Microwave Digital Archive
IEEE Microwave Theory and Techniques Society

2003

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WELCOME:

The Microwave Theory and Techniques Society of the IEEE continues the task of archiving the IEEE Transactions on Microwave Theory and Techniques, and all other major publications including the IEEE Microwave and Wireless Components Letters (formerly called IEEE Microwave and Guided Wave Letters), as well as the digests of the IEEE International Microwave Symposium and the Radio Frequency Integrated Circuits conference. The 2003 annual Microwave Theory and Techniques CD-ROM archive is provided to keep everyone up-to-date with the latest publications. This volume also contains the papers of the Special Issue on Microwave Photonics, published on the Journal of Lightwave Technology in December 2003.

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The section “Getting Started” in this Index tells you how to optimize the Acrobat Reader preferences to improve the readability of the document.

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The 2003 CD-ROM archive was assembled from electronic files provided to us by Adam Philippidis at IEEE Headquarters. The material includes papers from the IEEE Transactions on Microwave Theory and Techniques edited by David Rutledge and his associated editors, and the IEEE Microwave

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and Wireless Components Letters edited by Samir El-Ghazaly and his associated editors.

Herb Thal and Paul Eitner edited the 2003 International Microwave Symposium (IMS) Digest. Tina Quach edited the Radio Frequency Integrated Circuits (RFIC) Digest. Victor Lubecke and Paul Eitner edited the IMS CD-ROM that included papers from both the IMS and the RFIC.

Many people have contributed the CD-ROM archival effort. The Digital Archive project was initiated by Charlie Jackson and Roger Pollard. During my tenure as Editor, many people have offered invaluable support to my effort. Among the many, I would like to remember Charlie Jackson, Manfred Schindler, Karl Varian, and Samir El-Ghazaly. I would also like to acknowledge the hard work of the reviewers of the journal disk. I hope that I have implemented their ideas and corrections. It is my sole responsibility for any imperfections, big or small, you may uncover. Finally, I want to acknowledge the support by the team at InControl Productions, Inc. Special thanks go to Barbara DiEdwardo for her assistance in producing the new journal disc.

Thank you and enjoy!

Luciano Boglione,
Editor,
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tool bar:



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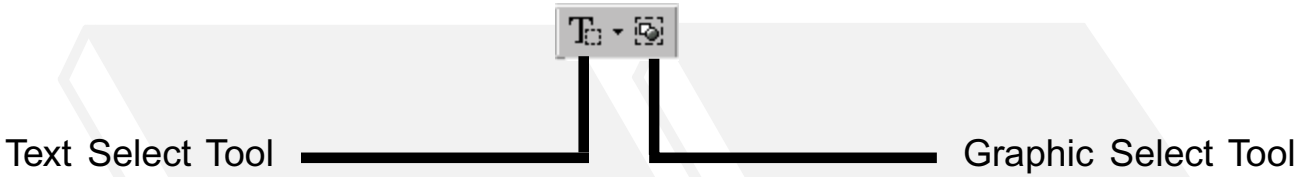
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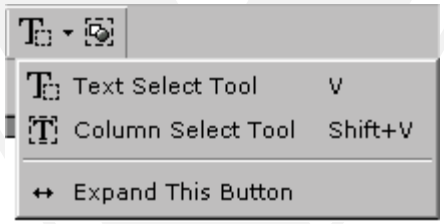
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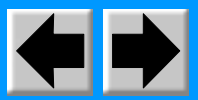
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Note to All users:

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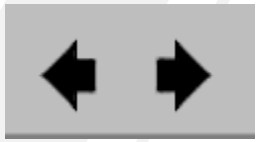
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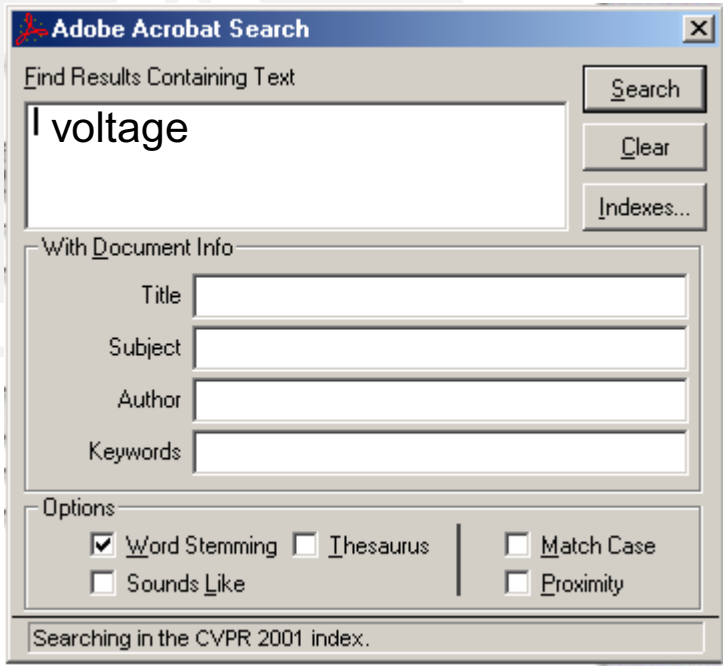
Typing a term in the text box at the top of the Search dialog box and pressing the "Search" button causes a full-text search of all words in the body of papers in the collection. If you have "Document

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



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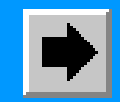
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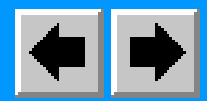
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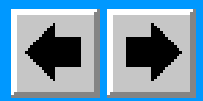
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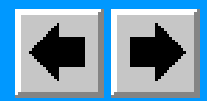
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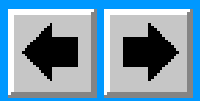
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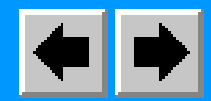
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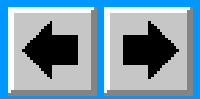
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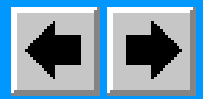
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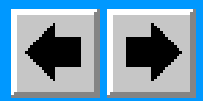
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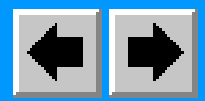
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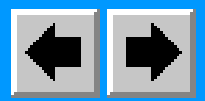
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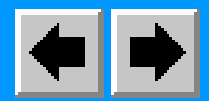
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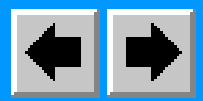
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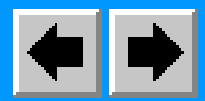
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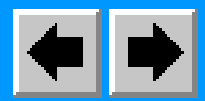
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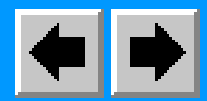
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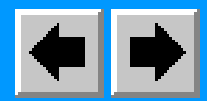
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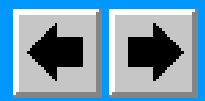
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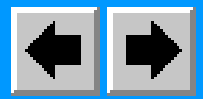
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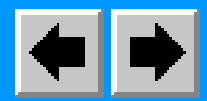
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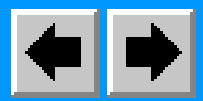
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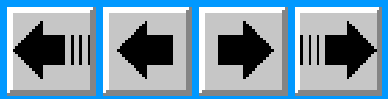
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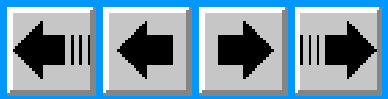
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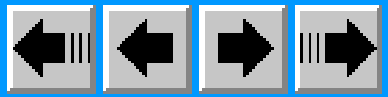
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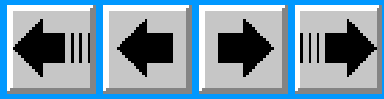
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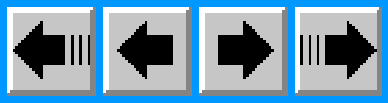
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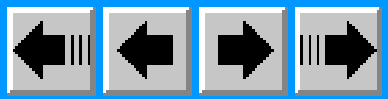
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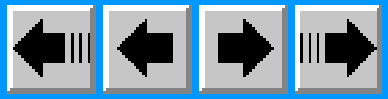
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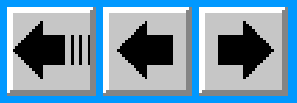
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Abstracts

Advanced coupling matrix synthesis techniques for microwave filters

R.J. Cameron. "Advanced coupling matrix synthesis techniques for microwave filters." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 1-10.

A general method is presented for the synthesis of the folded-configuration coupling matrix for Chebyshev or other filtering functions of the most general kind, including the fully canonical case, i.e., N prescribed finite-position transmission zeros in an Nth-degree network. The method is based on the "N+2" transversal network coupling matrix, which is able to accommodate multiple input/output couplings, as well as the direct source-load coupling needed for the fully canonical cases. Firstly, the direct method for building up the coupling matrix for the transversal network is described. A simple non-optimization process is then outlined for the conversion of the transversal matrix to the equivalent "N+2" folded-configuration coupling matrix. The folded matrix may be used directly to realize microwave bandpass filters in a variety of technologies, but some of these could require awkward-to-realize cross-couplings. This paper concludes with a description of two simple procedures for transforming the transversal and folded matrices into two novel network configurations, which enable the realization of advanced microwave bandpass filters without the need for complex inter-resonator coupling elements.

