 200-/spl mu/m devices yielded a low noise figure of 0.58-dB with very high associated gain.

Furthermore, we have also demonstrated output power of 27-dBm, P.A.E. of 70.1%, and power gain of 13.2-dB at 9-GHz on a 1200-/spl mu/m gate width InGaP PHEMT. This is the first reported demonstration of excellent low-noise and power performance at microwave frequencies from PHEMT with an InGaP Schottky barrier.

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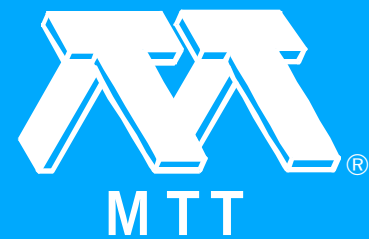
Linearization of 1.85 GHz amplifier using feedback predistortion loop

Youngsik Kim, Youngoo Yang, Sanghoon Kang and Bumman Kim. "Linearization of 1.85 GHz amplifier using feedback predistortion loop." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1675-1678.

A new feedback circuit topology was proposed for the cancelling loop of linear power amplifier. This circuit could cancel the intermodulation terms the same way as a typical feedforward technique but the tolerance of the cancellation is enhanced. To verify this circuit topology, an amplifier was designed and two tone test was performed at 1.85 GHz. This experiment showed about 20 dB reduction of intermodulation.

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MMIC-compatible terminal protection device

R. Kaul, J. McAdoo, W.M. Bollen and W. Catoe. "MMIC-compatible terminal protection device." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1679-1682.

A low-cost terminal protection device (TPD) employing only five components has been demonstrated that is compatible with monolithic microwave integrated circuits (MMICs) and suitable for phased-array applications. Using a standard low-noise, depletion-mode MESFET (metal semiconductor field-effect transistor) across a 50- Ω line, the TPD achieves a small-signal insertion loss less than 1 dB up to 3 GHz. With a single stage, the TPD attenuated 20-W pulses by 14 dB and 500-W pulses by 23 dB. Spike leakage was less than 0.1 μ J.

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Investigation and application to LNA of an InP-HEMT operated at ultra low DC power levels

L. Pettersson, J.P. Starski and H. Zirath. "Investigation and application to LNA of an InP-HEMT operated at ultra low DC power levels." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1683-1686.

The noise and gain for an InP HEMT were investigated as a function of DC power consumption. A special chip carrier in mixed coplanar waveguide/microstrip technology was developed for easy handling of the chip and to minimize the mounting parasitics. A complete S parameter and noise parameter model for the transistor and the carrier have been extracted. Measurements of the transistor mounted on the carrier gave an associated gain of 10 dB and noise figure lower than 0.7 dB at a DC power level of 200 μ W at 10 GHz. An X band one-stage amplifier with low DC consumption based on this transistor was built. The amplifier had a gain of 8-10 dB for the frequency range 8-12 GHz at $V_{ds}=0.35$ V, $I_{ds}=3.9$ mA. The noise figure of the complete amplifier was measured to 1.6 dB at 10 GHz. The HEMT was manufactured in our own laboratory process.

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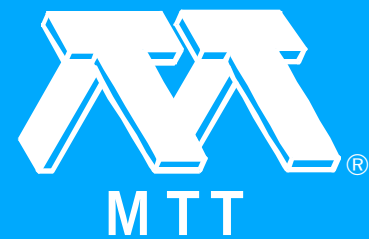
Intrinsic limitations of GaAs device cooling for microwave low noise applications

J.M. Miranda Pantoja, J.L. Sebastian and S. Munoz. "Intrinsic limitations of GaAs device cooling for microwave low noise applications." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1687-1690.

A simulation at microscopic level of the microwave noise temperature associated to a GaAs resistance at different physical temperatures and far from equilibrium conditions has been performed. The dependence of the noise temperature on the electric field, doping level and physical temperature has been investigated.

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MOTT SiGe SIMMWICs

K.M. Strohm, J.-F. Luy, T. Hackbarth and S. Kossowski. "MOTT SiGe SIMMWICs." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1691-1694.

Mixer diodes in SIMMWIC (silicon millimeter wave integrated circuit) technology with barrier height reducing n/sup +/- cap layers and SiGe top layers are investigated. The standard Mott diode with Ti-metallization has a barrier height of 0.5 V. By introducing an n/sup +/- cap layer of 10 nm thickness and a doping concentration of $2 \times 10^{18} \text{ cm}^{-3}$ a barrier height reduction of 0.08 V is achieved, while a 8 nm thick SiGe layer with 30% Ge increases the barrier height about 0.06 V. Conversion loss of 6.5 dB is measured in single ended mixers with an LO power of 10 dBm. The 1/f noise corner frequency is at 3 kHz for diode currents of 1 mA.

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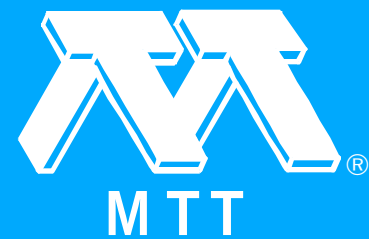


Abstracts

Low-frequency noise in GaAs and InP Schottky diodes

K.F. Sato, C.W. Chan, K. Najita, M.P. DeLisio, Y.H. Chung, J. Cowles, P.C. Grossman, R. Lai, A.K. Oki, D.C. Streit and H. Wang. "Low-frequency noise in GaAs and InP Schottky diodes." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1695-1698.

This paper examines the low-frequency noise properties of millimeter-wave GaAs and InP Schottky diodes. Measurements of diodes fabricated using both HEMT and HBT epitaxy will be presented. These noise measurements should enable the development of accurate models useful in the analysis and design of MMIC components.



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Flip-chip mounted silicon-based Impatt diodes for automotive applications

M. Wollitzer, K.M. Strohm, H. Jorke, J.-F. Luy, R.H. Rasshofer and E.M. Biebl. "Flip-chip mounted silicon-based Impatt diodes for automotive applications." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1699-1702.

We present the first silicon-based active antenna based on flip-chip mounted Impatt diodes. Our results show that flip-chip integration of Impatt diodes is a very promising alternative to monolithic integration since expected output power and heat removal is improved significantly. Compared to active antennas based on monolithic integration, the chip size of the novel flip-chip device is reduced by a factor of 50. Due to this fact, considerable reduction of manufacturing costs is expected.

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Abstracts

An advanced hybrid assembly technique for 40 Gbit/s-modules including surface and feed-through capacitors

G. Hanke, W. Nohr and D. Weber. "An advanced hybrid assembly technique for 40 Gbit/s-modules including surface and feed-through capacitors." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1703-1706.

Experimental 40 Gbit/s ETDM transmitter and receiver modules for optical fiberlink applications were developed. To obtain the essential extreme broad bandwidth the GaAs-chips are connected by self-supporting leads to ceramic thin film circuits which shows nearly reflection- and discontinuity-free connections up to millimeter-wave frequencies. In addition the use of hybrid integrated surface and coaxial feed-through capacitors results in low impedances and ultra broadband bypasses.



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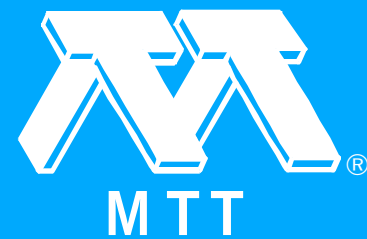


Abstracts

Wideband transmit modules designed for production

T.L. Barkdoll, S.A. Wartenberg, R.W. Mumper and H.C. Heffner. "Wideband transmit modules designed for production." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1707-1710.

This paper presents novel, multi-channel transmit modules designed for high-volume manufacturing, which operate over the multioctave EW bandwidth, and are intended for use in an active array. Use of multi-layer high temperature cofired ceramic (HTCC) as the base of the modules allows high-density routing of RF, bias and digital control lines, reducing the overall size. In a tightly-packed module, custom MMIC's are often called upon. Lower cost can be achieved by selection of MMIC's used in popular wireless products. For each transmit channel, the phase and gain are independently controlled by digital commands sent to on-board application-specific integrated circuits (ASIC's). The design goals were achieved without unnecessary MMIC development by selecting commercial off-the-shelf (COTS) MMIC's designed for the wireless market.



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A low noise NMOSFET with overlaid metal gate

C.-C. Hsiao, M.-S. Chen and Y.-C. Chiang. "A low noise NMOSFET with overlaid metal gate." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1711-1714.

A new MOSFET device structure which adopts a overlaid-metal over poly-Si gate is proposed for using in RF low-noise amplification. Measurement result shows the minimum noise figure as well as the noise resistance of overlaid-metal gate MOSFET (OMGMOS) are smaller than conventional MOSFET. The equivalent circuit model of this OMGMOS device is generated and compared to that of the conventional MOSFET with same physical geometry. It shows the better noise characteristic of OMGMOS is mainly due to the decrease of the gate resistance.





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Characterization of GaInP avalanche transit time device in millimeter-wave frequencies

C.C. Meng and G.R. Liao. "Characterization of GaInP avalanche transit time device in millimeter-wave frequencies." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1715-1718.

GaInP material has high breakdown electrical fields and thus is suitable to avalanche transit time device application. Millimeter-wave GaInP IMPATT devices at operating temperature (500 K) are analyzed by a large signal model in this paper. The simulation confirms that GaInP IMPATT device has the power density advantage when compared to conventional GaAs and Si IMPATT devices. The improvement in power density is about factor of 4 at 100 GHz. Moreover, GaInP IMPATT devices are easy to incorporate into GaAs millimeter-wave monolithic integrated circuit technology because of the lattice-match and high etching selectivity between GaInP and GaAs materials.

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Abstracts

A fully automated high-accuracy RF/IF test system for millimeter- and submillimeter-wave mixers

R.J. Dengler, A. Hanpachern and P.H. Siegel. "A fully automated high-accuracy RF/IF test system for millimeter- and submillimeter-wave mixers." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1719-1722.

An automated RF/IF test system for complete, accurate measurement of millimeter and submillimeter-wave mixer performance is described. Improved ability to measure mixers with high IF output impedance over a 1-18 GHz bandwidth has been achieved through the use of an automatic tuner and swept scalar reflection measurement. An accurate means of measuring mixer sideband response over a wide IF range is also described.



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120 and 60 GHz monolithic InP-based HEMT diode sub-harmonic mixer

Yon-Lin Kok, Pin-Pin Huang, Huei Wang, B.R. Allen, R. Lai, M. Sholley, T. Gaier and I. Mehdi. "120 and 60 GHz monolithic InP-based HEMT diode sub-harmonic mixer." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1723-1726.

Monolithic sub-harmonic mixers are designed using two circuit topologies for RF frequencies at 60 and 120 GHz. They are fabricated on a 3-mil thick InP substrate using 0.1 μm /m pseudomorphic InAlAs/InGaAs HEMT process. On-wafer measurements from 110 to 120 GHz at an IF of 7.8 GHz show a minimum conversion loss of 14.3 dB with 8.2 dBm of a subharmonic LO drive. This is the first demonstration of a monolithic HEMT diode sub-harmonic mixer at 120 GHz. The 60 GHz sub-harmonic mixer achieves a minimum conversion loss of less than 12 dB at an LO drive of 13 dBm. The conversion loss dependence on LO drive power and RF frequency are presented. Results indicate that within the band of interest at 120 GHz the mixer performance remains admirable even when LO drive is as little as 5.3 dBm.

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Abstracts

A low-noise 2.5 THz heterodyne receiver with tunable reflector antenna for atmospheric OH-spectroscopy

R.G. Nitsche, R.U. Titz and E.M. Biebl. "A low-noise 2.5 THz heterodyne receiver with tunable reflector antenna for atmospheric OH-spectroscopy." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1727-1730.

For atmospheric research reliable low-noise receivers are necessary. In this paper we present a novel low-noise heterodyne receiver for 2.5 THz. A Schottky diode, the mixer key element, is embedded in a planar structure for optimized coupling to a low-noise broadband amplifier. The corner cube antenna can be tuned for optimal coupling to the local oscillator.



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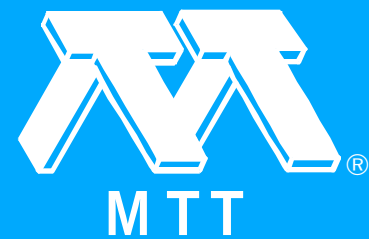
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Implementing PML boundary conditions in TLM

O. Pertz, B. Muller, U. Muller and A. Beyer. "Implementing PML boundary conditions in TLM." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1731-1734.

The numerical simulation of Maxwell's equations requires a discretization, which must be limited in space domain. An often used method is the implementation of absorbing boundary conditions (ABC). In the FDTD method the perfectly matched layer (PML) has proven to be an excellent type of ABCs in many applications. In this paper the PML is introduced and verified for the TLM method in the 3-dimensional case for orthogonal incidence.

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Efficient phenomenologically-based 1-D evaluation of the impedance matrix in a MPIE analysis of planar microstrip circuits

F. Cervelli, M. Mongiardo and L. Tarricone. "Efficient phenomenologically-based 1-D evaluation of the impedance matrix in a MPIE analysis of planar microstrip circuits." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1735-1738.