Abstracts

Simple noise deembedding technique for on-wafer shield-based test fixtures

T.E. Kolding and C.R. Iversen. "Simple noise deembedding technique for on-wafer shield-based test fixtures." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 11-15.

Conventional on-wafer test fixtures have a significant impact on two-port noise-parameter measurements of silicon devices at gigahertz frequencies. This leads to increased measuring inaccuracy, as well as a need for complicated and area-consuming deembedding procedures. Alternatively, shield-based test fixtures are characterized by very few series effects and, thus, support cost-efficient and simple deembedding. The applicability of a simple one-step method is illustrated with experimental data. A performance comparison is made to full-scale deembedding methods based on conventional, as well as shield-based test fixtures.

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Accurate determination of the complex permittivity of materials with transmission reflection measurements in partially filled rectangular waveguides

J.M. Catala-Civera, A.J. Canos, F.L. Penaranda-Foix and E. de los Reyes Davo. "Accurate determination of the complex permittivity of materials with transmission reflection measurements in partially filled rectangular waveguides." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 16-24.

An enhanced transmission reflection technique for the precise determination of the complex permittivity of dielectric materials partially filling the cross section of a rectangular waveguide is described. Dielectric properties are determined by an iterative procedure from two-port S-parameter measurements and a numerically generated propagation constant obtained from the analysis of a partially filled waveguide. Convergence of the solution is ensured from perturbational approximations. Unlike previous approaches, an uncertainty investigation is performed, taking into account all the parameters involved in the dielectric characterization. Permittivity accuracy values are presented and, hence, an optimum measurement setup can be established. Measurements of reference materials have been carried out to validate the method.

Abstracts

Isolation in three-dimensional integrated circuits

A. Margomenos, K.J. Herrick, M.I. Herman, S. Valas and L.P.B. Katehi. "Isolation in three-dimensional integrated circuits." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 25-32.

The necessity for high-density integrated-circuit (IC) design makes the issue of circuit isolation a critical one. In multilayer structures, surface waves excited by planar discontinuities induce parasitic currents on adjoining interconnects, therefore, causing a parasitic coupling, which becomes a limiting factor as density increases and size reduces. This paper presents a study of those proximity effects on interconnect geometry for X- and W-bands. Various configurations of finite ground microstrip lines, finite ground coplanar (FGC) waveguides, and transitions have been analyzed for silicon and Duroid substrates. The results included in this paper illustrate the implications of parasitic coupling associated with interconnects printed in parallel or perpendicular configurations, lines located in close proximity to open-end discontinuities, vias etched near FGC lines, and finally vertical transitions through wafers. Theoretical and experimental results, in terms of reduced isolation, are provided, showing the advantages of the use of FGC lines over conventional microstrip lines since, in the cases investigated, they offer 8 dB higher isolation. Additionally, open-end effects are demonstrated to increase coupling by as much as 6 dB, while vertical transitions through wafers cause a parasitic coupling in the order of 3 dB. The results presented in this study can be employed in order to reduce parasitic interference between interconnects.

Abstracts

Investigation of MW characteristics of HTS microstrip and coplanar resonators with ferrite thin-film components

T. Nurgaliev, S. Miteva, A.P. Jenkins and D. Dew-Hughes. "Investigation of MW characteristics of HTS microstrip and coplanar resonators with ferrite thin-film components." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 33-40.

Formulas for calculating the magnetic-field dependence of the resonance frequency and the quality factor of HTS microstrip (MS) and coplanar-waveguide resonators with a tangentially magnetized ferrite film component were obtained within the framework of the perturbation method. The conditions of attaining the maximum magnetic tuning effect of the resonance frequency (with reference to the external magnetic-field strength, the field-orientation angle, and the ferrite film position in the resonator) were determined and verified in the example of model resonators, formed from copper MS and ground-plane electrodes, a yttrium-iron-garnet (YIG) ferrite film component, and dielectric spacers. A YBCO MS resonator with a YIG component was also prepared and its characteristics were measured at 77 K.

Abstracts

Optimization of feedforward amplifier power efficiency on the basis of drive statistics

C.L. Larose and F.M. Ghannouchi. "Optimization of feedforward amplifier power efficiency on the basis of drive statistics." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 41-54.

Among power amplifier linearization techniques, feedforward delivers the best performance, but at the cost of significant degradation in the amplifier's power efficiency. This paper details a procedure to design feedforward amplifiers for optimal DC-RF conversion efficiency. The procedure has the convenience of requiring only the power statistics of the driving signal, of being computationally efficient, and of lending itself to a highly intuitive graphical representation. The gains and normalized saturated output powers of the main and error amplifiers, as well as the various couplings, are optimized for a specified linearity and gain at the output of the system. The amplifier types and adaptation methods employed must be specified at the outset, but results are presented that begin to reveal the impact of these factors on efficiency and, thus, to demonstrate the investigative potential of the procedure.

Abstracts

Mode discriminator based on mode-selective coupling

Wenxiang Wang, Yubin Gong, Guofen Yu, Lingna Yue and Jiahong Sun. "Mode discriminator based on mode-selective coupling." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 55-63.

Mode discriminators based on a mode-selective coupling principle have a number of advantages. The design method of this type of discriminator is presented in this paper. The emphasis is placed on the mode-selective coupler with a multihole and multigroup of coupling holes. All of the dimensions of the discriminator are determined by this method. The calibration and power measurement of the discriminator are also investigated. Some design examples of discriminators for 35- and 70-GHz gyrotrons, which can be applied to discriminate the TE/sub 11/, TE/sub 01/, and TE/sub 02/ modes and the TE/sub 01/, TE/sub 02/, and TE/sub 03/ modes, respectively, are given.

Abstracts

Prediction of peak internal fields in direct-coupled-cavity filters

C. Ernst and V. Postoyalko. "Prediction of peak internal fields in direct-coupled-cavity filters." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 64-73.

In this paper, an explicit expression of the peak electric-field strength in the cavities of Chebyshev direct-coupled-cavity waveguide filters is derived. It is shown that the electric-field strength can be predicted from the analysis of the time-averaged stored energy in the lumped low-pass prototype, from which the cavity filter was derived. This simplifies the analysis and study of the power-handling capability of these types of filters considerably, as the stored energy in the prototype filters is easily computed. The analysis of the field distribution in the cavities of an example third-degree Chebyshev direct-coupled-cavity filter shows that the explicit expression for the peak electric-field strength derived in this paper agrees closely with results obtained from a TE/sub 10/ circuit model of the filter, from a full-wave electromagnetic solver and from measurements.

Abstracts

SDA full-wave analysis of boxed multistrip superconducting lines of finite thickness embedded in a layered lossy medium

A.N. Deleniv, M.S. Gashinova and I.B. Vendik. "SDA full-wave analysis of boxed multistrip superconducting lines of finite thickness embedded in a layered lossy medium." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 74-81.

The spectral-domain approach is applied to modeling the propagation characteristics of a multiconductor structure of superconducting strip lines with signal strips and ground planes of finite thickness in lossy layered media. Two sets of basis functions (Chebyshev and Legendre polynomials) are compared by their ability for accurate modeling of microwave losses. Simple expressions within the immitance approach are presented for a power flux computation. As a result, complex propagation constants and related modal impedances of a multiconductor structure containing superconducting strips can be calculated with a high accuracy. The model applicability is illustrated by numerical results compared with available simulated data.

Abstracts

Generalized Z-domain absorbing boundary conditions for the analysis of electromagnetic problems with finite-difference time-domain method

Zhenhai Shao, Wei Hong and Jianyi Zhou. "Generalized Z-domain absorbing boundary conditions for the analysis of electromagnetic problems with finite-difference time-domain method." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 82-90.

In this paper, a generalized absorbing boundary condition (Z-ABCs) is constructed in the Z-transform domain. Based on Z-ABCs, some well-known ABCs, such as the Mur's ABC, the dispersive boundary condition, Zhao and Litva's ABC, Liao's ABC, etc. can be easily deduced. Besides, it can also result in some new ABCs. Recurrence formulas for the coefficients of Z-ABCs are presented, and the stability and numerical dispersive characteristics are discussed in detail. In order to validate the Z-ABCs, the finite-difference time-domain method is applied to the analysis of transmission lines, integrated filters, patch antennas, and scattering problems.

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Theoretical and experimental characterization of a near-field scanning microwave microscope (NSMM)

W.C. Symons III, K.W. Whites and R.A. Lodder. "Theoretical and experimental characterization of a near-field scanning microwave microscope (NSMM)." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 91-99.

An important aspect to understanding near-field optics and imaging involves the electromagnetic scattering characteristics of objects illuminated by the near field of a sub-wavelength-sized aperture. This paper addresses one particular application of near-field optics: a transmission-mode near-field scanning microscope (NSM). Specifically, some peculiar phenomena are investigated including a near-field focusing effect, as well as an impedance-based image-shape effect. To this end, we first describe the physical attributes of an NSM and then present two computational models we use to characterize this instrument. Both moment-method and finite-difference time-domain models are discussed. These two models are applied to the analysis of the NSM for various configurations and compared to other theoretical and experimental results. Finally, the construction of an X-band NSM is described - which we label a near-field scanning microwave microscope (NSMM) - and the experimental near-field imaging measurements are compared with our numerical predictions.

Abstracts

An improved multiline analysis for monolithic inductors

M. Dehan, J.-P. Raskin, I. Huynen and D. Vanhoenacker-Janvier. "An improved multiline analysis for monolithic inductors." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 100-108.

This paper presents a new efficient multiline model for monolithic inductors. A preliminary model was developed by Huynen, which divided the spiral in sections of coupled transmission lines whose parameters are calculated by a variational principle. This model has been improved for inductors with high trace width-to-gap ratios and it has been demonstrated to be adequate for predicting S-parameters characterizing the inductor over a wide frequency band, even above its self-resonant frequency. This new design tool is shown to be useful for analyzing and optimizing inductor topologies built on both insulating and semiconducting substrates.

Abstracts

Fast capacitance extraction of actual 3-D VLSI interconnects using quasi-multiple medium accelerated BEM

Wenjian Yu, Zeyi Wang and Jiangchun Gu. "Fast capacitance extraction of actual 3-D VLSI interconnects using quasi-multiple medium accelerated BEM." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 109-119.

A quasi-multiple medium (QMM) method based on the direct boundary element method (BEM) is presented to extract the capacitance of three-dimensional (3-D) very large scale integration interconnects with multiple dielectrics. QMM decomposes each dielectric layer into a few fictitious medium blocks, and generates an overall coefficient matrix with high sparsity. With the storage technique of a sparse blocked matrix and iterative equation solver generalized minimal residual, the QMM can greatly reduce the CPU time and memory usage of large-scale direct BEM computation. Numerical examples of 3-D multilayered and multiconductor structures cut from actual layout show the efficiency of the QMM method for capacitance extraction. We also compared the QMM accelerated BEM with geometry independent measured equation of invariance (GIMEI) and Zhu's overlapping domain decomposition method (ODDM).

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Miniaturized microstrip cross-coupled filters using quarter-wave or quasi-quarter-wave resonators

Cheng-Chung Chen, Yi-Ru Chen and Chi-Yang Chang. "Miniaturized microstrip cross-coupled filters using quarter-wave or quasi-quarter-wave resonators." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 120-131.

Miniaturized microstrip filters using quarter-wave or quasi-quarter-wave resonators with cross-coupling are presented. The quarter-wavelength resonators enable very compact positively or negatively cross-coupled filters to be realized. The combination of quarter-wave and quasi-quarter-wave resonators facilitates the cross-coupling with a proper coupling phase. A new explanation for the coupling phase between the main-coupling and cross-coupling paths is proposed. Different filters that use the proposed resonators are realized and may have either quasi-elliptical or flat group-delay responses. Measurement results correlate well with theoretical predictions.

Abstracts

Permittivity characterization of low-k thin films from transmission-line measurements

M.D. Janezic, D.F. Williams, V. Blaschke, A. Karamcheti and Chi Shih Chang. "Permittivity characterization of low-k thin films from transmission-line measurements." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 132-136.

Developed a broad-band technique for measuring the relative permittivity of low-k thin films using microstrip transmission-line measurements. From measurements of the complex microstrip propagation constant and the characteristic impedance, we determined the relative permittivity of thin films incorporated in microstrip lines. We present measurement results to 40 GHz for both an oxide and a bisbenzocyclobutene low-k thin film and show a variability of permittivity of approximately /spl plusmn/5% over the entire frequency range.

Abstracts

Modeling dispersion and radiation characteristics of conductor-backed CPW with finite ground width

F. Schnieder, T. Tischler and W. Heinrich. "Modeling dispersion and radiation characteristics of conductor-backed CPW with finite ground width." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 137-143.

Dispersion and radiation properties of the conductor-backed coplanar waveguide (CPW) with finite ground planes are analyzed and modeled. A frequency-domain finite-difference method using the perfectly matched layer absorbing boundary condition is used as reference. Based on these results, a closed-form description is derived and implemented into an existing quasi-static CPW model. This leads to a comprehensive and efficient CPW description accounting for all relevant effects from conductor loss to high-frequency dispersion. Additionally, design rules to avoid parasitic radiation effects are given.

Abstracts

A Ka-band power amplifier based on a low-profile slotted-waveguide power-combining/dividing circuit

Xin Jiang, Li Liu, S.C. Ortiz, R. Bashirullah and A. Mortazawi. "A Ka-band power amplifier based on a low-profile slotted-waveguide power-combining/dividing circuit." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 144-147.

In this paper, a Ka-band power amplifier based on a resonant slotted-waveguide-to-microstrip power-dividing/combining circuit is presented. The advantages of this structure are its low profile, ease of fabrication, as well as its potential for high power-combining efficiency. In addition, efficient heat sinking of monolithic microwave integrated circuit (MMIC) devices is achieved. A slotted-waveguide power amplifier using eight MMIC amplifiers was designed and fabricated. The measured power-combining efficiency at 33 GHz is 72%. In addition, simulation results predicting the performance degradation of the slotted-waveguide power amplifier due to multiple device failure are presented.

Abstracts

On multiwavelet-based finite-element method

G.W. Pan, Ke Wang and B.K. Gilbert. "On multiwavelet-based finite-element method." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 148-155.

A new approach of using multiwavelets in the finite-element method for electromagnetic-wave problems is presented for the first time. In this approach, the multiscalets are employed as the basis functions. Due to the smoothness, completeness, compact support, and interpolation property of the multiscalets, in terms of the basis function and its derivatives, fast convergence in approximating a function is achieved. The new basis functions are /spl isin/C/sup 1/, i.e., the first derivatives of the bases are continuous on the connecting nodes. Thus, the divergence-free condition is satisfied at the end points. The multiscalets, along with their derivatives, are orthonormal in the discrete sampling nodes. Therefore, no coupled system of equations in terms of the function and its derivative is involved, resulting in a simple and efficient algorithm. Numerical results demonstrate the high efficiency and accuracy of the new method. For a partially loaded waveguide problem, we have achieved a factor of 16 in memory reduction and 435 in CPU speedup over the linear edge-element method.

Abstracts

Design of miniature multilayer on-package integrated image-reject filters

A. Sutono, J. Laskar and W.R. Smith. "Design of miniature multilayer on-package integrated image-reject filters." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 156-162.

We present the design, implementation, and characterization of compact on-package integrated multilayer image-reject filters. The filter implemented in a novel lumped-element stripline configuration in a standard low-temperature cofired ceramic technology occupies an area of only 3.8 mm /spl times/ 2.4 mm /spl times/ 0.5 mm. A distinct feature of this filter is the optimal use of the parasitics of the lumped-element components to implement other components as an integral part of the filter by novel vertical deployments of planar structures. Measurement data of the prototype indicate 3 dB of insertion loss and 20 dB of return loss at the center frequency of 2.4 GHz, as well as 39-dB attenuation at the image frequency, suitable for Bluetooth applications. This paper demonstrates the feasibility of on-package integration of RF front-end elements where the transceiver module is built and, therefore, significantly reduces the development cost.

Abstracts

Design and characterization of an all-cryogenic low phase-noise sapphire K-band oscillator for satellite communication

S.A. Vitusevich, K. Schieber, I.S. Ghosh, N. Klein and M. Spinnler. "Design and characterization of an all-cryogenic low phase-noise sapphire K-band oscillator for satellite communication." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 163-169.

An all-cryogenic oscillator consisting of a frequency-tunable sapphire resonator, a high-temperature superconducting filter and a pseudomorphic high electron-mobility transistor amplifier was designed for the K-band frequency range. The high quality factor of the resonator above 1 000 000 and the low amplifier phase noise of approximately -133 dBc/Hz at a frequency offset of 1 kHz from the carrier, gave oscillator phase-noise values superior to quartz-stabilized oscillators at the same carrier frequency for offset frequencies higher than 100 Hz. In addition to low phase noise, the oscillator possesses mechanical and electrical frequency tunability. We have implemented a two-step electrical tuning arrangement consisting of a varactor phase shifter integrated within the amplifier circuit (fine tuning by 5 kHz) and a dielectric plunger moved by a piezomechanical transducer inside the resonator housing (coarse tuning by 50 kHz). This tuning range is sufficient for phase locking and for electronic compensation of temperature drifts occurring during operation of the device employing a miniaturized closed-cycle Stirling-type cryocooler.

Abstracts

Millimeter-wave measurement of complex permittivity using dielectric rod resonator excited by NRD-guide

A. Nakayama, A. Fukuura and M. Nishimura. "Millimeter-wave measurement of complex permittivity using dielectric rod resonator excited by NRD-guide." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 170-177.

A new method for measuring complex permittivity of low-loss dielectric materials at millimeter-wave frequencies has been developed. The method uses a dielectric rod resonator excited by a nonradiative dielectric waveguide. Effective conductivity of conducting plates for short circuiting the resonator is determined by the difference of unloaded Q factors between TE/sub 0m1/- and TE/sub 0m/spl delta//-mode resonators, made of the same low-loss dielectric material. The complex permittivity of the dielectric rod is determined by the resonant frequency (f/sub 0/) and unloaded Q factor (Q/sub u/) of the TE/sub 0m1/-mode resonator. The complex permittivities of single crystal sapphire, polycrystalline Ba(Mg/sub 1/2/W/sub 1/2/)O/sub 3/ and Mg/sub 2/Al/sub 4/Si/sub 5/O/sub 18/ (cordierite) have been obtained at 60 and 77 GHz by the new method. These results were consistent with the values measured at microwave frequencies. It was also found that the frequency dependence of the dielectric loss tangent (tan/spl delta/) for sapphire can be expressed by frequency/tan/spl delta/=1/spl times/10/sup 6/ GHz.