The analysis of microstrip circuits via integral equation techniques has proven as the most efficient, and yet rigorous and full-wave, approach. Nonetheless, the latter requires the evaluation of the impedance matrix which elements, in turn, are generally obtained after a two-dimensional numerical integration. We introduce a coordinate transformation allowing to reduce for the mixed potential integral equation, the numerical integration to a one-dimensional case. Moreover, by using the spatial domain closed-form of the Green's function and by phenomenologically separating the relevant contributions, we demonstrate that a significant reduction of computer times is indeed feasible and achievable.

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3D subgrid technique for the finite difference method in the frequency domain

R. Lotz, J. Ritter and F. Arndt. "3D subgrid technique for the finite difference method in the frequency domain." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1739-1742.

A new, efficient finite difference frequency domain (FD-FD) subgrid technique is introduced. Based on a robust direct orthogonalization of the FD-FD grid, the method does not require any additional interpolation or correction terms. This yields a significant reduction in both CPU time and storage requirements as compared with the usual graded mesh techniques. The rigorous S-parameter calculation of 3D dielectric or metallic post element examples in rectangular waveguides demonstrates the versatility of the method. Comparisons with measurements and calculated reference values verify the presented technique and show its high dynamic range.

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Modal analysis of the slotted-circular coaxial cavities used in space-harmonic millimeter wave magnetrons

J.-Y. Raguin and K. Schunemann. "Modal analysis of the slotted-circular coaxial cavities used in space-harmonic millimeter wave magnetrons." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1743-1746.

Computer-aided design of millimeter wave magnetrons operating in a non- π mode calls for self-consistent numerical simulation of the electron dynamics. For a modal analysis of the slotted-circular coaxial cavities used in these magnetrons, complete sets of eigenmodes, resonant as well as irrotational, have to be computed. The Generalized Spectral Domain (GSD) method provides a fast and accurate mean to calculate the eigenvalues of these modes and to investigate their modal field distributions. Results for a typical millimeter wave magnetron cavity are presented.

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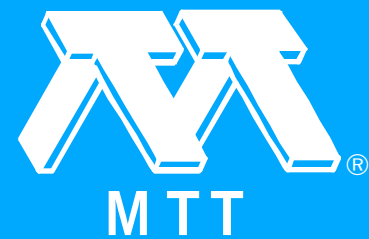
Efficient integral equation formulations for admittance or impedance representation of planar waveguide junctions

G. Gerini, M. Guglielmi and G. Latoria. "Efficient integral equation formulations for admittance or impedance representation of planar waveguide junctions." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1747-1750.

In this paper we describe very efficient impedance and admittance Integral Equation (IE) formulations for the study of passive microwave devices composed of cascaded uniform waveguide sections. The formulation leads directly to reduced multimode matrix representations that only involve a small number of accessible, or interacting, modes. In addition to theoretical results, a performance comparison is also discussed which clearly demonstrates the improvement achieved.

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Efficient admittance matrix representation of a cubic junction of rectangular waveguides

V.E. Boria and M. Guglielmi. "Efficient admittance matrix representation of a cubic junction of rectangular waveguides." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1751-1754.

In this paper we describe a very efficient multi-mode admittance matrix representation of a six-port cubic junction composed of the orthogonal intersection of three rectangular waveguides. The formulation is based on the theory of cavities and yields very simple closed-form analytical expressions for all matrix elements. In addition to theory, the application of the results obtained to the special cases of E- and H-plane T-junctions and to the magic-T junction are also discussed indicating how the representations obtained are indeed very accurate and numerically efficient.

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Abstracts

A general-purpose circuit model of interdigital capacitor for accurate design of low-loss microstrip circuit

Lei Zhu and Ke Wu. "A general-purpose circuit model of interdigital capacitor for accurate design of low-loss microstrip circuit." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1755-1758.

A general-purpose CAD-oriented circuit model is presented for accurately modeling interdigital capacitor (IDC) in optimized design of low-loss IDC-related microstrip circuits. This equivalent model is formulated as an admittance-based π -network through the use of a so-called "Short-Open Calibration (SOC)" technique for extracting precisely circuit parameters from a fullwave method of moments (MoM). A J-inverter based topology is further developed for explicit characterization of IDC-related coupling characteristics that accounts for frequency dispersion and fringing effect. Extracted model parameters are given for two types of IDC structure and the model accuracy is well validated by our experiments for an IDC-related quasi-lumped bandpass filter.



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A trust region aggressive space mapping algorithm for EM optimization (1998 Vol. III [MWSYM])

M.H. Bakr, J.W. Bandler, R.M. Biernacki, S.H. Chen and K. Madsen. "A trust region aggressive space mapping algorithm for EM optimization (1998 Vol. III [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1759-1762.

A new robust algorithm for EM optimization of microwave circuits is presented. The algorithm integrates a trust region methodology with aggressive space mapping (ASM). A new automated multipoint parameter extraction process is implemented. EM optimization of a double-folded stub filter and of an HTS filter illustrate our new results.



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A robust and efficient method for the frequency domain analysis of non-uniform, lossy multi-line transmission structures

N. Boulejfen, A.B. Kouki and F.M. Ghannouchi. "A robust and efficient method for the frequency domain analysis of non-uniform, lossy multi-line transmission structures." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1763-1766.

A new efficient and robust method of moment-based formulation for the analysis of non-uniform, lossy multi-line transmission structures is proposed. The stability and speed of this method are demonstrated by analyzing different non-uniform structures. The performances obtained show the proposed approach to be suitable for CAD applications.



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Abstracts

A hierarchical neural network approach to the development of library of neural models for microwave design

Fang Wang, V.K. Devabhaktuni and Q.J. Zhang. "A hierarchical neural network approach to the development of library of neural models for microwave design." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1767-1770.

Neural networks recently gained attention as a fast and flexible vehicle to microwave modeling simulation and optimization. This paper addresses a new challenge in this area, i.e., development of libraries of microwave neural models. A hierarchical neural network framework is presented utilizing the knowledge of basic relationships common to all library components. The proposed method improves the reliability of neural models, while significantly reducing the cost of library development through reduced need for data collection and shortened time of training.



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Automated design of microwave devices using full EM optimization method

S. Bila, D. Baillargeat, S. Verdeyme and P. Guillon. "Automated design of microwave devices using full EM optimization method." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1771-1774.

A relevant automated electromagnetic (EM) optimization method is presented. This optimization method combines a rigorous and accurate global EM analysis of the device performed with a finite element method (FEM) and a fast analytical model deduced from its segmented EM analysis. First we describe our automated optimization method with the definition of the analytical model, then we apply it to optimize two volumic dielectric resonator (DR) filters. The accuracy of this automated method is demonstrated considering the good agreement between theoretical optimization results and experimental ones.

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Efficient CAD of discontinuities between elliptical and circular waveguides

C. Tomassoni and M. Mongiardo. "Efficient CAD of discontinuities between elliptical and circular waveguides." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1775-1778.

Elliptical waveguides are currently finding several applications, since they provide Improved flexibility with respect to circular waveguides and better manufacturability and higher Q with respect to rectangular waveguides. Effective CAD of components involving elliptical waveguides requires the efficient evaluation of the scattering parameters at the discontinuity occurring between elliptical and circular or rectangular waveguides. In this study we present analytical formulas for the efficient CAD of a junction between a circular and an elliptical waveguide of larger cross-section. With respect to current approaches, based on the numerical evaluation of the coupling integrals, the analytical formulas permit a significant reduction of computer time of more than one order of magnitude. We have implemented the above formulas and results have been tested against published data and compared with those obtained by numerical integration: in all cases an almost perfect agreement is observed.

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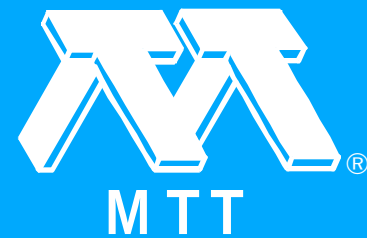


Abstracts

Microwave module design applying a global electromagnetic analysis

F. Bodereau, D. Baillargeat, S. Verdeyme, M. Aubourg and P. Guillon. "Microwave module design applying a global electromagnetic analysis." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1779-1782.

In this paper, an active microwave module containing three MMICs is studied. Our objective is to analyse the MMIC radiation influence on module response. The finite element method is applied to perform a global electromagnetic analysis of the module distributed area. Then, we determine the effect of a metallic boundary placed between MMICs, which permits a decrease in the indirect interferences between these circuits.



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Abstracts

A partitioning approach to large scale electromagnetic problems applied to an array of microstrip coupled slot antennas

M.N. Abdulla and M.B. Steer. "A partitioning approach to large scale electromagnetic problems applied to an array of microstrip coupled slot antennas." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1783-1786.

An electromagnetic modeling procedure for electrically large microwave and millimeter-wave systems with circuit-field interactions is presented. The concept of an electromagnetic terminal is introduced to interface separate electromagnetic models of the blocks in a partitioned network.



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A new approach to the optimization of passive microwave structures on the basis of a FDTD-method

U. Effing and I. Wolff. "A new approach to the optimization of passive microwave structures on the basis of a FDTD-method." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1787-1790.

A new approach to the optimization of passive microwave structures on the basis of a FDTD-field simulator is presented. The method is suitable for reducing the number of time consuming numerical FDTD-field simulations in the automatic optimization process. The results of a minimized number of field simulations are projected on IIR filters. The pole and zero positions are parameter vector dependent curves or fields in the z-domain.



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The mutual coupling effects in large microstrip leaky-mode array

C.-K.C. Tzuang and Cheng-Nan Hu. "The mutual coupling effects in large microstrip leaky-mode array." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1791-1794.

A twenty-element microstrip array that emits twenty coupled leaky modes is analyzed and validated by a novel, generic technique combining the full-wave integral equation method and coupled mode theory. The new method enables fast, accurate assessment of coupled leaky modes and gives physical insight on how the large array may excite the leaky modes considering the mode-coupling effects.



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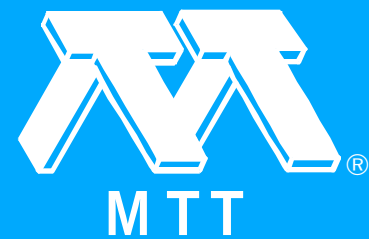
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Dispersion characteristics of leaky waves on lossless and lossy slotlines

J. Zebentner, J. Machac and M. Migliozi. "Dispersion characteristics of leaky waves on lossless and lossy slotlines." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1795-1798.

This paper deals with the dependence of the type of solution of the determinantal slotline dispersion equation on the location of the poles of its matrix elements. A number of possible solutions above the cut-off frequencies of particular surface waves is determined. Complete dispersion characteristics of the 1st and 2nd leaky wave on the lossless and lossy slotline as well as the main characteristics of the 1st up to the 4th leaky wave on the lossless slotline are presented.

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Fast and efficient mode-matching analysis of ridged circular waveguide polarizers

J. Bornemann, S. Arnari, J. Uher and R. Vahldieck. "Fast and efficient mode-matching analysis of ridged circular waveguide polarizers." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1799-1802.

A fast and efficient mode-matching technique is applied to the analysis and design of polarizer components in ridged circular waveguide technology. Two different structures (the septum polarizer and the longitudinal-ridge polarizer) are investigated with respect to the validity of approximating the rectangular-cross-section septa by conically shaped ridges in theory. Measurements of two different prototypes demonstrate, first, that the axial ratio response is not potentially critical to this approximation and, second, that some differences occur with respect to return loss and isolation performance, but that these difference have only been encountered beyond the 25 dB margin. A CPU time comparison with HFSS results in a ten-minutes-versus-three-hours advantage of the mode-matching technique.

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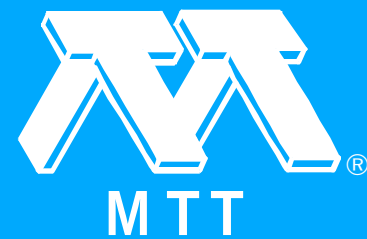


Abstracts

A novel high-Q image guide resonator using band-gap structures

Fei-Ran Yang, Yongxi Qian and T. Itoh. "A novel high-Q image guide resonator using band-gap structures." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1803-1806.

This paper presents a novel high-Q resonator using photonic band-gap structures in an image guide. Our initial measurement with an X-band prototype demonstrates a Q-factor of 697, which is limited by the dielectric material (Duroid) used for experiment. A new planar integration technique for image guides using Yagi-Uda slot array is also developed. This resonator structure is potentially useful for millimeter-wave integrated circuits.



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Surface-wave elimination in integrated circuit structures with artificial periodic materials

H.D. Yang. "Surface-wave elimination in integrated circuit structures with artificial periodic materials." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1807-1810.

Surface-wave (or dielectric slab) modes in integrated circuit structures often result in undesired energy losses and cross talk between components. In this paper, we investigate the feasibility of surface-wave elimination in integrated circuit structures by using planar artificial periodic (photonic band-gap) substrates. A full-wave 3-D integral-equation moment-method is employed to find the propagation constants of guided-wave modes on grounded dielectric slabs with planar periodic implants. Rectangular blocks in both a rectangular lattice and a triangular lattice are investigated. It is found that surface-waves forbidden characteristics are mostly determined by the lattice structures and insensitive to the shape and size of the periodic elements. Attempt has been made to obtain the omnidirectional wave band-gap. The limitation on complete surface-wave elimination is discussed. This paper initiates the investigation of a class of novel integrated circuit components which have potential applications in millimeter-waves and optics.

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Abstracts

Development of the "laminated waveguide"

H. Uchimura, T. Takenoshita and M. Fujii. "Development of the "laminated waveguide"." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1811-1814.