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Computation of electromagnetic field inside a tissue at mobile communications frequencies

G. Emili, A. Schiavoni, M. Francavilla, L. Roselli and R. Sorrentino. "Computation of electromagnetic field inside a tissue at mobile communications frequencies." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 178-186.

The increasing diffusion of mobile communications is stimulating the study of the interaction mechanisms between electromagnetic (EM) fields and biological systems at radio frequencies. This paper is devoted to the modeling of the interaction between EM fields and a tissue, represented with spherical cells. Different EM approaches have been used to analyze the problem and, in particular, the lumped-element finite-difference time-domain (FDTD) technique has been used to model the cell's membrane represented with the Hodgkin-Huxley (HH) model, and the Floquet theorem to study a tissue by analyzing only few cells. The EM problem has been solved by using the FDTD technique to be independent from the geometry. Computations have been performed at GSM900 and GSM1800 frequencies overcoming the problem relevant to the computation time by using the quasi-static FDTD technique. The results show the field distribution inside the tissue at GSM frequencies; the effect of the application of the HH model to the membrane is also shown.

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Removal of undesired wavefields related to the casing of a microwave scanner

P.M. van den Berg and J.T. Fokkema. "Removal of undesired wavefields related to the casing of a microwave scanner." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 187-192.

This paper deals with the scattered field data measured by a closed microwave scanner and discusses the removal of the effects of the metal casing as a preprocessing step before actual inversion of the data can take place. It is shown that Rayleigh's reciprocity theorem furnishes a relation between the scattered field data obtained in the closed microwave scanner and the scattered field data as if they were obtained by an open scanner without the metal casing. This relation leads to a system of linear equations, from which the desired scattered field data with respect to the equivalent open scanner are obtained.

Abstracts

Compact elliptic-function low-pass filters using microstrip stepped-impedance hairpin resonators

Lung-Hwa Hsieh and Kai Chang. "Compact elliptic-function low-pass filters using microstrip stepped-impedance hairpin resonators." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 193-199.

A compact elliptic-function low-pass filter using microstrip stepped-impendance hairpin resonators and their equivalent-circuit models are developed. The prototype filters are synthesized from the equivalent-circuit model using available element-value tables. To optimize the performance of the filters, electromagnetic simulation is used to tune the dimensions of the prototype filters. The filter using multiple cascaded hairpin resonators provides a very sharp cutoff frequency response with low insertion loss. Furthermore, to increase the rejection-band bandwidth, additional attenuation poles are added in the filter. The filters are evaluated by experiment and simulation with good agreement. This simple equivalent-circuit model provides a useful method to design and understand this type of filters and other relative circuits.

Abstracts

A novel coplanar-waveguide directional coupler with finite-extent backed conductor

Chun-Lin Liao and Chun Hsiung Chen. "A novel coplanar-waveguide directional coupler with finite-extent backed conductor." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 200-206.

A novel edge-coupled coplanar-waveguide (CPW) directional coupler with a floating backed conductor is proposed. For design purposes, a theoretical transmission-line model for the coupler is established, which is based on the characteristic parameters of the related coupled CPW structures. To this end, the effective dielectric constants and characteristic impedances of the conductor-backed edge-coupled CPW structures are analyzed using the full-wave analysis based on the spectral-domain approach. Specifically, the coupling coefficient of this new coupler can be controlled by adjusting the width of the backed conductor. In this paper, two conductor-backed edge-coupled CPW directional couplers with moderate (-6dB) and tight (-3dB) coupling coefficients are designed and implemented based on the theoretical transmission-line model. The theoretical results are compared with the measured ones, and the agreement among them confirms the usefulness of the coupler design model, as well as the full-wave approach for the related coupled CPW structures.

Abstracts

A full-wave analysis model for uniplanar circuits with lumped elements

Chi-Hsueh Wang, Huei Wang and Chun Hsiung Chen. "A full-wave analysis model for uniplanar circuits with lumped elements." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 207-215.

A full-wave analysis model, which uses the current-source port concept for combined electromagnetic and circuit simulation of linear and nonlinear uniplanar circuits is proposed. The passive distributed parts of the circuit are analyzed by the mixed-potential integral-equation formulation, and the connections between distributed parts and lumped elements are treated by the current-source ports. Based on this model, all electromagnetic effects associated with the distributed circuit parts, as well as the interactions between lumped elements (active or passive) and distributed elements (passive) can easily be characterized. In this study, the proposed model is tested by applying it to the problems with a chip capacitor, spiral inductor, and active slot antenna. The model is then employed to design and analyze two novel uniplanar mixers. The simulation results are also validated by the measurements.

Abstracts

Hybrid dyadic-mixed-potential and combined spectral-space domain integral-equation analysis of quasi-3-D structures in stratified media

M. Vrancken and G.A.E. Vandenbosch. "Hybrid dyadic-mixed-potential and combined spectral-space domain integral-equation analysis of quasi-3-D structures in stratified media." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 216-225.

Planar circuits and antennas in stratified media are efficiently analyzed using an integral-equation formulation with a spectral-domain approach to construct the required Green's functions. This efficiency is largely lost when arbitrary three-dimensional (3-D) structures have to be analyzed. We, therefore, focus attention on "quasi 3-D" structures, which, although not fully 3-D, are still seen to cover most practical problems. The formulation of the electric field is adapted to the geometry as a hybrid dyadic-mixed-potential form. Evaluation of all z, z/sup '/-dependent parts of the reaction integrals is done analytically in the spectral domain. The remaining evaluation is done in the space domain with a mixed-potential formalism. We obtain a combined spectral-space domain approach to solve the integral equation. Numerical results demonstrate the applicability of the method to (most) 3-D problems that occur in planar stratified media.

Abstracts

Exact adjoint sensitivity analysis for neural-based microwave modeling and design

Jianjun Xu, M.C.E. Yagoub, Runtao Ding and Qi Jun Zhang. "Exact adjoint sensitivity analysis for neural-based microwave modeling and design." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 226-237.

For the first time, an adjoint neural network method is introduced for sensitivity analysis in neural-based microwave modeling and design. The proposed method is applicable to generic microwave neural models including a variety of knowledge-based neural models embedding microwave empirical information. Through the proposed technique, efficient first- and second-order sensitivity analysis can be carried out within the microwave neural network infrastructure using neuron responses in both the original and adjoint neural models. A new formulation of simultaneous training of original and adjoint neural models allows robust model development by learning not only the input/output behavior of the modeling problem, but also its derivative data. The proposed technique is very useful for neural-based microwave optimization and synthesis, and for analytically unified DC/small-signal/large-signal device modeling and circuit design. Examples of high-speed very large scale integration system interconnect modeling and optimization, large-signal FET modeling, and three-stage power-amplifier simulation utilizing the proposed sensitivity technique are demonstrated.

Abstracts

A method of effective use of ferrite for microwave absorber

M. Amano and Y. Kotsuka. "A method of effective use of ferrite for microwave absorber." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 238-245.

To meet the demand for various electromagnetic-wave absorbers, a method for effective use of conventional ferrite in microwave absorbers is investigated both through finite-difference time-domain analysis and experiments. The matching characteristic is expanded to encompass a broad range from 1 GHz to over 4 GHz, using only a single magnetic material with a thickness of 6.5 mm. This is accomplished by simply punching small holes in a conventional magnetic absorber. The effects of various kinds of parameters for a rubber ferrite absorber with multiholes are clarified and general design charts are also presented, principally for normal incidence cases. The method of laser perforation is investigated for use in practical production. A desirable condition for obtaining a good matching characteristic in the present frequency range from 1 to 4 GHz is derived. A thin microwave absorber with a thickness of 3.0 mm at 2.45 GHz is presented as an application of punching small holes in a layer of conventional ferrite attached to a layer of carbonyl iron.

Abstracts

Adaptive synthesis and design of resonator filters with source/load-multiresonator coupling (Corrections)

S. Amari, U. Rosenberg and J. Bornemann. "Adaptive synthesis and design of resonator filters with source/load-multiresonator coupling (Corrections)." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part I [T-MTT]): 246-246.

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Guest Editorial (Jan. 2003, Part II [T-MTT])

G.M. Rebeiz, L.P.B. Katehi and N.S. Barker. "Guest Editorial (Jan. 2003, Part II [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part II [T-MTT] (Special Issue on MEMS Devices for RF Systems)): 257-258.

Abstracts

Electromechanical considerations in developing low-voltage RF MEMS switches

D. Peroulis, S.P. Pacheco, K. Sarabandi and L.P.B. Katehi. "Electromechanical considerations in developing low-voltage RF MEMS switches." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part II [T-MTT] (Special Issue on MEMS Devices for RF Systems)): 259-270.

This paper reports on the design, fabrication, and testing of a low-actuation voltage Microelectromechanical systems (MEMS) switch for high-frequency applications. The mechanical design of low spring-constant folded-suspension beams is presented first, and switches using these beams are demonstrated with measured actuation voltages of as low as 6 V. Furthermore, common nonidealities such as residual in-plane and gradient stress, as well as down-state stiction problems are addressed, and possible solutions are discussed. Finally, both experimental and theoretical data for the dynamic behavior of these devices are presented. The results of this paper clearly underline the need of an integrated design approach for the development of ultra low-voltage RF MEMS switches.

Abstracts

Reconfigurable double-stub tuners using MEMS switches for intelligent RF front-ends

J. Papapolymerou, K.L. Lange, C.L. Goldsmith, A. Malczewski and J. Kleber. "Reconfigurable double-stub tuners using MEMS switches for intelligent RF front-ends." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part II [T-MTT] (Special Issue on MEMS Devices for RF Systems)): 271-278.

This paper presents novel planar dynamically reconfigurable double-stub tuners that utilize electrostatically activated microelectromechanical system (MEMS) switches. The tuners operate in the 10-20 GHz frequency range and have stubs that consist of a digital capacitor bank. Each bank has a predetermined number of capacitors that can be selected through the activation of appropriate MEMS switches. The value and number of capacitors is dictated by the range of loads that needs to be matched. Simulated and measured results from several designs are presented. A 4 bit /spl times/ 4 bit tuner that can match loads with 1.5 /spl Omega/<Re{Z/sub L/}<109 /spl Omega/ and -107 /spl Omega/<Im{Z/sub L/}<48 /spl Omega/ at 20 GHz equivalent to three quadrants of the Smith chart and loads with 3 /spl Omega/<Re{Z/sub L/}<94 /spl Omega/ and -260 /spl Omega/<Im{Z/sub L/}<91 /spl Omega/ at 10 GHz is demonstrated for the first time, as well as other designs. The demonstrated tuners provide real-time reconfiguration and matching for RF loads that change values during system operation. Applications include the development of several novel highly integrated microwave/millimeter-wave circuits such as ultra-wide-band high output power and increased power-added-efficiency amplifiers, ultra-wide-band multipliers, and very broad-band antenna arrays. It is expected that these circuits will be part of future low-cost and low-power intelligent RF front-end microsystems and systems-on-a-chip.

Abstracts

3-D construction of monolithic passive components for RF and microwave ICs using thick-metal surface micromachining technology

Jun-Bo Yoon, Byeong-Il Kim, Yun-Seok Choi and E. Yoon. "3-D construction of monolithic passive components for RF and microwave ICs using thick-metal surface micromachining technology." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part II [T-MTT] (Special Issue on MEMS Devices for RF Systems)): 279-288.

As a viable technological option to address today's strong demands for high-performance monolithic low-cost passive components in RF and microwave integrated circuits (ICs), a new CMOS-compatible versatile thick-metal surface micromachining technology has been developed. This technology enables to build arbitrary three-dimensional (3-D) metal microstructures on standard silicon substrate as post-IC processes at low temperature below 120/spl deg/C. Using this technology, various highly suspended 3-D microstructures have been successfully demonstrated for RF and microwave IC applications. We have demonstrated spiral inductors suspended 100 /spl mu/m over the substrate, coplanar waveguides suspended 50 /spl mu/m over the substrate, and complicated microcoaxial lines, which have 50-/spl mu/m-suspended center signal lines surrounded by inclined ground shields of 100 /spl mu/m in height. The microwave performance of the microcoaxial transmission line fabricated on a glass substrate has been evaluated to achieve very low attenuation of 0.03 dB/mm at 10 GHz with an effective dielectric constant of 1.6. The process variation/manufacturability, mechanical stability, and package issues also have been discussed in detail.

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Fully integrated low phase-noise VCOs with on-chip MEMS inductors

Eun-Chul Park, Yun-Seok Choi, Jun-Bo Yoon, Songcheol Hong and E. Yoon. "Fully integrated low phase-noise VCOs with on-chip MEMS inductors." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part II [T-MTT] (Special Issue on MEMS Devices for RF Systems)): 289-296.

We present fully integrated high-performance voltage-controlled oscillators (VCOs) with on-chip microelectromechanical system (MEMS) inductors for the first time. MEMS inductors have been realized from the unique CMOS-compatible MEMS process that we have developed to provide suspended thick metal structures for high-quality (Q) factors. Fully integrated CMOS VCOs have been fabricated by monolithically integrating these MEMS inductors on the top of the CMOS active circuits realized by the TSMC 0.18-/spl mu/m mixed-mode CMOS process. Low phase noise has been achieved as -124 and -117 dBc/Hz at 300-kHz offset from carrier frequencies of 1 and 2.6 GHz, respectively, in the fabricated single-chip VCOs.

Abstracts

Low-loss 2- and 4-bit TTD MEMS phase shifters based on SP4T switches

Guan-Leng Tan, R.E. Mihailovich, J.B. Hacker, J.F. DeNatale and G.M. Rebeiz. "Low-loss 2- and 4-bit TTD MEMS phase shifters based on SP4T switches." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part II [T-MTT] (Special Issue on MEMS Devices for RF Systems)): 297-304.

2- and 4-bit microelectromechanical system (MEMS) X- to K/sub u/-band true-time-delay phase shifters with a very low insertion loss are described. The phase shifters are fabricated on 200-/spl mu/m GaAs substrates and the low loss is achieved using MEMS SP4T switches, which reduce the number of switches in the signal path by half when compared to conventional designs with SP2T switches. Measurements indicate an insertion loss of -0.6/spl plusmn/0.3 and -1.2/spl plusmn/0.5 dB at 10 GHz for the 2- and 4-bit designs, respectively. The measured losses agreed very well with Momentum simulations and are the lowest reported to date. The 2-bit phase shifter performed well from dc-18 GHz, with -0.8/spl plusmn/0.3-dB insertion loss at 18 GHz and a return loss of <-10.5 dB over dc-18 GHz.

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A Ka-band 3-bit RF MEMS true-time-delay network

J.B. Hacker, R.E. Mihailovich, Moonil Kim and J.F. DeNatale. "A Ka-band 3-bit RF MEMS true-time-delay network." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part II [T-MTT] (Special Issue on MEMS Devices for RF Systems)): 305-308.

A monolithic Ka-band true-time-delay (TTD) switched-line network containing 12 metal-to-metal contact RF microelectromechanical system switches has been successfully fabricated and characterized on a 75-/spl mu/m-thick GaAs substrate. The compact 9.1-mm/sup 2/ TTD network was designed to produce flat delay time over a dc-to-40-GHz bandwidth with full 360/spl deg/ phase control at 45/spl deg/ intervals at 35 GHz. Measurements show a match to within 2% to the designed delay times at 35 GHz for all eight switch states with 2.2-dB average insertion loss over all states. Peak rms phase error is 2.28/spl deg/ and peak rms amplitude error is 0.28 dB from dc to 40 GHz. Return loss better than 15 dB from dc to 40 GHz for all eight states confirms the circuit's broad-band operation.

Abstracts

Very low-loss distributed X-band and Ka-band MEMS phase shifters using metal-air-metal capacitors

J.S. Hayden and G.M. Rebeiz. "Very low-loss distributed X-band and Ka-band MEMS phase shifters using metal-air-metal capacitors." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part II [T-MTT] (Special Issue on MEMS Devices for RF Systems)): 309-314.

2-bit wide-band distributed coplanar-waveguide phase shifters have been developed on a 500-/spl mu/m quartz substrate for X- and Ka-band operation. The designs utilize microelectromechanical system (MEMS) switches in a distributed MEMS transmission line periodically loaded by MEMS switches and high Q (/spl ges/250 at 30 GHz) metal-air-metal capacitors. The MEMS switches are actuated by a /spl plusmn/20-V voltage waveform using a high-resistance bias line. Estimated spring constant and switching time is 30 N/m and 9 /spl mu/s, respectively. The Ka-band 2-bit design results in a reflection coefficient better than -11.5 dB, an average insertion loss of -1.5 dB and phase shifts of 0/spl deg/, 89/spl deg/, 180/spl deg/, and 270/spl deg/ at 37.7 GHz. The X-band 2-bit design results in a reflection coefficient better than -12.5 dB, an average insertion loss of -1.2 dB and phase shifts of 0/spl deg/, 94/spl deg/, 176/spl deg/, and 270/spl deg/ at 13.6 GHz. These results are very competitive with switched transmission-line and reflection-based phase shifters. The distributed design can be easily scaled to V- and W-band frequencies for wide-band low-loss performance.

Abstracts

Variable MEMS capacitors implemented into RF filter systems

R.L. Borwick, III, P.A. Stupar, J.F. DeNatale, R. Anderson and R. Erlandson. "Variable MEMS capacitors implemented into RF filter systems." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part II [T-MTT] (Special Issue on MEMS Devices for RF Systems)): 315-319.

A microelectromechanical systems analog tunable capacitor has been designed and fabricated for implementation into a two-pole UHF filter. Recent developments on the capacitor have improved the RF device performance significantly, and have resulted in improved UHF filter performance. In the 225-400-MHz range that this device is intended for, Q values are in excess of 100. In addition, an 8.4 : 1 tuning ratio has been achieved with continuous tuning over a 1.4 : 11.9-pF range. When implemented into a two-pole UHF filter, tuning over the entire 225-400-MHz range was achieved with a loss under 6.2 dB.