A new waveguide structure for millimeter wave has been developed. It is a dielectric waveguide, with conductor walls consisting of two lined via-holes, herein referred to as the "laminated waveguide." Applications for the laminated waveguide include antenna feed lines.



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Phase noise effect on frequency measurement error of IFM receivers

K. Tajima, K. Kawakami, A. Kagohara and K. Itoh. "Phase noise effect on frequency measurement error of IFM receivers." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1815-1818.

This paper presents phase noise effect on frequency measurement errors of an IFM (Instantaneous Frequency Measurement) receiver. In the paper, a calculation method of frequency measurement errors due to phase noise of a PLL synthesizer for an local oscillator is discussed. Calculated results indicate, (1) Phase noise effect on frequency measurement error is clarified, (2) Frequency measurement errors can be reduced by narrowing a noise bandwidth of the PLL synthesizer when integrated phase noise in the noise bandwidth remains constant. Moreover, calculated results are verified by measured results with a developed 5 to 10 GHz PLL synthesizer.





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Development of vertical interconnect surface mount packages

Hongwei Liang, C. Chun, J. Laskar and D. Estreich. "Development of vertical interconnect surface mount packages." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1819-1822.

A novel vertical interconnect package (VIP) based upon surface mount plastic lead frame packages is presented for microwave applications. The prototype has been fabricated and measured, and its finite element method (FEM) simulation is confirmed by experimental results. This new package demonstrates improvements of approximately 10 dB in return loss and 1 dB in insertion loss over the small shrink outline package (SSOP) to 10 GHz. Investigation into the behavior of the discontinuities has provided insight into mismatches at interconnects, and higher performance prototypes are in fabrication.

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Abstracts

RF and mechanical characterization of flip-chip interconnects in CPW circuits with underfill (1998 Vol. III [MWSYM])

Zhiping Feng, Wenge Zhang, Bingzhi Su, K.C. Gupta and Y.C. Lee. "RF and mechanical characterization of flip-chip interconnects in CPW circuits with underfill (1998 Vol. III [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1823-1826.

RF characterization of flip-chip interconnects in CPW circuits with underfill has been investigated by measuring the scattering-parameters up to 40 GHz for GaAs coplanar waveguide (CPW) through line chips flip-chip mounted on alumina substrate with and without underfill epoxy. Fatigue life of flip-chip assemblies has been computed for different chip sizes and substrates. The results show feasibility of using underfill encapsulant in microwave/mm-wave frequency range.



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Abstracts

Design and implementation of a microwave packaging materials database

M. Harris, C. Lesniak, C. Erichsen and M. Dobbs. "Design and implementation of a microwave packaging materials database." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1827-1830.

A microwave packaging materials database is designed and implemented to enable materials tolerant microwave packaging design. Over 200 products covering 14 different packaging applications are included in this "stand-alone" application that requires no additional host software. Advanced search routines permit designers to select packaging materials based on a combination of materials properties. Use of this database reduces design cycle time and non-recurring (NRE) engineering cost and can expedite the insertion of new materials into microwave packaging design.



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Characterization of plated via hole fences for isolation between stripline circuits in LTCC packages

G.E. Ponchak, Donghoon Chen, Jong-Gwan Yook and L.P.B. Katehi. "Characterization of plated via hole fences for isolation between stripline circuits in LTCC packages." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1831-1834.

Reduced coupling between adjacent striplines in LTCC packages is commonly accomplished by walls made of plated via holes. In this paper, a 3D-FEM electromagnetic simulation of stripline with filled via fences on both sides is presented. It is shown that the radiation loss of the stripline and the coupling between striplines increases if the fence is placed too close to the stripline.



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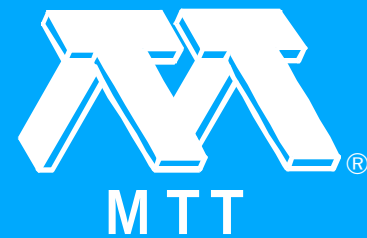


Abstracts

Ultra low-cost membrane technology for millimeterwave applications

C. Person, S. Perrot, L. Carri, S. Toutain, J.P. Coupez, G. Legeay and P. Morillon. "Ultra low-cost membrane technology for millimeterwave applications." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1835-1838.

This paper presents an original technique for implementing membrane structures for millimeterwave applications. The process is described and results on transmission lines and filters are given, with simultaneous comparisons between measurements and simulations. According to the performance which are presented, the proposed process appears as an interesting possible alternative for membrane technology.



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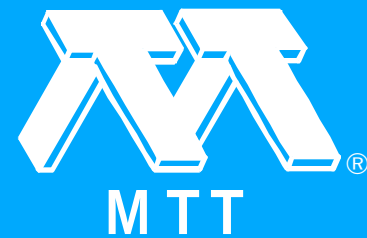


Abstracts

A fast frequency switching synthesizer with an integration circuit

H. Nosaka, T. Nakagawa and A. Yamagishi. "A fast frequency switching synthesizer with an integration circuit." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1839-1842.

A new type of direct frequency synthesizer which can complete frequency switching in less than a microsecond is proposed. This yields low-spurious outputs by low-power analog integration circuit whose operating principle is similar to a digital accumulator. Experimental results confirm successful frequency synthesizer operation.



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InP heterojunction bipolar transistor decision circuits

L. Samoska, R. Pullela, B. Agarwal, D. Mensa, Q. Lee, V. Kaman, J. Guthrie and M.J. Rodwell. "InP heterojunction bipolar transistor decision circuits." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1843-1846.

We have designed and built 30 Gb/s master-slave D-flip-flop circuits using InGaAs-InAlAs HBT's. The HBT devices have a β of 30, and $f_{\text{sub max}}$ and f_t of 160 and 106 GHz, respectively. We discuss methods of testing decision circuits when bit error rate testing is not available at high data rates.

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Abstracts

A wide-band low-distortion ferrimagnetic attenuator

C. Trask. "A wide-band low-distortion ferrimagnetic attenuator." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1847-1850.

An electronically-controlled attenuator is presented which incorporates readily-available ferrite materials. A primary goal of the design is to attain a high level of intermodulation (IP/sub 3/) performance while at the same time keeping circuit complexity and cost at a minimum. A secondary goal is to reduce, if not eliminate, the temperature dependence normally associated with variable-gain stages. Test results show that these goals are easily achieved.



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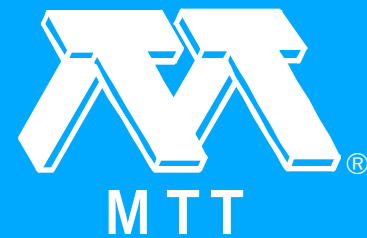


Abstracts

CMOS RF circuits for integrated wireless systems

R.H. Caverly, S. Smith, Jiangang Hu and R. Nichols. "CMOS RF circuits for integrated wireless systems." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1851-1854.

There is increasing interest in the use of CMOS circuits for highly integrated high frequency wireless telecommunications systems. This paper presents the results of on-going work into the development of a cell library that includes many of the circuit elements required for the high frequency sub-system of a communications integrated circuit. The cells were fabricated using standard CMOS processes and measurement results are presented. No post processing was used with the circuits described.



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Abstracts

Modeling of spiral inductors on lossy substrates for RFIC applications (1998 Vol. III [MWSYM])

R.D. Lutz, Y. Hahm, A. Weisshaar, V.K. Tripathi, A. Grzegorek, W. McFarland and J. Meyer. "Modeling of spiral inductors on lossy substrates for RFIC applications (1998 Vol. III [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1855-1858.

A modeling technique for planar microstrip spiral inductors in the presence of lossy media, such as in CMOS and bipolar technologies, is presented. The new model for spiral inductors incorporates the frequency dependent substrate effects via analysis of the 'skin-effect' mode of the microstrip structure.



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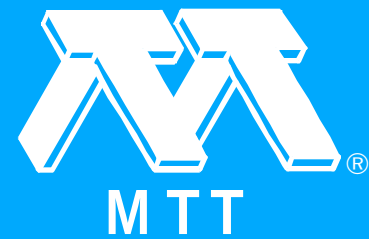


Abstracts

Sub-micron silicon RFIC technologies: "an overview"

D.K. Lovelace, J.L. Finol and J.C. Durec. "Sub-micron silicon RFIC technologies: "an overview"." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1859-1862.

Silicon based semiconductors have become the standard active device technology of choice in today's cost and performance driven consumer wireless products. No longer is silicon technology confined to low frequency analog and digital processing functions. Silicon devices have now reached high frequency performance levels which allow them to be used almost exclusively in the RF section of many wireless communication circuits. This paper deals with the issues involved in employing silicon IC technologies to low cost, low power, RF circuits.



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Abstracts

Extraction of parasitic parameters of dummy devices on different silicon substrates (1998 Vol. III [MWSYM])

L.P. Chen, Y.P. Ho, D.C. Lin, B.M. Tseng, H.Y. Lee, R.F. Guan, G.W. Huang, Y.C. Chen, W.Y. Wen and C.L. Chen. "Extraction of parasitic parameters of dummy devices on different silicon substrates (1998 Vol. III [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1863-1866.

S-parameters of dummy devices fabricated on Si substrates with different resistivities are measured and analyzed to study the effects of substrate resistivity on the microwave characteristics. An equivalent parasitic circuit model is proposed and the extraction procedure also developed. The substrate resistivity effects can be explained well by the proposed model.



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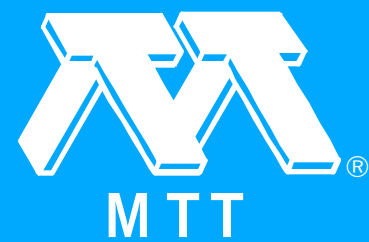
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Parasitic-aware design and optimization of CMOS RF integrated circuits (1998 Vol. III [MWSYM])

R. Gupta and D.J. Allstot. "Parasitic-aware design and optimization of CMOS RF integrated circuits (1998 Vol. III [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1867-1870.

The need for higher integration and lower cost personal communication systems (PCS) has motivated extensive efforts to develop CMOS RF integrated circuits which meet the performance requirements of current and future standards such as IS-95, GSM, DECT, etc. However, power losses associated with on-chip inductor, device, and package parasitics have impeded the full integration of power-efficient CMOS RF ICs. In this paper, we describe a custom CAD synthesis and optimization tool which enables RF chip/package design for optimum circuit performance. A fully-integrated CMOS power amplifier (PA) illustrates the efficacy of this approach.

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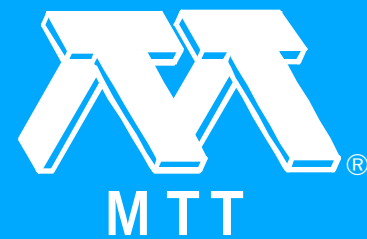


Abstracts

A two-dimensional Newton iterative scheme for high contrast full-scale microwave tomography

A.E. Souvorov, A.E. Bulyshev, S.Y. Semenov, R.H. Svenson, A.G. Nazarov, Y.E. Sizov and G.P. Tatsis. "A two-dimensional Newton iterative scheme for high contrast full-scale microwave tomography." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1871-1872.

We propose a variant of the Newton method that uses a fast solution of the direct problem and a dual mesh. Using this method, we are able to obtain good quality images of high contrast experimental phantoms. Our computational experiments show that a full scaled image of a two-dimensional mathematical model of a human torso can be obtained with this method.



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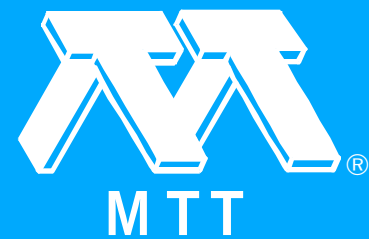
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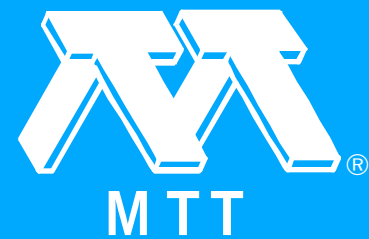
Calibration of a lens-focused reflectometer by means of a mixed time/frequency domain method

G.L. Fyiedsam and E.M. Biebl. "Calibration of a lens-focused reflectometer by means of a mixed time/frequency domain method." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1873-1876.

A lens-focused reflectometer operating in the 75-95 GHz frequency range for measuring the square of the complex transmission coefficient of planar samples for different angles of incidence and polarization states is presented. The systematic errors of the set-up are reduced by employing a new advanced time/frequency domain calibration method. Experimental results obtained with the lens-focused reflectometer and with a free-space transmission measurement system are in good agreement. The deviation in the magnitude and in the phase of the measured curves are less than 1.0% and 1.0/spl deg/, respectively.

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Phase-locking of grid oscillators

Wenzhang Wang and L. Wilson Pearson. "Phase-locking of grid oscillators." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1879-1882.

In this paper, we report results of the first successful phase locking, to our knowledge, of a grid oscillator. A voltage controlled grid with a center frequency of 4.7 GHz and with 300 MHz electric tuning range was locked to a frequency synthesizer by way of a phase-locked loop (PLL). The loop was designed with 10 kHz bandwidth and employs three operational amplifiers. Phase noise was improved to match the specification of the synthesizer locking source.

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Abstracts

Spatial power combining of Gunn diodes using an overmoded waveguide resonator at millimeter wavelengths

Jongsuck Bae, T. Uno, T. Fujii and K. Mizuno. "Spatial power combining of Gunn diodes using an overmoded waveguide resonator at millimeter wavelengths." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1883-1886.

An oscillator which incorporates an overmoded-waveguide resonator with an array of TE/sub 10/-mode waveguides containing Gunn diodes, has been developed as a means for achieving highly efficient spatial power combining. This oscillator makes use of mode conversion of radiation power from the Gunn diodes in the waveguide array to the overmoded-waveguide resonator, to produce high power at millimeter wavelengths. An efficiency of about 83% and an output power of 1.5 W (CW) at 61.4 GHz, has been achieved with a 3/spl times/3 waveguide Gunn diode array.



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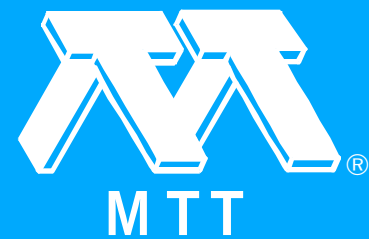
Grid oscillators with photonic-crystal reflectors

Qi Sun, K.W. Miyashiro, J.B. Horiuchi and W.A. Shiroma. "Grid oscillators with photonic-crystal reflectors." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1887-1890.

The frequency-, polarization-, and reflectivity-dependent properties of photonic crystals are exploited to improve the performance of a grid oscillator. The metal reflector of a C-band grid is replaced with a photonic-crystal reflector, resulting in a higher cross-polarization ratio, higher radiated power, lower harmonic content, and improved start-up conditions.

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Surface-wave coupling of active antennas for homodyne sensor systems (1998 Vol. III [MWSYM])

R.H. Rasshofer and E.M. Biebl. "Surface-wave coupling of active antennas for homodyne sensor systems (1998 Vol. III [MWSYM])." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1891-1894.

In this paper, we present a novel method for significantly enhancing the performance of low cost millimeter wave sensors systems based on active integrated antennas. Our method uses the planar active antenna's parasitic surface-wave field as a LO signal for a mixing rectenna. Compared to a self-mixing active 67 GHz antenna, the surface-wave coupled rectenna receiver shows a considerably improved MDS (10 dB lower) and the possibility for high quality homodyne I/Q signal detection.

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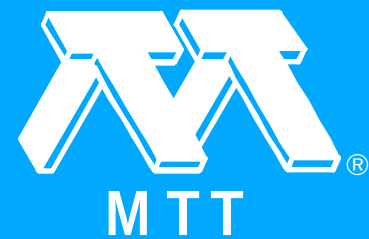
Broadband power amplifier integrated with slot antenna and novel harmonic tuning structure

V. Radisic, Yongxi Qian and T. Itoh. "Broadband power amplifier integrated with slot antenna and novel harmonic tuning structure." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1895-1898.

A high efficiency class-AB GaAs FET power amplifier integrated with a slot antenna has been designed and fabricated. Broadband second harmonic tuning was achieved using a microstrip line with a periodically etched ground plane. Power-added efficiency greater than 50% was achieved in the 3.7-4.0 GHz bandwidth.

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Cavity induced polarisation switching in a slot-loop active antenna

Q. Chen, M. Zheng, V.F. Fusco and P.S. Hall. "Cavity induced polarisation switching in a slot-loop active antenna." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1899-1902.

The new features of a cavity backed active slot-loop antenna are discussed in this paper. By using a high Q cavity, 35 dBc phase noise level reduction at 200 kHz from the carrier has been achieved. Once in resonance, the established TE/sub 110/ cavity fields rotate the principle E-plane of the slot-loop antenna through 90/spl deg/. This results in an exchange of E- and H-plane locations in the radiation pattern together with reduced cross-polarisation levels. Thus the presence of the cavity tuned into and out of resonance allows the antenna to have its polarisation properties orthogonally switched.

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Submillimeter-wave sideband generation using a planar diode array

*D.S. Kurtz, J.L. Hesler, J.B. Hacker, T.W. Crowe, D.B. Rutledge and R.M. Weikle, II.
"Submillimeter-wave sideband generation using a planar diode array." 1998 MTT-S
International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1903-1906.*

A 36 element array of planar Schottky diodes is used to mix the output of a CO/sub 2/ pumped far infrared laser with a 1-20 GHz microwave source to generate tunable sidebands at 1.6 THz. The double sideband power was measured by heterodyne detection with a 1T23 corner cube Schottky diode for a calculated output power of 5.9 /spl mu/W with a 28 dB conversion loss.

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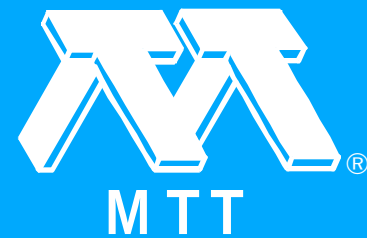


Abstracts

A planar active lens oscillator on a dielectric slab

A.R. Perkons and T. Itoh. "A planar active lens oscillator on a dielectric slab." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1907-1910.

This paper presents power combining of TM surface waves in a dielectric slab by a planar active lens oscillator. An output power of 15.4 dBm at 8.16 GHz was measured at the oscillator output connector. Measurements of surface wave field patterns radiated by the active lens oscillator are also presented.



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50-GHz interconnect design in standard silicon technology

B. Kleveland, T.H. Lee and S.S. Wong. "50-GHz interconnect design in standard silicon technology." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1913-1916.

Coplanar waveguides were fabricated in a process that emulates silicon CMOS technologies with 5 to 10 metal layers. The observed S_{21} loss of 0.3 dB/mm at 50 GHz is among the lowest ever reported with standard Al interconnects on Si/SiO₂. Optimum design parameters were counter-intuitive: in some frequency ranges, the lowest loss was achieved with relatively narrow lines over a low-resistivity substrate. This was exploited in the design of transmission lines that are fully compatible with a CMOS technology. The process emulation was calibrated with a commercial 4-layer Al/Cu CMOS technology.

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Abstracts

Accurate characteristic impedance measurement on silicon

D.F. Williams, U. Arz and H. Grabinski. "Accurate characteristic impedance measurement on silicon." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1917-1920.

This paper presents a new method that accurately determines the characteristic impedance of planar transmission lines printed on lossy dielectrics even when contact-pad capacitance and conductance are large. We demonstrate the method on a coplanar waveguide fabricated on fused silica and a microstrip line fabricated on a highly conductive silicon substrate.



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A test board for multiport immittance measurement and characterization of RF-IC packages

A. Tripathi, R. Lutz, V.K. Tripathi, H.H. Wu, J.W. Meyer and B. Hutchison. "A test board for multiport immittance measurement and characterization of RF-IC packages." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1921-1924.

An experimental technique based on the measurement of two port scattering parameters for the characterization of electrically small RF-IC package is presented. The procedure is based on a novel test board design to facilitate extraction of n-port admittance and impedance matrix parameters using two port network analyzer scattering parameter measurements. An optimization routine is used to extract the SPICE based equivalent circuit model that includes the mutual coupling effects present in the RF-IC package pins.

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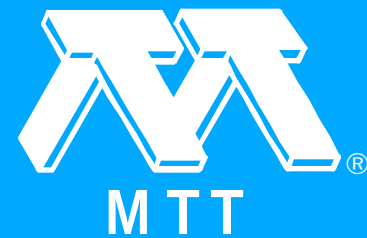


Abstracts

Analysis of microvia interconnects

R. Abhari and T.E. van Deventer. "Analysis of microvia interconnects." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1925-1928.

The development of high density circuitry has promoted the introduction of the microvia technology which relies on organic dielectrics and vertical interconnects of reduced dimensions. In this paper, microvia interconnects are evaluated both through simulation using an FDTD model and experimental measurements, and have shown good electrical performance.



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Multi-wire microstrip interconnections: a systematic analysis for the extraction of an equivalent circuit

F. Alimenti, P. Mezzanotte, L. Roselli and R. Sorrentino. "Multi-wire microstrip interconnections: a systematic analysis for the extraction of an equivalent circuit." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1929-1932.

A systematic analysis of the multi-wire microstrip interconnection is proposed in this work. A family of structures has been analyzed by considering single-, double- and triple-wire interconnections and by varying the typical geometrical parameters. The Finite Difference Time Domain (FDTD) method has been used for the electromagnetic simulation of these structures. The curvature of the wire has been modeled with a polygonal approximation and, in the multi-wire case, the wires have been assumed to be parallel. The computed scattering parameters have been then used to extract a low-pass π -network equivalent to the interconnection. In this way the series inductance of the interconnection has been characterized as a function of the spacing between the wires. Finally the scattering parameters for single-, double- and triple-wire interconnections have been compared. This work proposes a method to derive accurate and efficient equivalent circuits of the multi-wire interconnections suitable for CAD implementation.

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Applications of microwave radar to improving aviation safety and efficiency

J.E. Evans. "Applications of microwave radar to improving aviation safety and efficiency." 1998 MTT-S International Microwave Symposium Digest 98.3 (1998 Vol. III [MWSYM]): 1935-1935.

Summary form only given. Reliable real time hazardous weather (especially low altitude wind shear) warnings at major airports with frequent thunderstorm activity and reduced delays due to adverse weather are a critical need for the aviation system. This paper describes some key elements of the Federal Aviation Administration (FAA)'s microwave Terminal Doppler Weather Radar (TDWR) that is now providing fully automated Doppler radar based detection of microbursts and gust fronts and 20 minute warning of wind shifts which could effect runway usage at many of the nation's major airports. Current work is underway to use the TDWR to reduce delays at major airports. The TDWR also could be used to provide improved roadway information at many major metropolitan areas. The use of C-band has permitted high spatial resolution beam patterns for clutter suppression and storm feature resolution, but has lead to some difficult challenges in range/Doppler ambiguities. The paper concludes with a discussion of possible microwave system improvements to support the next generation of weather sensing radars.

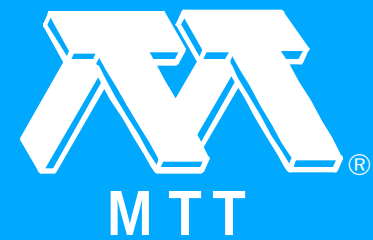
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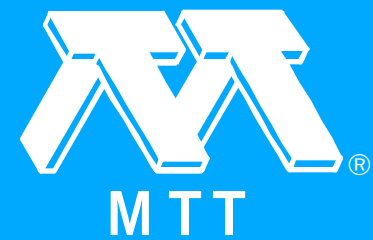
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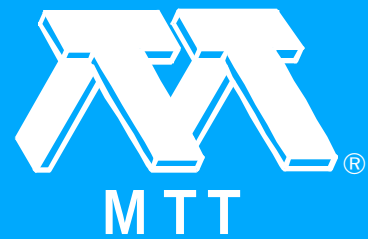


Abstracts

Wireless communications devices and technology: future directions

K. Hansen. "Wireless communications devices and technology: future directions." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 1-5.

The wireless communication marketplace has enjoyed enormous growth over the last decade. This paper takes a look at what new applications, services, and technology will be required to continue this growth into the future.



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RF design challenges for CDMA cellular and PCS mobile handsets

F. Ali, C. Wakeham, M. Williams, R. Moazzam and T.L. Fu. "RF design challenges for CDMA cellular and PCS mobile handsets." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 7-10.

This paper outlines the key RF design parameters for code division multiple access (CDMA) protocol based cellular and PCS mobile handsets. Technical challenges pertaining to the receiver and transmitter are discussed.



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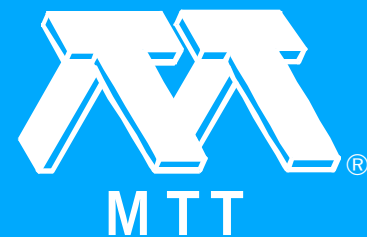


Abstracts

Recent trends and status of Japanese RFICs for commercial applications

H. Kondoh. "Recent trends and status of Japanese RFICs for commercial applications." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 11-14.

This paper describes the recent trends and status of Japanese development of RFICs and related technologies for commercial applications. A focus will be put primarily on two markets: 800 MHz-1.9 GHz cellular phones to depict a existing high-volume rapidly growing market and millimeter-wave automotive radars to delineate a highest-frequency high-volume application in the foreseeable future. Recent results of RFIC technologies are described and reviewed to observe the status of resolving issues specific to each application. Some examples are also given to implicate device technologies for future RFIC use.



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K-band Si/SiGe HBT MMIC amplifiers using lumped passive components with a micromachined structure

Liang-Hung Lu, Jae-Sung Rieh, P. Bhattacharya, L.P.B. Katehi, E.T. Croke, G.E. Ponchak and S.A. Alterovitz. "K-band Si/SiGe HBT MMIC amplifiers using lumped passive components with a micromachined structure." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 17-20.

Using Si/SiGe heterojunction bipolar transistors with a maximum oscillation frequency of 52 GHz and a novel structure for passive components, a two-stage K-band lumped-element amplifier has been designed and fabricated on high-resistivity Si substrates. The chip size including biasing and RF chokes is 0.92/spl times/0.67 mm/sup 2/.

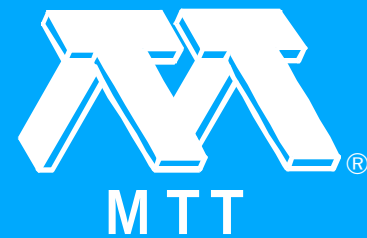


Abstracts

A 1-157 GHz InP HEMT traveling-wave amplifier

B. Agarwal, A.E. Schmitz, J.J. Brown, M. Le, M. Lui and M.J.W. Rodwell. "A 1-157 GHz InP HEMT traveling-wave amplifier." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 21-23.