Abstracts

MEMS switchable interdigital coplanar filter

E. Fourn, A. Pothier, C. Champeaux, P. Tristant, A. Catherinot, P. Blondy, G. Tanne, E. Rius, C. Person and F. Huret. "MEMS switchable interdigital coplanar filter." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part II [T-MTT] (Special Issue on MEMS Devices for RF Systems)): 320-324.

This paper presents a tunable interdigital coplanar filter with tapped-line feedings. Microelectromechanical systems capacitors are used as a high contrast capacitive switch between a quarter-wavelength resonator and an open-ended stub to perform the frequency shift. A two-pole tunable filter with a 13% relative bandwidth has been designed, fabricated, and measured. The center frequency can be switched from 18.5 to 21.05 GHz with low return losses (less than 15 dB) and low insertion losses (3.5 dB).

Abstracts

A V-band micromachined 2-D beam-steering antenna driven by magnetic force with polymer-based hinges

Chang-Wook Baek, Seunghyun Song, Jae-Hyoung Park, Sanghyo Lee, Jung-Mu Kim, Wooyeol Choi, Changyul Cheon, Yong-Kweon Kim and Youngwoo Kwon. *"A V-band micromachined 2-D beam-steering antenna driven by magnetic force with polymer-based hinges." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part II [T-MTT] (Special Issue on MEMS Devices for RF Systems)): 325-331.*

This paper presents a new type of antenna fabricated by micromachining technology for mechanical beam steering with two degrees of freedom of motion. A V-band two-dimensional mechanical beam-steering antenna was designed and fabricated on a single high-resistivity silicon substrate using microelectromechanical systems technologies. A fabricated antenna is driven by magnetic force to overcome the limit of electrostatic actuation, and a polymer-based hinge structure is used to increase the maximum scanning angle to as much as 40/spl deg/. Simulation result for validating the mechanical beam-steering concept is presented. In addition, mechanical properties such as static actuation angles are investigated together with microwave properties such as the return loss and radiation pattern at the V-band.

Abstracts

Monolithic integration of RF MEMS switches with a diversity antenna on PCB substrate

B.A. Cetiner, J.Y. Qian, H.P. Chang, M. Bachman, G.P. Li and F. De Flaviis. "Monolithic integration of RF MEMS switches with a diversity antenna on PCB substrate." 2003 Transactions on Microwave Theory and Techniques 51.1 (Jan. 2003, Part II [T-MTT] (Special Issue on MEMS Devices for RF Systems)): 332-335.

A novel process for monolithic integration of RF microelectromechanical system (MEMS) switches with three-dimensional antenna elements on a microwave laminate printed circuit board (PCB) is presented. This process calls for a low-temperature (90/spl deg/C-170/spl deg/C) high-density inductively coupled plasma chemical vapor deposition technique that allows the choice of any PCB substrate, such as RO4003-FR4 (/spl epsiv//sub r/=3.38, tan/spl delta/=0.002), with the desired electrical properties for antenna applications. A two-element diversity antenna system monolithically integrated with RF MEMS switches is designed and demonstrated.

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Abstracts

A compact second-order LTCC bandpass filter with two finite transmission zeros

Lap Kun Yeung and Ke-Li Wu. "A compact second-order LTCC bandpass filter with two finite transmission zeros." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 337-341.

A novel implementation and associated design formula for a compact low-temperature cofired ceramics (LTCC) lumped-element second-order bandpass filter are proposed in this paper. The filter schematic that provides two finite transmission zeros is well known. It is shown in the paper that the filter schematic is built on a pair of conventional inductive coupled resonator tanks with a feedback capacitor between input and output. While revealing its working mechanism both graphically and mathematically, a simple design procedure for such a compact filter is also given. The proposed filter has been implemented in a six-layer ceramic substrate using LTCC technology, showing promising application potentials in miniaturized mobile terminals and Bluetooth RF front-ends. The measured results agree very well with the full-wave electromagnetic designed responses.

Abstracts

Application of the genetic algorithm in modeling RF on-chip inductors

Chen Zhen and Guo Lihui. "Application of the genetic algorithm in modeling RF on-chip inductors." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 342-346.

The genetic algorithm (GA) with parameter confinement has been introduced into the extraction of model parameters for RF on-chip inductors. The details of applying the GA in extracting the model's parameters are discussed. For a set of inductors, the meaningfulness of extracted parameters is considered in the procedure of extraction. The S-parameter, inductance, and Q value can be set as the fitting targets simultaneously in this study. The values of model parameters are extracted by a fully automatic programmed GA procedure, which show excellent quality of fit when compared with the measured data.

Abstracts

Temperature- and structural-parameters-dependent characteristics of V-band heterojunction FET MMIC DROs

K. Hosoya, K. Ohata, T. Inoue, M. Funabashi and M. Kuzuhara. "Temperature- and structural-parameters-dependent characteristics of V-band heterojunction FET MMIC DROs." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 347-355.

This paper describes a systematic approach to the design and analysis for dielectric resonator oscillators (DROs). The approach features a temperatureand structural-parameters-dependent dielectric resonator (DR) model and a newly developed temperature-dependent nonlinear FET model. The implementation of these models on a harmonic-balance circuit simulator allows prediction for mechanical tuning characteristics, coupling strength dependencies, and temperature-dependent performance of oscillation frequency, output power, and phase noise of DROs. V-band heterojunction FET monolithic-microwave integrated-circuit DROs utilizing a TE/sub 01/spl delta//-mode cylindrical DR were designed and fabricated based on the proposed procedure. Good agreement between the predicted and measured characteristics indicates the validity of our design technique featuring the proposed DR and FET models.

Abstracts

Passive 5.8-GHz radio-frequency identification tag for monitoring oil drill pipe

B. Strassner and Kai Chang. "Passive 5.8-GHz radio-frequency identification tag for monitoring oil drill pipe." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 356-363.

This paper reports a new passive 5.8-GHz radio-frequency identification tag proposed for monitoring oil drill pipe (patent pending). The tag is to be inserted into the tool joint of the drill pipe in order to predict the pipe's lifetime and to provide inventory control. The tag requires a minimal incident power density of 13.5 mW/cm/sup 2/ to establish a link and transmit 64-bit coded information to the interrogating reader. The tag uses a circular patch etched on a 60-mil Duroid with /spl epsiv//sub r/=2.33 to receive the interrogating RF power and transmit the identification (ID) information simultaneously. An efficient Schottky diode is used to rectify the RF power to provide the DC power necessary to operate the "on-board" electronics. A p-i-n diode modulates the tag's ID code onto the 5.8-GHz carrier frequency. The tag's physical size has to be small so that it can be imbedded into the pipe without weakening the structure. It has been designed to withstand large pressures normal to its surface. The system was successfully demonstrated in the laboratory.

Abstracts

On the design of novel compact broad-band planar filters

W. Menzel, Lei Zhu, Ke Wu and F. Bogelsack. "On the design of novel compact broad-band planar filters." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 364-370.

On the basis of impedance steps and coupled-line sections as inverter circuits, novel wide-band and very compact filters are presented. The application of alternately high- and low-impedance lines presented to the connected transmission-line resonators partly reduces their lengths to a quarter-wavelength only. In addition, effective techniques are demonstrated to reduce spurious stopband resonance resulting from a remaining half-wavelength resonator. Both suspended stripline (SSL) and microstrip filters were designed, fabricated, and tested, proving this concept in an excellent way. For the prototype filters, center frequencies around 6 GHz were selected. Bandwidths are between 2.5-3.25 GHz, and insertion-loss amounts to around 0.25 dB for the microstrip filters and 0.5 dB (including the transitions to coaxial line) for the SSL filters, respectively. For the selected center frequency and on a substrate with a dielectric constant of 10.8, the smallest microstrip filter is only 15 mm/spl times/5 mm in size.

Abstracts

A wide-band monopulse comparator with complete nulling in all delta channels throughout sum channel bandwidth

Kian Sen Ang, Y.C. Leong and Chee How Lee. "A wide-band monopulse comparator with complete nulling in all delta channels throughout sum channel bandwidth." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 371-373.

A broad-band monopulse comparator with complete nulling in the three delta channels throughout the sum channel bandwidth is presented in this paper. It is based on a new broad-band 180/spl deg/ hybrid with amplitude and phase balances that are theoretically perfect and frequency independent. Using this 180/spl deg/ hybrid, a microstrip monopulse comparator was realized on a low-cost FR-4 board. The comparator was fully characterized by its eight-port S-parameters to generate the sum and delta channel frequency responses. Over 30-dB null depths was achieved in the three delta channels across the sum channel passband from 1.1 to 3.3 GHz.

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3-D FDTD design analysis of a 2.4-GHz polarization-diversity printed dipole antenna with integrated balun and polarization-switching circuit for WLAN and wireless communication applications

Huey-Ru Chuang and Liang-Chen Kuo. "3-D FDTD design analysis of a 2.4-GHz polarization-diversity printed dipole antenna with integrated balun and polarization-switching circuit for WLAN and wireless communication applications." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 374-381.

Detailed numerical simulation, fabrication, and experimental measurements of a 2.4-GHz polarization-diversity printed dipole antenna are presented for wireless communication applications. Two orthogonal printed dipole antennas, each with a microstrip via-hole balun feeding structure, are combined and fabricated on an FR-4 printed-circuit-board substrate. A p-i-n diode circuit is used to switch and select the desired antenna polarization. In the antenna design simulation, a full-wave method of a three-dimensional finite-difference time-domain (FDTD) method is employed to analyze the entire structure of the printed antenna including the lumped elements of the polarization-selected p-i-n diode switching circuit. The Berenger perfectly matched layer absorbing-boundary condition is used for the FDTD computation. Numerical and measured results of antenna radiation characteristics, including input standing-wave ratio, radiation patterns, and polarization diversity are presented.