We report traveling wave amplifiers with 1-157 GHz 3-dB bandwidth, 5 dB gain. These amplifiers were fabricated in a 0.1 μm gate length InGaAs/InAlAs HEMT MMIC technology. The use of gate-line capacitive-division and low-loss elevated coplanar waveguide lines have yielded record bandwidth broadband amplifiers.



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76 GHz flip-chip MMICs for automotive radars

T. Shimura, Y. Kawasaki, Y. Ohashi, K. Shirakawa, T. Hirose, S. Aoki, H. Someta, K. Makiyama and S. Yokokawa. "76 GHz flip-chip MMICs for automotive radars." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 25-28.

Using the flip-chip bonding technique, we developed a 76-GHz MMIC chip set for automotive radars. A chip set consists of a 76-GHz amplifier, a 76-GHz mixer, 76-GHz SPDT switches, a 38/76-GHz doubler, a 38-GHz voltage-controlled oscillator and a 38-GHz buffer amplifier.

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An 18-40 GHz monolithic ring mixer

S.A. Mass, F.M. Yamada, A.K. Oki, N. Matovello and C. Hochuli. "An 18-40 GHz monolithic ring mixer." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 29-32.

This paper describes a doubly balanced monolithic ring mixer using a unique planar balun consisting of a Marchand section followed by a coupled-line structure. The latter provides additional even-mode rejection and a convenient point for IF extraction. The mixer achieves low conversion loss and high isolation over an 18-40 GHz RF/LO bandwidth and a dc-10 GHz IF bandwidth.

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Coplanar transceiver MMIC for 77 GHz automotive applications based on a nonlinear design approach

L. Verwey, H.J. Siweris, M. Neumann, U. Schaper, R. Osorio, A. Werthof, S. Kudszus, H. Massier, H. Tischer, W. Reinert, A. Hulsmann, W.H. Haydl, T. Meier, W. Kellner and M. Schlechtweg. "Coplanar transceiver MMIC for 77 GHz automotive applications based on a nonlinear design approach." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 33-36.

Integrated transceiver MMICs for automotive applications were realized in coplanar waveguide technology, using a 0.15 μm PM-HEMT process. Based on an analytical nonlinear HEMT model, harmonic balance simulations of the entire chip, comprising up to 7 devices, showed good agreement with the measured power performance of the transmit and the receive paths. For the resistive mixer, a DSB noise temperature of only 297 K was measured.

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Highly selective novel MMIC microwave active recursive filter

W. Mouzannar, L. Billonnet, B. Jarry and P. Guillon. "Highly selective novel MMIC microwave active recursive filter." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 39-42.

This paper describes a new original microwave filter design using low frequency recursive concepts and fully integrable in MMIC technology. Our approach offers a convenient way to realize miniature filter circuits for narrowband filtering applications. A 7 GHz fixed center frequency MMIC active bandpass filter with two percent bandwidth is realized and experimental results are presented which validate the accuracy of the novel design methodology.

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A high performance switched-LNA IC for CDMA handset receiver applications

R. Moroney, K. Harrington, W. Struble, B. Khabbaz and M. Murphy. "A high performance switched-LNA IC for CDMA handset receiver applications." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 43-46.

This paper reports on a low voltage, low noise, high linearity amplifier with on-chip bypass switch to provide extended dynamic range. The amplifier is designed for the wide dynamic range requirements of cellular band CDMA handsets. In high gain mode, the amplifier achieves 16.5 dB gain, 1.5 dB noise figure and 0 dBm input IP3 with just 10 mA of current from a 2.7 V supply. In bypass mode, the input IP3 increases to +27 dBm with <5 dB insertion loss and <100 /spl mu/A of DC current. This patented M/A-COM topology switched-LNA is fabricated on M/A-COM's 0.5 /spl mu/m low noise MESFET process and packaged in a low cost 8 lead MSOP plastic package.

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Abstracts

A low noise amplifier for a multi-band and multi-mode handset

Chang-Soek Lee, Min-Gun Kim, Joe-Jin Lee, Kwang-Eui Pyun and Hyung-Moo Park. "A low noise amplifier for a multi-band and multi-mode handset." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 47-50.

Using a low noise active balun and a push-pull active matching circuit, a wideband low noise amplifier MMIC is designed and fabricated. For the frequency up to 3 GHz, output VSWR is less than 1.3 and the output power handling capability of 9.4 dB is enhanced compared with conventional active matching circuit.



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Novel active differential phase splitters in RFIC for wireless applications (1998 [RFIC])

H. Ma, S.J. Fang, F. Lin and H. Nakamura. "Novel active differential phase splitters in RFIC for wireless applications (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 51-54.

Two novel active differential phase splitters have been designed and fabricated in a GaAs MESFET process. The new circuits employ a concept of feedback to adjust gain and phase unbalance separately and accurately. The active phase splitters feature simplicity, low power supply and wide-band performance. The circuits can provide ± 1 dB and $\pm 180^\circ$ differential signals within a 4 GHz bandwidth, well covering the frequency range currently used for dual mode commercial wireless communications. In narrowband application more accurate balanced differential signals can be achieved by external tuning.

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A low distortion GaAs quadrature modulator IC

J. Itoh, T. Nakatsuka, K. Sato, Y. Imagawa, T. Uda, T. Yokoyama, M. Maeda and O. Ishikawa. "A low distortion GaAs quadrature modulator IC." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 55-58.

A low distortion GaAs quadrature modulator IC with on-chip active 90/spl deg/ phase-shifter was fabricated by using high linearity GaAs MESFET technology for wideband wireless applications. The IC showed OIP3 of +16 dBm, CLR of -40 dBc, and IRR of -40 dBc at supply voltage of 5.0 V, dissipation current of 70 mA and carrier frequency of 600 MHz. Excellent EVM smaller than 1.0% and ACPR of 60 dBc were also obtained for 4 Mbps QPSK signal with Pout of -10 dBm.

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New type of class A/F amplifier MMIC for use in commercial PCS multiple modulation format base station power amplification

D. Helms, M. Mokalla, N. Vladimirsky, M. Testa and D. Wills. "New type of class A/F amplifier MMIC for use in commercial PCS multiple modulation format base station power amplification." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 61-64.

A modified GaAs FET class-A/F amplifier provided greatly improved linear power in concurrent multiple modulation formats. The class A/F structure suppresses the 3rd and 5th order products more than 15.8 dB and 13 dB respectively, over a typical class A/F amplifier and 17.8 dB reduced 3rd order products verses a straight class A amplifier. The amplifier has 0.3 dB gain flatness over a 10% bandwidth.

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Abstracts

49% efficiency power amplifier MMIC utilizing SrTiO/sub 3/ capacitors for 3.5 V Li-ion battery operated CDMA cellular phones

N. Iwata, K. Yamaguchi, T.B. Nishimura, K. Takemura and Y. Miyasaka. "49% efficiency power amplifier MMIC utilizing SrTiO/sub 3/ capacitors for 3.5 V Li-ion battery operated CDMA cellular phones." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 65-68.

This paper describes 840 MHz IS-95 power performance of a two-stage power amplifier MMIC with 2.0/spl times/1.5 mm/sup 2/ area utilizing double-doped AlGaAs-InGaAs-AlGaAs FETs and SrTiO/sub 3/ capacitors. Under 3.5 V operation, the developed MMIC including input matching, inter-stage matching and bias circuits delivered an output power of 0.93 W (29.7 dBm), a power-added efficiency (PAE) of 48.6% and an associated gain of 28.4 dB with an adjacent channel leakage power of -42 dBc at 0.9 MHz off-center frequency. Even operated at a reduced supply voltage of 1.2 V, a high PAE of 46.9% was obtained.



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IMD elimination and ACPR improvement for an 800 MHz HBT MMIC power amplifier

F. Ali, M.R. Moazzam and C. Aitchison. "IMD elimination and ACPR improvement for an 800 MHz HBT MMIC power amplifier." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 69-71.

This paper describes a novel technique for reducing the third order intermodulation (IMD) product and ACPR levels in HBT power amplifiers. This technique is based on the dynamic control of the injection/feedback of the second harmonic frequency signal to the amplifier. For a cellular frequency HBT MMIC power amplifier, a reduction of 44 dB in the 3rd order IMD level is measured at 28 dBm output power. By controlling the phase and amplitude of the injected/feedback second harmonic, a total rejection of IMD products over a wide dynamic range of input power is achieved without any change in the fundamental signal levels. The ACPR for CDMA system (IS-98 standard) over a 30 kHz bandwidth with ± 900 KHz offset shows a 6 dB improvement. No degradation in the CDMA signal quality factor (ρ) and PAE (40%) are observed. To the best of our knowledge this is the first application of this technique to HBT power amplifiers.



Abstracts

A 3.4 V, 1 watt cellular DAMPS GaAs MESFET power amplifier with 50% efficiency

S.S. Taylor. "A 3.4 V, 1 watt cellular DAMPS GaAs MESFET power amplifier with 50% efficiency." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 73-76.

A 3.4 V, 1 W cellular DAMPS power amplifier with 50% efficiency has been implemented and tested. The single-supply PA incorporates biasing, PMOS interface, and negative supply voltage generation on-chip, and is assembled in a TSSOP20 package with a downset paddle. The circuit achieves 30 dB of power gain, a 12 dB input return loss, and is implemented in a 20 GHz ion-implanted GaAs MESFET manufacturing process.



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A highly integrated T/R module for active phased array antennas

K. Fujii, Y. Hara, Y. Shibuya, T. Sakai and Y. Takano. "A highly integrated T/R module for active phased array antennas." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 77-80.

A highly integrated transmit/receive (T/R) module that has achieved integration levels superior to any MMIC module is described. The highly integrated T/R module is achieved by using LTCC (Low Temperature Co-fired Ceramic) multiple layer substrate, highly integrated MMIC chip-set, large-signal simulation for switching MESFET circuits, high power and high efficiency amplifiers using a PHEMT process, multiple-cavity package, advanced thin-film substrate which enables to realize air bridge structures, and self align like void free MMIC die-bonding technique.



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Integration trends with RF silicon technologies in mobile radio applications

S. Atkinson and J. Strange. "Integration trends with RF silicon technologies in mobile radio applications." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 83-86.

The aim of this paper is to outline the likely future trends in the integration of RF circuits within portable radio applications utilising silicon technology. This is achieved firstly by examining the historical evolution of RF IC products with a particular emphasis on how a component oriented focus has become system oriented, which in turn is causing semiconductor manufacturers to re-think how existing and future technologies may be applied in more effective ways. In particular as semiconductor companies take control of the development of a greater part of the overall radio, new architectures and techniques are evolving and technologies are being applied in radically new ways.

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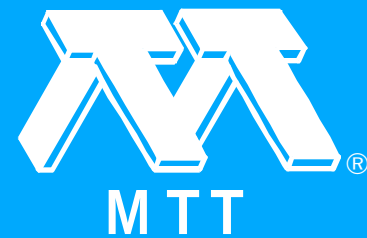


Abstracts

Recent MMW technology development and its military and commercial applications

K.-F. Lau, L. Liu and S. Dow. "Recent MMW technology development and its military and commercial applications." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 87-90.

This paper highlights key recent advances in the infrastructure of Milli-Meter Wave (MMW) technology. They include improved MMIC design methodologies, enhanced HEMT and HBT wafer processes, new on-wafer testing capabilities, automated assembly of MMW Multi-Chip Assemblies (MCAs) and new packaging techniques. It also addresses the implications of these advances in terms of their impact on a wide range of military and commercial systems. The paper concludes with comments on future trends and directions of the MMW technology.



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A 2.7 V image reject receiver for DECT

A. Hanke, K. Hadjizada, S. Heinen, G.L. Puma and W. Geppert. "A 2.7 V image reject receiver for DECT." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 93-96.

An image reject receiver IC for DECT with min. 27 dB power gain is presented. The effect of different realizations of phase shifter networks on the receiver performance is discussed in detail. It is shown that this kind of architecture gives a large gain in overall cost, because of the decrease of external components in the RF and IF path of the complete receiver.



Abstracts

A 900 MHz image-reject transceiver Si bipolar IC

P. Katzin, A.P. Brokaw, G. Dawe, B. Gilbert, L. Lynn and J.M. Maurant. "A 900 MHz image-reject transceiver Si bipolar IC." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 97-100.

An ISM-band transceiver chip includes an LNA, image-reject up- and down-converters, a VCO, a /64/65 dual-modulus prescaler, an IF Limiting amplifier/RSSI strip, and a voltage regulator. The IC operates from a single-supply down to 3.0 V and is optimized for a 10.7 MHz IF frequency to allow use of very low-cost ceramic filters. The 6.8 mm² chip is fabricated using a 24 GHz f_{sub T}/Si bipolar process and mounted in a 28 pin SSOP package.



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A single-chip 1.9 GHz RF transceiver MMIC using GaAs MESFET

Huainan Ma, Rajinder Singh, Kai Tuan Yan, Sher Jiun Fang, Fujiang Lin, Khen-Sang Tan, J. Shibata, A. Tamura and H. Nakamura. "A single-chip 1.9 GHz RF transceiver MMIC using GaAs MESFET." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 101-104.

This paper presents a newly developed single-chip RF transceiver MMIC for 1.9 GHz PHS wireless communications using a GaAs MESFET technology. The MMIC features a complete RF transceiver which includes an SPDT switch, a 2-stage LNA, a down-mixer, a double balanced up-mixer, an AGC amplifier and a 2-stage PA with an automatic gate-bias control circuit. The transceiver also features on-chip 50 Ω impedance matching, with a chip size of 9.3 mm/sup 2/ and packaged in a 48 pin TQFP with heat sink.

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Abstracts

A single-chip PHS front-end MMIC with a true single +3 V voltage supply

T. Tsutsumi, Y. Kawaoka, T. Katamata, T. Yamamoto, T. Marukawa, F. Okui, S. Fukuda, E. Imamura and E. Grace. "A single-chip PHS front-end MMIC with a true single +3 V voltage supply." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 105-108.

A small single-chip PHS RF front-end GaAs MMIC operating with single +3V supply voltage has been developed. This MMIC integrates transmitter power-amplifier, receiver LNA, switchable attenuator, RX/TX switches, and control logic in a single-chip. Unlike conventional GaAs MESFET technology, the new power GaAs MESFET incorporated in this chip does not require negative voltage gate bias, and as a result, the MMIC can be operated by a true single-supply voltage without internal or external negative voltage generator.



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Abstracts

Architectures of highly integrated RFICs for 900 MHz US digital cordless systems

N. Camilleri. "Architectures of highly integrated RFICs for 900 MHz US digital cordless systems." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 109-112.

Cordless phone systems operating at 900 MHz in the United States have gained popularity over the older 49 MHz analog systems. The driver that has made these 900 MHz systems popular, is performance at the right price for consumer applications. This paper reviews architectures and shows examples of highly integrated RFICs applicable for this market.



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A DECT RF transmitter with integrated VCOs suitable for open loop GFSK modulation

O. Kromat, S. Heinen, U. Matter, G.L. Puma and M. Zannoth. "A DECT RF transmitter with integrated VCOs suitable for open loop GFSK modulation." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 113-116.

Since the monolithic integration of VCOs complying with the DECT standard seems to be possible, the interaction between circuit parts, such as PLL and biasing, with a fully integrated VCO needs to be studied. This is necessary with the focus on spurious products in the output spectrum and the effect on the open loop modulation of the VCO for the generation of a DECT GFSK modulated signal.



Interference issues in silicon RFIC design

Zhaofeng Zhang, A. Pun and J. Lau. "Interference issues in silicon RFIC design." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 119-122.

Traditional noise immunity methodologies used in PCB designs are less effective when applied to RFICs. We present here analyses of both electromagnetic interferences and spiral inductor induced substrate noise in silicon RFICs that can be an impediment in achieving higher integration. In the analysis, we (1) compare the effectiveness of 4 shielding solutions in a triple layer metal technology, (2) contrast the interference on both heavily doped and lightly doped substrates, (3) study the impact of physical separation and geometrical variations, (4) and measure the inductor induced substrate noise on a 0.8 μm /m triple-layer CMOS process.



Abstracts

Highly accurate spurious-free integrated VCO resonator in a GSM transceiver using circuit-package co-design

Jenshan Lin, Ran-Hong Yan, R.C. Frye, P.R. Smith and Y.L. Low. "Highly accurate spurious-free integrated VCO resonator in a GSM transceiver using circuit-package co-design." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 123-126.

We report an integrated VCO in a GSM transceiver with less than 1% frequency error in the first design and spurious-free frequency response. The first-design success with high accuracy is due to considering the package as part of the circuit design and included in optimization. The spurious-free frequency response is achieved by carefully designing a high-Q (37.5 at 1 GHz) inductor and a co-planar stripline in the VCO resonator.



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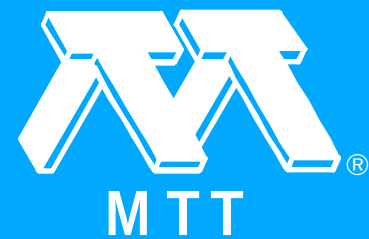
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Plastic microwave multi-chip modules for wireless communication applications

V. Krishnamurthy, E. Balch, K. Durocher, J. Rose, R. Saia, D. Lester and D. Sherwood.
"Plastic microwave multi-chip modules for wireless communication applications." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 127-130.

This paper describes a high density, microwave plastic multi-chip module (MCM) with vertical feed throughs providing RF/DC I/Os at the module backside allowing for a low thermal resistance solder attach to a printed circuit board. A return loss of better than -20 dB up to approximately 3.8 GHz was measured for the coplanar vertical interconnect from the plastic module to a printed circuit board. Functional T/R modules operating between 1.60 GHz and 2.0 GHz were also fabricated with this technology.

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Analysis and performance of BGA interconnects for RF packaging

D. Staiculescu, A. Pham, J. Laskar, S. Consolazio and S. Moghe. "Analysis and performance of BGA interconnects for RF packaging." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 131-134.

We present the development of a lumped element model for the BGA transition using both measurements and simulations results. Measurements of the test structure are used to generate a circuit model for a single bump configuration. This model is used to calibrate EM simulations of the bump geometry. Furthermore, the effect of the bump diameter on the equivalent circuit model is presented. This model approach is scaleable and extendible to a more global behavior of BGA interconnects for RF packaging.

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VCO linearisation by frequency feedback

J. Gustrau, F. Fiechtner and M. Hoffmann. "VCO linearisation by frequency feedback." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 135-138.

We demonstrate, how a voltage controlled oscillator is linearised by frequency feedback independently of the VCO-characteristic. The VCO is replaced by a controlled frequency locked loop. Hereby, the VCO characteristic is substituted by the inverse function of the frequency detector characteristic, which, in our case, is linear to a great extent. A 70 MHz oscillator was built to verify the principle.

On the optimum width of GaAs MESFETs for low noise amplifiers

S.S. Taylor. "On the optimum width of GaAs MESFETs for low noise amplifiers." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 139-142.

A derivation of the optimum device width for minimizing noise figure at a specified bias current is presented for a cascode LNA circuit topology in GaAs MESFET technology. This configuration achieves excellent third-order intercept and input return loss by employing source and series gate inductance. The resulting noise figure can be chosen close to $F_{\text{sub min}}$, or traded for acceptable noise figure and/or input IP3 at reduced current consumption. Computer simulations confirm the predicted results.





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Design of high performances Gilbert-cell mixers for GSM/DCS front-ends

S. Colomines, T. Amaud, R. Plana, T. Parra and J. Graffeuil. "Design of high performances Gilbert-cell mixers for GSM/DCS front-ends." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 143-146.

This paper reports an original design methodology for low voltage high performances Gilbert mixers in the DCS range. We present for the first time a real BiCMOS structure featuring +10.6 dB conversion gain, +6.7 dBm TP3, 10.3 DSB noise figure under a 2.2 V supply voltage, which is among the best results ever reported.

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Silicon monolithic balanced oscillators using on-chip suspended active resonators

Y. Sun, J.L. Tauritz and R.G.F. Baets. "Silicon monolithic balanced oscillators using on-chip suspended active resonators." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 149-152.

Silicon microwave monolithic balanced oscillators using suspended active resonators realized in a $f_T = 15$ GHz BJT process are presented. These micro-machined oscillators feature lower power consumption and lower phase noise (5 dBc lower). Suspended active resonators, tuned to self-oscillate and having an even simpler topology, are also demonstrated.

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A sub 1-V SOI CMOS low noise amplifier for L-band applications

H. Komurasaki, H. Sato, N. Sasaki, K. Ueda, S. Maeda, Y. Yamaguchi and T. Miki. "A sub 1-V SOI CMOS low noise amplifier for L-band applications." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 153-156.

This paper describes a sub 1.0 V low noise amplifier in a 0.35 μm /m SOI (silicon on insulator) CMOS process. Active-body control enables a sub 1.0 V operation, and improves gain and the 1 dB-compression point. The gain of 7.0 dB, the NF of 3.6 dB and the input 1 dB-compression point of -4.5 dBm are obtained at 1.0 V and 1.9 GHz.





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Micropower CMOS RF components for distributed wireless sensors

T.-H. Lin, H. Sanchez, R. Rofougaran and W.J. Kaiser. "Micropower CMOS RF components for distributed wireless sensors." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 157-160.

A wide range of new applications have recently appeared for a low power, low cost, "embedded radio". These wireless interfaces for handheld mobile nodes and Wireless Integrated Network Sensors (WINS) must provide spread spectrum signaling for multi-user operation at 902-928 MHz. Conventional low power RF systems have been implemented in bipolar technology. However, cost considerations motivate the development of complete micropower CMOS RF circuits and systems operating at previously unexplored low power levels. Micropower CMOS VCO and mixer circuits, developed for these emerging narrow-band communication systems, are reported here. Design methods combining high-Q inductors and weak inversion MOSFET operation enable the lowest reported operating power for RF front end components including a mixer and voltage-controlled oscillator (VCO) operating at frequencies of 400-900 MHz. In addition, the VCO, by virtue of its high-Q inductive components, displays the lowest reported phase noise for 1 GHz CMOS VCO systems for any power dissipation.

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Silicon-on-sapphire MOSFET distributed amplifier with coplanar waveguide matching

P.F. Chen, R.A. Johnson, M. Wetzel, P.R. de la Houssaye, G.A. Garcia, P.M. Asbeck and I. Lagnado. "Silicon-on-sapphire MOSFET distributed amplifier with coplanar waveguide matching." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 161-164.

Analog applications of silicon RF MOSFET circuits have received increased attention as potentially lower cost and higher integration alternatives to III-V technology. In this work, a thin-film silicon-on-sapphire (SOS) n-MOSFET based distributed amplifier is demonstrated. Impedance matching was achieved by a coplanar waveguide (CPW) on sapphire. The distributed amplifier has a bandwidth of 10 GHz and 5 dB gain. The amplifier's bandwidth is the broadest ever reported for a Si MOSFET technology.

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F-inductor and BC-MOS technology for monolithic silicon RFICs

J.S. Kim, C.H. Park, S.H. Kim, G.H. Ryu and K. Seo. "F-inductor and BC-MOS technology for monolithic silicon RFICs." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 165-168.

A high performance spiral inductor and a RF-optimized MOSFET are developed for monolithic silicon RF application. The new inductor is made on the standard CMOS processed wafer using flip-chip bonding technology. Its floating-in-air structure enables to achieve more than 18 GHz resonant frequency at 4.8 nH inductance, as well as the good Q-factor. The RF-optimized MOSFET adopts the buried channel and the profiled junction structure for larger G_m and smaller C_{gs}/G_m . The measurement results show the improvement of G_m by 30% and f_{subT} , by 45%, and the decrease of C_{gs}/G_m by 52%, compared with that of the conventional MOSFET.



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Improvement of the quality factor of RF integrated inductors by layout optimization

J.M. Lopez-Villegas, J. Samitier, C. Cane and P. Losantos. "Improvement of the quality factor of RF integrated inductors by layout optimization." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 169-172.

A systematic method to improve the quality factor of RF integrated inductors is proposed. The method is based on the inductor's layout optimization, and has been successfully applied to the design of square spiral inductors performed using a silicon based MCM technology and silicon micromachining post processing.

Click on title for a complete paper.





Unaided 2.5 Gb/s silicon bipolar clock and data recovery IC

G. Gutierrez and Shyang Kong. "Unaided 2.5 Gb/s silicon bipolar clock and data recovery IC." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 173-176.

We will describe a low cost and low power Si Bipolar IC for clock and data recovery at 2.488 Gb/s that requires no external reference. The design is based on a digital quadri-correlator that has inherent low phase offset and allows the use of passive loop filters. The clock recovery unit (CRU) has broad locking range that makes it robust against power supply and temperature variations.





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GalnP/GaAs HBT broadband monolithic transimpedance amplifiers and their high frequency small and large signal characteristics (1998 [RFIC])

Jae-Woo Park, S. Mohammadi, D. Pavlidis, C. Dua, J.L. Guyaux and J.-C. Garcia.

"GalnP/GaAs HBT broadband monolithic transimpedance amplifiers and their high frequency small and large signal characteristics (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 179-182.

Monolithic broadband transimpedance amplifiers were developed using GalnP/GaAs single HBTs. The HBTs showed a cut off frequency ($f_{sub\ T/}$) of 60 GHz and maximum oscillation frequency ($f_{sub\ max/}$) of 100 GHz. The fabricated amplifiers had a maximum bandwidth of 19 GHz and an associated transimpedance gain of 47 dB/spl Omega/. The large signal characteristics of two transimpedance amplifier designs with similar gain were also investigated and showed that the cascode approach is much less sensitive to input power level.





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K/Ka-band low-noise embedded transmission line (ETL) MMIC amplifiers (1998 [RFIC])

Hua-Quen Tseng, L. Witkowski, A. Ketterson, P. Sannier and T. Jones. "K/Ka-band low-noise embedded transmission line (ETL) MMIC amplifiers (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 183-186.

The design, fabrication, and performance of producible, high-performance K-, and Ka-band pHEMT low-noise MMIC amplifiers using embedded transmission line (ETL) circuit concept with top-side grounding are reported. A state-of-the-art noise figure of 1.2 dB with 25 dB gain is achieved at 31 GHz. These amplifiers can be implemented in low-cost, ultra-compact receiver modules for emerging space-borne phased-array communication applications.