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Abstracts

Carrier generation and data transmission on millimeter-wave bands using two-mode locked Fabry-Perot slave lasers

M. Ogusu, K. Inagaki, Y. Mizuguchi and T. Ohira. "Carrier generation and data transmission on millimeter-wave bands using two-mode locked Fabry-Perot slave lasers." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 382-391.

This paper concerns an optical millimeter-wave signal generator for fiber-based millimeter-wave systems. The millimeter-wave signal generator is based on two-mode injection locking of a Fabry-Perot (F-P) laser. The millimeter-wave signal can be induced by self-heterodyne detection of the locked two modes in a high-speed photodetector (PD). The locking characteristics of the F-P slave laser and the tunability for the millimeter-wave carrier frequency are demonstrated. When the F-P laser is directly modulated by data signals, the locked two modes are modulated simultaneously. The data signals can then be up-converted to the millimeter-wave band at the PD output. By this direct modulation method, the effect of fiber chromatic dispersion on the millimeter-wave signal components at the PD output can be moderate according to mixing of amplitude and phase modulation on the locked two modes. In virtue of the wide response of the F-P laser, relatively high-speed data (2.5 Gbit/s nonreturn to zero (NRZ)-ASK or 622 Mbit/s NRZ-BPSK) on the millimeter-wave band (52 or 60 GHz) can be transmitted on a 32-km single-mode fiber without bit error. A wide tunable range (56-63 GHz) for the central frequency of the millimeter-wave signals and a wide optical bandwidth (1530-60 nm) of the F-P slave laser are also confirmed by the bit-error measurements of the transmitted data signals.

Abstracts

An enhanced method for determining electromagnetic properties of periodic materials

F. Lubrano and F. Oelhoffen. "An enhanced method for determining electromagnetic properties of periodic materials." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 392-396.

A three-dimensional finite-element method with efficient boundary conditions is presented to simulate the electromagnetic properties of heterogeneous periodic materials. The analysis based on a waveguide approach applies to arbitrary profiles with any kind of inclusions for all incidence conditions. Floquet's theorem is used to take into account the periodicity of the problem. This method allows one to handle the scattering effects in the material. For periodically organized composite materials, we can extract an effective permeability and permittivity under certain hypotheses.

Abstracts

A rigorous and efficient full-wave analysis of uniform bends in rectangular waveguide under arbitrary incidence

A.A.S. Blas, B. Gimeno, V.E. Boria, H. Esteban, S. Cogollos and A. Coves. "A rigorous and efficient full-wave analysis of uniform bends in rectangular waveguide under arbitrary incidence." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 397-405.

In this paper, a rigorous full-wave analysis of uniform bends in rectangular waveguides is performed. An accurate and efficient method-of-moments solution combined with the generalized-admittance-matrix (GAM) formulation is proposed in order to achieve a full-wave characterization of the analyzed structures. This full-wave modal solution turns out to be necessary for modeling complex microwave devices involving an arbitrary number of discontinuities between curved and straight waveguides, where all the modes of the involved guides are excited. The key feature of the presented method lies in the GAM representation of single and cascaded curved E- and H-plane uniform bends, which allows the construction of accurate models of the investigated discontinuities. To validate the theory, the convergence of the method is discussed and comparisons between our simulations and theoretical and experimental data are presented. The excellent behavior of our results, together with the computational efficiency of the proposed method, proves that the developed computer-aided-design tool can be successfully used in the design of complex microwave subsystems involving curved waveguides.

Abstracts

Error analysis of the discrete complex image method and pole extraction

S.-A. Teo, S.-T. Chew and M.-S. Leong. "Error analysis of the discrete complex image method and pole extraction." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 406-413.

Recently, Teo et al (IEEE AP-S Int. Symp., vol. 4, pp. 862-864, 2001) proposed a discrete complex image method that is able to represent both the near and far fields of the Green's function accurately, using only a single approximate Green's function. In this paper, an error analysis of this method is presented. The error analysis shows an additional term, which represents the quasi-static image of the surface-wave poles plays a crucial role in the convergence and accuracy of this new method. As the extraction of poles is required, a recently proposed algorithm by Teo et al (IEEE Trans. Microwave Theory Tech., vol. 50, pp. 440-445, 2002) is also discussed and compared with existing methods in terms of computational speed.

Abstracts

A dual bias-feed circuit design for SiGe HBT low-noise linear amplifier

E. Taniguchi, T. Ikushima, K. Itoh and N. Suematsu. "A dual bias-feed circuit design for SiGe HBT low-noise linear amplifier." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 414-421.

An SiGe HBT low-noise amplifier (LNA) with a novel diode/resistor dual base bias-feed circuit is described. The dual bias-feed circuit extends P1 dB without degradation of the noise figure (NF). In the small-signal region, a conventional resistor bias-feed circuit is a dominant base current source and, in the large-signal region, the diode turns on and the diode bias-feed circuit supplies the base current like a voltage source, which allows higher output power and linearity. In this paper, the operation principle of the dual bias-feed circuit is explained by using a virtual current source model, which indicates the increase of base current of the HBT in a large-signal region. The design method is also described for the idle current of the diode bias-feed circuit in a small-signal region from the points-of-view of NF and P1 dB. The effectiveness of the dual bias-feed circuit is evaluated by simulation and measurement. The fabricated 2-GHz-band dual bias-feed LNA has the P1 dB improvement of 5 dB and no degradation NF compared with the conventional resistor bias-feed LNA.

Abstracts

Hybrid millimeter-wave push-push oscillators using silicon-germanium HBTs

F.X. Sinnesbichler. "Hybrid millimeter-wave push-push oscillators using silicon-germanium HBTs." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 422-430.

Push-push design has proven to be an efficient way to extend the usable frequency range of active devices for oscillator applications. In this paper, the basic principles of push-push oscillator design are explained and various possibilities to realize this concept are shown. Several examples of hybrid millimeter-wave push-push oscillators using SiGe HBTs as active devices are discussed. Details on large-signal modeling of the SiGe HBTs using both a vertical bipolar integrated-circuit model, as well as a customized large-signal model are given. Measured key performance data of microstrip resonator oscillators at 57 and 58 GHz are output power levels of +1 dBm and single-sideband phase-noise figures (1-MHz offset from carrier) of -106 and -108 dBm/Hz, respectively. For the dielectric-resonator oscillators, a maximum output power of -8 dBm and an optimum phase noise of -112 dBc/Hz (-14-dBm output power), as well as a mechanical tuning range of 500 MHz were measured.

Abstracts

A single light-source configuration for full-duplex 60-GHz-band radio-on-fiber system

T. Kuri, K. Kitayama and Y. Takahashi. "A single light-source configuration for full-duplex 60-GHz-band radio-on-fiber system." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 431-439.

A simple full-duplex radio-on-fiber system using a single light source is described. A base station (BS) is simplified by giving it no local light or RF sources. The optical carrier for the uplink is sent along with the downlink optical signal to a remote BS. It is looped back to the central station after being modulated with an uplink RF signal. Fiber-optic full-duplex transmission of 60-GHz-band 155.52-Mb/s downlink and uplink signals over 25-km-long standard single-mode fibers is experimentally demonstrated and bit error rates of 10/sup -9/ for both links were achieved without any serious fiber dispersion due to the optical single-sideband format. The configuration of the proposed system is simpler because one light source is shared by the downlink and uplinks.

Abstracts

Characteristics and design of broadside-coupled transmission line at a higher order leaky mode

K.-F.S. Huang and C.-K.C. Tzuang. "Characteristics and design of broadside-coupled transmission line at a higher order leaky mode." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 440-447.

The aim of this paper is to provide: (1) a detailed description of the higher order leaky modes of the much-used broadside-coupled microstrips, and (2) demonstrate the practical application of such leaky modes as an antenna. A representative broadside-coupled transmission-line structure is examined to elucidate the detail of leakage effects at higher order of multilayered three-dimensional microwave and millimeter-wave circuits. Two-layer cases are analyzed from a physical perspective and the total number of first higher order leaky modes is found to be equal to that of microstrips. One of the two first higher order leaky modes obtained in the two-layer case is weakly attenuated, while the other is strongly attenuated. A high-gain narrow-beam leaky-mode antenna using only the weakly attenuated leaky mode is designed and measured as an application of this broadside-coupled structure, exhibiting a marked beamwidth reduction of 60%. This antenna is the first Yagi-Uda-like array antenna that utilizes the higher order leaky modes of the microstrip, for which the three basic elements-driver, reflector, and director-are stacked in the broadside direction. The attenuation rate can be further reduced by adjusting the strip width of the director. The half-power beamwidth of the leaky-mode antenna applying two-layer broadside-coupled microstrips with a wider top microstrip is measured to be 2.10/spl deg/ at 25.20/spl deg/ from the broadside at 34 GHz.

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A theory of high-frequency distortion in bipolar transistors

M. Vaidyanathan, M. Iwamoto, L.E. Larson, P.S. Gudem and P.M. Asbeck. "A theory of high-frequency distortion in bipolar transistors." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 448-461.