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Integrated 1.55 μm receivers using GaAs MMICs and thin film InP detectors (1998 [RFIC])

C. Chun, O. Vendier, E. Moon, J. Laskar, H.C. Ki, N.M. Jokerst and M. Brooke. "Integrated 1.55 μm receivers using GaAs MMICs and thin film InP detectors (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 187-190.

A GaAs-based amplifier has been designed and integrated with a large area, high efficiency, thin film InP-based metal-semiconductor-metal photodetector. Thin film integration is a hybrid integration scheme that minimizes the parasitics between the InP detector and the GaAs circuit to the order of integrated circuits. The GaAs integrated circuits are fabricated using a commercial TriQuint Semiconductor foundry process, demonstrating the use of standard GaAs-based foundry circuits for long wavelength, highly integrated, high speed, low cost photoreceivers. Utilizing thin film integration to minimize interconnect parasitics, a 1.55 μm wavelength receiver has been demonstrated at 1 GB/s, and initial results for a 10 GB/s receiver under fabrication are presented.

[Click on title for a complete paper.](#)



A Ka-band 4-bit monolithic phase shifter using unresonated FET switches (1998 [RFIC])

K. Maruhashi, H. Mizutani and K. Ohata. "A Ka-band 4-bit monolithic phase shifter using unresonated FET switches (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 191-194.

This paper presents a Ka-band 4-bit monolithic phase shifter incorporating novel unresonated FET switches which show broadband on/off characteristics up to 40 GHz without inductors. The developed switched-line phase shifter MMIC demonstrated an overall phase deviation of 3.3/spl deg/ rms and an insertion loss deviation of 0.9 dB rms at 34.5 GHz. Over a relatively wide frequency range from 33 to 36 GHz, the phase deviation was less than 7/spl deg/ rms. The chip size of the MMIC is 2.5 mm/spl times/2.2 mm.



Abstracts

A wideband pHEMT downconverter MMIC for satellite communication systems (1998 [RFIC])

C.F. Campbell. "A wideband pHEMT downconverter MMIC for satellite communication systems (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 195-198.

This paper presents the design and performance of a broadband, low power, +3.0 V pHEMT Gilbert cell downconverter IC for satellite communication systems. The downconverter is fully integrated on to a single die and requires no external matching elements. The MMIC demonstrates 300-8000 MHz RF-LO bandwidth and 185-2085 MHz IF bandwidth.



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A 2-V operation RF front-end GaAs MMIC for PHS hand-set (1998 [RFIC])

T. Seshita, K. Kawakyu, H. Wakimoto, M. Nagaoka, Y. Kitaura and N. Uchitomi. "A 2-V operation RF front-end GaAs MMIC for PHS hand-set (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 201-204.

A single 2-V operation RF front-end MMIC has been developed using three kinds of self-aligned gate MESFETs. Its transmitter block of a power amplifier with an antenna switch exhibited a power gain of 28.9 dB and a high power-added efficiency of 27.0% at 20.5-dBm output power. The receiver block of a low-noise amplifier with the antenna switch exhibits a noise figure of 3.4 dB and a gain of 11.1 dB.

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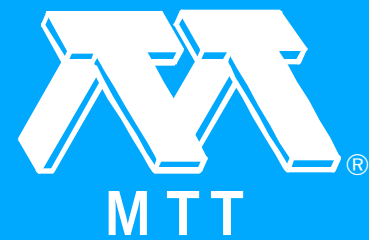


Abstracts

A 1.9 GHz single-chip RF front-end GaAs MMIC with low-distortion cascode FET mixer for personal handy-phone system terminals (1998 [RFIC])

M. Nakayama, K. Horiguchi, K. Yamamoto, Y. Yoshii, S. Sugiyama, N. Suematsu and T. Takagi. "A 1.9 GHz single-chip RF front-end GaAs MMIC with low-distortion cascode FET mixer for personal handy-phone system terminals (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 205-208.

This paper describes new single-chip RF front-end GaAs MMIC for 1.9 GHz Japanese PHS handheld terminals. The IC consists of a high power amplifier, a T/R switch, a low noise amplifier, a newly developed low distortion cascode FET mixer and a negative voltage generator for FET gate bias voltage. The IC has high performance as RF front-end for terminals.



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A monolithic even harmonic quadrature mixer using a balance type 90 degree phase shifter for direct conversion receivers (1998 [RFIC])

M. Shimosawa, K. Kawakami, H. Ikematsu, K. Itoh, N. Kasai, Y. Isota and O. Ishida. "A monolithic even harmonic quadrature mixer using a balance type 90 degree phase shifter for direct conversion receivers (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 209-212.

This paper proposes a novel circuit configuration of an even harmonic quadrature mixer (EHQMIX) for direct conversion receivers. In this EHQMIX, a 90 degree phase shifter consists of balance type high pass and low pass filters, and it does not require any circuits connecting to the ground plane. So this configuration is suitable for low cost monolithic IC without any vias, because amplitude and phase imbalance caused by inductance included in wires and leads of a package for circuits to the ground plane can be reduced. A developed L-band MMIC achieves good quadrature detecting characteristics.





An 18 GHz Si bipolar mold package prescaler (1998 [RFIC])

M. Mineo, M. Okamoto, K. Hosoki and H. Ohba. "An 18 GHz Si bipolar mold package prescaler (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 213-216.

A mold package static prescaler operating at 18 GHz has been realized. The technology used is the Si bipolar process of which the emitter mask width is 0.8 μm . The cut-off frequency and the maximum oscillation frequency are 30 GHz and 40 GHz respectively. The input power range of operations is more than 10 dB in -70 to +95/spl deg/C at 1 to 15 GHz. This prescaler features a +5 V single supply voltage and 190 mW power dissipation.



A Q-factor enhancement technique for MMIC inductors (1998 [RFIC])

M. Danesh, J.R. Long, R.A. Hadaway and D.L. Hareme. "A Q-factor enhancement technique for MMIC inductors (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 217-220.

An increase of 50% in the peak Q-factor and a wider operating bandwidth for monolithic inductors is achieved by exciting a microstrip structure differentially. Conventional excitation of a 8 nH spiral inductor fabricated in a production silicon IC technology resulted in a peak (measured) Q-factor of 6.6 at 1.6 GHz, while the differential connection showed a maximum Q-factor of 9.7 at 2.5 GHz. These experimental results compared favorably with the behaviour predicted from simulation.



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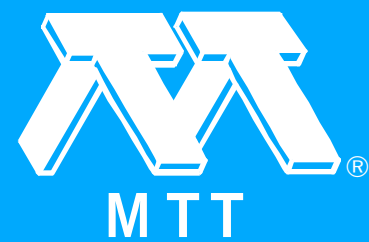
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A 44 GHz low noise block downconverter MMIC suitable for EHF satellite communication applications (1998 [RFIC])

A.R. Barnes, D.C. Bannister and M.T. Moore. "A 44 GHz low noise block downconverter MMIC suitable for EHF satellite communication applications (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 223-226.

A multifunction MMIC, containing the core components required for an EHF satellite communications receiver, operating over 43.5 to 45.5 GHz, has been designed and tested. The circuit has been fabricated using a high yield, commercially available, 0.25 μm /m PHEMT GaAs-InGaAs-AlGaAs foundry process at GEC Marconi Materials Technology Ltd. The multifunction MMIC integrates a low noise amplifier, downconverter, local oscillator doubler and buffer amplifier onto a single chip occupying an area of 3.0/spl times/3.8 mm/sup 2/. Successful performance was achieved for a first pass iteration, namely 4.3 dB noise figure and 5 to 8 dB conversion gain with a low local oscillator (LO) drive level of 0 dBm.





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A highly integrated multi-functional chip set for low cost Ka-band transceiver (1998 [RFIC])

D.L. Ingram, L. Sjogren, J. Kraus, M. Nishimoto, M. Siddiqui, S. Sing, K. Cha, M. Huang and R. Lai. "A highly integrated multi-functional chip set for low cost Ka-band transceiver (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 227-230.

This paper presents the development of a highly integrated multi-functional chip set for low-cost Ka-band transceiver. The transmitter portion consists of a 17.5-to-35 GHz doubler macrocell which delivers >20 dBm of output power, a Ka-band SPDT polarization switch macrocell with >45 dB of isolation and a >10-W high power module. The receiver portion consists of a Ka-band doubler macrocell, an InGaAs/InAlAs/InP HEMT Ka-band balanced LNA with 1.9 dB noise figure and 19 dB gain and a Ka-band image rejection mixer with >32 dB image rejection and 5.5 dB conversion loss. The high power module consists of two power modules; each can deliver 6-W with 24% PAE and an associated power gain of 21.5 dB. The power module consists of a driver amplifier and two power amplifier chips. These MMIC amplifiers were fabricated with a 2-mil thick substrate using 0.15- μm InGaAs/AlGaAs/GaAs HEMT technology. The total GaAs real estate required for implementation of a typical pulsed-FM transceiver is <150 mm². This highly integrated chip set will also reduce the assembly cost substantially.



Abstracts

V-band single chip, direct carrier BPSK modulation transmitter with integrated patch antenna (1998 [RFIC])

G. Passiopoulos, S. Nam, A. Georgiou, A.E. Ashtiani, I.D. Robertson and E.A. Grindrod. "V-band single chip, direct carrier BPSK modulation transmitter with integrated patch antenna (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 231-234.

A single chip V-Band pHEMT technology transmitter with wideband direct BPSK modulation and on-chip dual band patch antenna is reported. The transmitter features, 10% bandwidth electronic tuning range, substantial power output, injection locking capability, low power consumption and good patch antenna radiation characteristics. As such it is well suited to wireless digital communications systems as well in radar and phased array applications.



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A Ka-band monolithic single-chip transceiver using sub-harmonic mixer (1998 [RFIC])

Yon-Lin Kok, M. Ahmadi, Huei Wang, B.R. Allen and Tzuen Lin. "A Ka-band monolithic single-chip transceiver using sub-harmonic mixer (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 235-237.

This paper presents development of a Ka-band (38 GHz) single-chip transceiver based on GaAs HEMT MMIC technology. The transceiver chip utilizes a sub-harmonic mixer in receiving chain such that LO-to-RF port isolation can be improved by more than 20 dB without sacrificing chip compactness. In addition the dc power consumption can be reduced to about one-half of the conventional transceiver with a direct mixer receiver. To date this single-chip transceiver chip has demonstrated a measured LO-to-RF input port isolation of 62 dB, LO-to-RF transmitter port isolation of 52 dB and a power consumption of 1.0 and 3.4 watt in receive and transmit modes respectively. The receiver noise figure achieves 9 dB across the RF band from 38.0 to 38.6 GHz with an IF of 2.38 GHz under 4 dBm LO drive. The conversion gain was measured to be greater than 17 dB.

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Millimeter-wave three-dimensional masterslice MMICS (1998 [RFIC])

K. Nishikawa, K. Kamogawa, K. Inoue, K. Onodera, M. Hirano, T. Tokumitsu and I. Toyoda. "Millimeter-wave three-dimensional masterslice MMICS (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 239-242.

The three-dimensional (3D) masterslice MMIC technology has, even in the millimeter-wave region, the advantages of high integration levels, simple design procedures, short turn-around-time, and low fabrication cost. Fabricated V-band amplifiers achieve an 8-dB gain and a 5.3 dB noise figure in an area of 0.27 mm². A U-band single-chip downconverter is also demonstrated.

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A 900 MHz ISM band transceiver RFIC chip set and RF module (1998 [RFIC])

Chien-Kuang Lee, Chung-Chiang Ku, Keng-Li Su, Chao-Hui Lin and Kuang-Chung Tao. "A 900 MHz ISM band transceiver RFIC chip set and RF module (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 245-248.

This paper demonstrates a packaged RF front-end IC chip set (transmitter and receiver) and a highly integrated transceiver RF module used in the 902-928 MHz ISM band. By using the RF IC chip set with other application circuits, this module can provide the sensitivity of -93 dBm at 1.152 Mb/s data rate. The transmit power of the module can be varied continuously from -10 dBm to +20 dBm simply by a 0/spl sim/3 V DC control voltage. The average current consumption of the module under TDD operation is 150 mA for +20 dBm output power, and 60 mA for -10 dBm output power.



GaAs RFICs for CDMA/AMPS dual-band wireless transmitters (1998 [RFIC])

V. Aparin, K. Gard, G. Klemens and C. Persico. "GaAs RFICs for CDMA/AMPS dual-band wireless transmitters (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 249-252.

An upconverter and two driver amplifiers for CDMA/AMPS cellular/PCS wireless transmitters are presented. The upconverter has two selectable RF outputs operating over 800 to 1900 MHz frequency range. They can be assigned to different frequency bands providing a dual-band operation. The driver amplifiers offer two gain modes selected with a control voltage. The cellular driver amplifier provides DC power savings in the low gain mode. The chip set was fabricated using a GaAs 0.6 μm E/D MESFET process.



A bipolar upconversion modulation loop transmitter for dual-band mobile communications (1998 [RFIC])

Shen Feng, B. Kolb, H. Herrmann, W. Veit, V. Thomas, S. Herzinger, F. Volpe, G. Lipperer and J. Fenk. "A bipolar upconversion modulation loop transmitter for dual-band mobile communications (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 253-256.

This paper presents design considerations and measurement results of an upconversion modulation loop transmitter IC (PMB 2255) implemented in Siemens 26 GHz Si bipolar technology B6HF. The device consists of a vector modulator, a downconversion mixer, a modulation phase-locked loop (PLL) and a three-wire programming bus. Besides power-down and standby modes, added values of switchable filter cutoff frequency and precharge function are also realized for dual- and multi-band digital mobile communication systems such as GSM900, GSM1800 and GSM1900. Based on measurements the device provides an excellent performance in designed intermediate frequency range from 300 to 550 MHz with supply voltage from 2.7 to 4.5 V, ambient temperature from -30 to 85/spl deg/C, and local and RF frequencies up to 2.0 GHz.



IF-band MMICs for high-speed wireless signal processing (1998 [RFIC])

H. Hayashi and M. Muraguchi. "IF-band MMICs for high-speed wireless signal processing (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 257-260.

IF-band MMICs for high-speed wireless signal processing are presented. The first is a miniaturized 90/spl deg/ divider/combiner with 2.1 dB mean transmission loss for dividing signals at 140 MHz. The second is a logarithmic/limiting amplifier which utilizes a self-phase-distortion compensation technique. More than 65 dB gain and less than 5/spl deg/ phase deviation were obtained.



Abstracts

A high dynamic range, digitally tuned, Q-enhanced LC bandpass filter for cellular/PCS receivers (1998 [RFIC])

W.B. Kuhn, N.K. Yanduru and A.S. Wyszynski. "A high dynamic range, digitally tuned, Q-enhanced LC bandpass filter for cellular/PCS receivers (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 261-264.

A fully-integrated, 850 MHz, 2-pole, bandpass filter with a 2 percent fractional bandwidth is reported. The filter provides digital control of center frequency and Q, and includes a companion on-chip oscillator suitable for master-slave tuning. Prototype measurements show a dynamic range of 75 dB when used in a system with a 1 MHz final IF bandwidth, and an oscillator phase noise of -105 dBc/Hz at 100 kHz offset.



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A 44 GHz InP-based HBT double-balanced amplifier with novel current re-use biasing (1998 [RFIC])

K.W. Kobayashi, M. Nishimoto, L.T. Tran, H. Wang, J. Cowles, T.R. Block, J. Elliott, B. Allen, A.K. Oki and D.C. Streit. "A 44 GHz InP-based HBT double-balanced amplifier with novel current re-use biasing (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 267-270.

Here we report on what is believed to be the first Q-band IP3 results of an InAlAs-InGaAs-InP based HBT MMIC linear amplifier. The 3-stage amplifier uniquely combines a "double-balanced" design topology that incorporates a "current re-use" bias scheme. The amplifier MMIC achieves 15.4 dB of gain, 28.3 dBm of IP3, and a P/sub sat/ of 16.2 dBm at 44 GHz. The corresponding output-stage IP3/P/sub dc/ ratio is 5.3 which is the best reported for InP-HBTs at Q-band. The MMIC is a high complexity chip which integrates 15 HBTs and 18 Lange couplers in a 6.2/spl times/3.5 mm/sup 2/ area, and is self-biased through 5 V while consuming 108 mA. The "current re-use" enables easier system integration while the "double-balanced" design produces wideband IP3, gain and return-loss performance. This work demonstrates the promising linearity performance of InP-HBTs and practical biasing capability which is attractive for Q-band receiver applications such as MM-wave digital radio.

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Abstracts

A 60 GHz 256 QAM balanced vector modulator for short range LOS communication applications (1998 [RFIC])

S. Nam, A.E. Ashtani, G. Passiopoulos, S. Lucyszyn and I.D. Robertson. "A 60 GHz 256 QAM balanced vector modulator for short range LOS communication applications (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 271-274.

An I-Q type vector modulator employing two orthogonal bi-phase amplitude reflection type modulators has been demonstrated which sets a new benchmark for a multilevel direct carrier modulator for digital communications. The 60 GHz modulator uses design techniques and technology capability to reduce hardware complexity in communication applications. The modelling and design of the balanced I-Q vector modulator are reported, followed by the measured performances.



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A single-chip 94-GHz frequency source using InP-based HEMT-HBT integration technology (1998 [RFIC])

H. Wang, R. Lai, L. Tran, J. Cowles, Y.C. Chen, E.W. Lin, H.H. Liao, M.K. Ke, T. Block and H.C. Yen. "A single-chip 94-GHz frequency source using InP-based HEMT-HBT integration technology (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 275-278.

This paper presents the development of a 94-GHz monolithic frequency source using InP-based HEMT-HBT integration technology. This single-chip frequency source consists of five sub-circuits: a 23.5-GHz HBT VCO, a 23.5-GHz HBT buffer amplifier, a 23.5 to 47 GHz HEMT frequency doubler, a 47 GHz HEMT buffer amplifier, and a 47 to 94 GHz HEMT doubler. The source chip has a peak output power of 1.6 dBm, with tuning range from 90.8 GHz to 94.3 GHz. This is the highest-level integration of millimeter-wave solid-state integrated circuits using this technology reported to date.



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Fully integrated Q-band MMIC transmitter and receiver chips using resistive PHEMT mixers (1998 [RFIC])

S. Nam, T. Gokdemir, A.H. Baree, I.D. Robertson, A.D. Plews, M.J. Howes, C.M. Snowden, K.G. Leckey, A.D. Patterson and J.A.C. Stewart. "Fully integrated Q-band MMIC transmitter and receiver chips using resistive PHEMT mixers (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 279-282.

This paper describes the design of resistive PHEMT mixers and their application in fully integrated Q-band millimetre-wave monolithic receiver and transmitter chips, where LO power is limited. The design method has been verified with excellent measured performances over the RF frequency range of 36.5-40 GHz.

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Low cost GaAs PHEMT MMICs for millimeter wave sensor applications

H.J. Siweris, A. Werthof, H. Tischer, U. Schaper, A. Schafer, L. Verweyen, T. Grave, G. Bock, M. Schlechtweg and W. Kellner. "Low cost GaAs PHEMT MMICs for millimeter wave sensor applications." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 283-286.

A chip set for millimeter-wave sensor applications, especially automotive radar systems, is described. It consists of a highly integrated transceiver chip, a voltage controlled oscillator, a harmonic mixer and a medium power amplifier. The MMICs operate in the 76-77 GHz frequency range and have been fabricated by a production oriented GaAs PHEMT technology.



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X-band Si bipolar transistor single-chip transceiver using three-dimensional MMIC technology (1998 [RFIC])

I. Toyoda, K. Nishikawa, K. Kamogawa, C. Yamaguchi, M. Hirano, K. Onodera and T. Tokumitsu. "X-band Si bipolar transistor single-chip transceiver using three-dimensional MMIC technology (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 289-292.

The three-dimensional (3-D) MMIC technology significantly improves the operating frequency of Si MMICs and offers highly integrated masterslice MMICs. This paper introduces a newly developed X-band Si bipolar transistor transceiver MMIC which integrates 13 function blocks on a 2.3/spl times/2.3 mm chip; it offers 20 dB receiver gain and 13 dB transmitter gain. Its design uses a novel function-block-library concept based on the 3-D masterslice MMIC technology.

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Direct conversion for FLEX paging receivers - A feasibility study (1998 [RFIC])

Zhiheng Chen and J. Lau. "Direct conversion for FLEX paging receivers - A feasibility study (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 293-296.

To achieve an integrated solution for the 6400 bps FLEX paging receiver, we examined the direct conversion architecture and addressed two major problems that may obstruct the implementation: (1) the compensation of the DC offset, and (2) the design of a 4-level FSK demodulator at zero-IF. Simulation results show that the combination of harmonic mixers with a zero-crossing-interpolation based demodulator is a possible solution.

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A Si BJT RF dual band receiver IC for DAB (1998 [RFIC])

W. Titus, R. Croughwell, C. Schiller and L. DeVito. "A Si BJT RF dual band receiver IC for DAB (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 297-300.

A low cost 1.5 GHz and 200 MHz dual channel broadband receiver IC for Digital Audio Broadcast (DAB) is described. The SSOP-28 packaged Si bipolar device provides 28 dB of conversion gain, 4 dB NF and 50 dB IM3 suppression to a common 920 MHz IF. Two novel 30 dB variable gain, 2.4 dB NF, low noise amplifiers are integrated with doubly balanced mixers, VCO, dual modulus prescaler, AGC and power management circuitry. With a companion IF IC, filters, and 20 MHz Frequency Synthesizer, it forms a complete DAB receiver for large dynamic range signals between -97 and -5 dBm.



A low voltage RF receiver for digital satellite radio (1998 [RFIC])

G. Cali, G. Cantone, P. Filoramo, G. Sirna, P. Vita and G. Palmisano. "A low voltage RF receiver for digital satellite radio (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 301-304.

An integrated low voltage RF receiver for the Digital Satellite Radio is presented. It uses innovative solutions for critical blocks such as LNA, IF buffer, VCO, etc., and includes power supply regulators at 2.4 V. The circuit has been integrated in a high performance 20-GHz silicon bipolar technology and correctly operates with an external power supply varying from 2.7 V to 5.5 V.



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A Si BJT IF downconverter/AGC IC for DAB

M. Goldfarb, R. Croughwell, C. Schiller, D. Livezey and G. Heiter. "A Si BJT IF downconverter/AGC IC for DAB." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 305-308.

A low cost, 920 MHz to 30 MHz downconverter/AGC IF IC of novel topology is described. Implemented in Si bipolar technology, this device provides 85 dB of conversion gain, a 15 dB NF (including the 22 dB loss of an external bandpass filter), a leveled output of 41 dBmV (120 mVrms), with a minimum IM ratio of 40 dB. With a companion RFIC, it forms a DAB receiver.

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RF micromachined varactors with wide tuning range (1998 [RFIC])

A. Dec and K. Suyama. "RF micromachined varactors with wide tuning range (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 309-312.

Polysilicon surface micromachined varactors using two- and three-plate structures with 1.5:1 and 1.87:1 tuning ranges, respectively, are presented. The tuning ranges are near-theoretical limits and can be obtained within 4.4 V control voltage. The two-plate varactor has a nominal capacitance of 2.05 pF and a Q-factor of 20 at 1 GHz.



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Modeling of spiral inductors on lossy substrates for RFIC applications (1998 [RFIC])

R.D. Lutz, Y. Hahm, A. Weisshaar, V.K. Tripathi, A. Grzegorek, W. McFarland and J. Meyer. "Modeling of spiral inductors on lossy substrates for RFIC applications (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 313-316.

A modeling technique for planar microstrip spiral inductors in the presence of lossy media, such as in CMOS and bipolar technologies, is presented. The new model for spiral inductors incorporates the frequency dependent substrate effects via analysis of the the 'skin-effect' mode of the microstrip structure.

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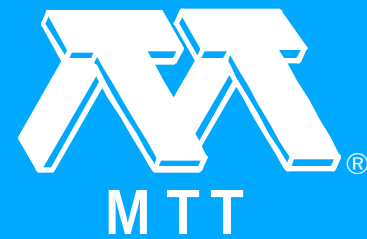


Abstracts

Sub-micron silicon RFIC technologies: an overview

D.K. Lovelace, J.L. Finol and J.C. Durec. "Sub-micron silicon RFIC technologies: an overview." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 317-320.

Silicon based semiconductors have become the standard active device technology of choice in today's cost and performance driven consumer wireless products. No longer is silicon technology confined to low frequency analog and digital processing functions. Silicon devices have now reached high frequency performance levels which allow them to be used almost exclusively in the RF section of many wireless communication circuits. This paper deals with the issues involved in employing silicon IC technologies to low cost, low power, RF circuits.



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Abstracts

Extraction of parasitic parameters of dummy devices on different silicon substrates (1998 [RFIC])

L.P. Chen, Y.P. Ho, D.C. Lin, B.M. Tseng, H.Y. Lee, R.F. Guan, G.W. Huang, Y.C. Chen, W.Y. Wen and C.L. Chen. "Extraction of parasitic parameters of dummy devices on different silicon substrates (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 321-324.

S-parameters of dummy devices fabricated on Si substrates with different resistivities are measured and analyzed to study the effects of substrate resistivity on the microwave characteristics. An equivalent parasitic circuit model is proposed and the extraction procedure also developed. The substrate resistivity effects can be explained well by the proposed model.



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Parasitic-aware design and optimization of CMOS RF integrated circuits (1998 [RFIC])

R. Gupta and D.J. Allstot. "Parasitic-aware design and optimization of CMOS RF integrated circuits (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 325-328.

The need for higher integration and lower cost personal communication systems (PCS) has motivated extensive efforts to develop CMOS RF integrated circuits which meet the performance requirements of current and future standards such as IS-95, GSM, DECT, etc. However, power losses associated with on-chip inductor, device, and package parasitics have impeded the full integration of power-efficient CMOS RF ICs. In this paper, we describe a custom CAD synthesis and optimization tool which enables RF chip/package design for optimum circuit performance. A fully-integrated CMOS power amplifier (PA) illustrates the efficacy of this approach.

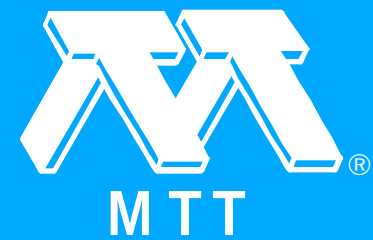
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Abstracts

Index of Authors (1998 [RFIC])

"Index of Authors (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 329-331.



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