High-frequency distortion in bipolar transistors is examined by using the charge-control approach of Poon and Narayanan (H.C. Poon, IEEE Trans. Electron Dev., vol. ED-19, pp. 719-731, 1972; S. Narayanan and H.C. Poon, IEEE Trans. Circuit Theory, vol. CT-20, pp. 341-351, 1973; H.C. Poon, IEEE Trans. Electron Dev., vol. ED-21, pp. 110-112, 1974) to connect the device's distortion behavior to its "loaded" unity-current-gain frequency (/spl omega//spl circ//sub T/). The resulting expressions for the distortion reveal considerable information on its frequency and bias dependence. Points on the /spl omega//spl circ//sub T/ versus collector current curve yielding optimum distortion performance are identified and interpreted in terms of current cancellation. Both second- and third-order distortion are considered, and the results are validated by both simulation and experiment.

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Voltage-controlled RF filters employing thin-film barium-strontium-titanate tunable capacitors

A. Tombak, J.-P. Maria, F.T. Ayguavives, Zhang Jin, G.T. Stauf, A.I. Kingon and A. Mortazawi. "Voltage-controlled RF filters employing thin-film barium-strontium-titanate tunable capacitors." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 462-467.

Tunable lowpass and bandpass lumped-element filters employing barium-strontium-titanate (BST)-based capacitors are presented. A new metallization technique is used, which improves the quality factor of the tunable BST capacitors by a factor of two. The lowpass filter has an insertion loss of 2 dB and a tunability of 40% (120-170 MHz) with the application of 0-9 V DC bias. The bandpass filter (BPF) has an insertion loss of 3 dB and a tunability of 57% (176-276 MHz) with the application of 0-6 V DC. The third-order intercept point of the BPF was measured to be 19 dBm with the application of two tones around 170 MHz.

Abstracts

A 110-GHz large-signal lookup-table model for InP HEMTs including impact ionization effects

A. Orzati, D.M.M.-P. Schreurs, L. Pergola, H. Benedickter, F. Robin, O.J. Homan and W. Bachtold. "A 110-GHz large-signal lookup-table model for InP HEMTs including impact ionization effects." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 468-474.

We developed an efficient method to extract a large-signal lookup table model for InP high electron-mobility transistors that takes impact ionization into account. By measuring the device on a logarithmic frequency scale, we obtain high resolution at lower frequencies to accurately characterize impact ionization, and a sufficient number of data points at millimeter-wave frequencies to extract the nonquasi-static parameters. Model validation through linear and nonlinear device measurements and its application to monolithic-microwave integrated-circuit design are presented.

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Abstracts

Optimization for error-canceling loop of the feedforward amplifier using a new system-level mathematical model

Youngoo Yang, Young Yun Woo and Bumman Kim. "Optimization for error-canceling loop of the feedforward amplifier using a new system-level mathematical model." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 475-482.

We present a system-level mathematical model to simulate the linearity of the feedforward amplifier. The model has fundamental and distortion signal sub-paths constructed from the data extracted by baseband system simulation. The calculated linearization performances using the model have been validated by comparison with the baseband system simulation results. From the calculated results, the optimum design of the error amplifier size and coupling factor of the output coupler for a down-link WCDMA signal with 16 data channels are provided to maximally achieve output linearity with a fixed power capacity of the amplifiers. Our data shows that the optimum size of the error amplifier is 0.45 times that of the main amplifier with the coupling factor of 5.5 dB.

Abstracts

A note on the modeling of transmission-line losses

A.R. Djordjevic, A.G. Zajic, D.V. Tosic and Truc Hoang. "A note on the modeling of transmission-line losses." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 483-486.

We consider uniform lossy transmission lines characterized by their primary parameters. Exact and approximate formulas for the characteristic impedance and propagation coefficient are reviewed and discussed for low-loss lines. Approximating the characteristic impedance by its real part can lead to erroneous results for the input impedance of short- and open-circuited stubs. This problem is analytically demonstrated on electrically short stubs. Results obtained using the exact and approximate expressions are compared with numerical solutions that are generated by various circuit simulation software.

Abstracts

Ultra-compact superconducting narrow-band filters using single- and twin-spiral resonators

F. Huang. "Ultra-compact superconducting narrow-band filters using single- and twin-spiral resonators." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 487-491.

Superconducting filters using spiral resonators have been demonstrated. Compared with meander lines, errors in track width have a smaller effect on the total inductance; fabrication tolerance, simulation accuracy, power handling, and quality factor are consequently improved. The coils do not require air bridges, which are difficult to produce in superconductors. The devices can be designed using a standard procedure based on the coupling coefficients between resonators and coupling to source and load. Fourth- and sixth-order Chebyshev filters employing single and twin spirals are demonstrated for 0.86% bandwidth filters with center frequency of approximately 1750 MHz. A new coupling structure has been introduced for the single-spiral resonators. Despite the very small size of approximately 1.7/spl times/1.7 mm, the resonators have a quality factor of approximately 30000 at 77 K and the filters can handle approximately 20 mW.

Abstracts

An analysis of excitation of magnetostatic surface waves in an in-plane magnetized YIG film by the integral kernel expansion method

Y. Ando, Ning Guan, K. Yashiro, S. Ohkawa and M. Hayakawa. "An analysis of excitation of magnetostatic surface waves in an in-plane magnetized YIG film by the integral kernel expansion method." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 492-499.

We present a method to solve a kind of integral equations (we call it the integral kernel expansion method), and apply it to an analysis of excitation of magnetostatic surface-wave/magnetostatic backward-volume-wave modes in a magnetized yttrium-iron-garnet film. The Fourier integral of a normal component of magnetic flux density is derived in terms of an unknown current density flowing in a microstrip transducer. The integral kernel is expanded into a series of the Legendre polynomials and expansion of the unknown current density in terms of appropriate functions reduces the Fourier integral to a system of linear equations with unknown coefficients. Determination of the unknown coefficients allows us to estimate the power of magnetostatic waves, which characterizes the excitation. It is found that our numerical method is superior to the previous conventional method based on an assumed current density. In order to verify the validity of our method, we compare our results with the corresponding experiments, and we have found good agreement between the two.

Abstracts

A wide-bandwidth coupler for a free-electron-maser amplifier

P.R. Foster and D. Gamble. "A wide-bandwidth coupler for a free-electron-maser amplifier." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 500-503.

The coupler described in this paper is designed to separate the hot electron beam and the high-power microwave signal in a free-electron-maser amplifier. This coupler has been designed, built, and tested and is intended for operation across the 8-18 GHz frequency band. It consists of an arc of quadridged waveguide with the electron beam entering between ridges. The RF performance was found to be critically dependent on the radius and length of the arc. The measured return loss is better than -30 dB across the band with an insertion loss of less than 0.1 dB.

Abstracts

Full-wave design of canonical waveguide filters by optimization

Tao Shen, Heng-Tung Hsu, K.A. Zaki, A.E. Atia and T.G. Dolan. "Full-wave design of canonical waveguide filters by optimization." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 504-511.

Full-wave design of canonical waveguide filters by optimization is presented. For full-wave modeling, the filter structure is decomposed into the cascade connection of waveguide step and/or bifurcation discontinuities, and waveguide T-junction discontinuities. Generalized scattering matrices of each discontinuity are obtained using the mode-matching method, from which the filter response can be obtained using the cascading procedure. For optimization design, an error function to be minimized is constructed according to the design specification. Polynomial curve fitting is used to characterize each discontinuity to speed up the optimization process. Full-wave approximate synthesis of input/output and inter-cavity coupling iris dimensions is also described. Design examples of four- and six-cavity canonical waveguide filters are presented to demonstrate the feasibility of the design approach. An experimental four-cavity filter is machined and tested. Measured results are in good agreement with computed results.

Abstracts

Random and systematic uncertainties of reflection-type Q-factor measurement with network analyzer

D. Kajfez. "Random and systematic uncertainties of reflection-type Q-factor measurement with network analyzer." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 512-519.

The reflection-type measurement of the unloaded Q factor of microwave resonant cavities consists of measuring the complex reflection coefficient with a network analyzer as a function of frequency and fitting the measured data to a circle on a complex plane. The measurement errors are of two kinds: random errors caused by imperfect data fit to an ideal circle and systematic errors caused by the limited accuracy of the network analyzer and its accessories. This paper presents the methods for estimating the measurement uncertainties for both kinds of errors.

Abstracts

Tunable microstrip bandpass filters with two transmission zeros

Lung-Hwa Hsieh and Kai Chang. "Tunable microstrip bandpass filters with two transmission zeros." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 520-525.

This paper presents an analytical technique for positioning the locations of two transmission zeros for a microstrip bandpass filter. In addition, this paper discusses how the tapping positions of asymmetric feed lines affect the coupling between resonators. The bandpass filter uses two resonators with two transmission zeros to obtain lower insertion loss than a conventional cross-coupled microstrip filter. Also, by using four resonators, the bandpass filter has better out-of-band rejection than the conventional cross-coupled microstrip filter. The filter designs using four cascaded resonators provide a sharp passband that can be tuned using a piezoelectric transducer to change the effective dielectric constant. The filters demonstrate high selectivity, compact size, and can be used in many wireless communication systems.

Abstracts

Absorbing boundary conditions for adjoint problems in the design sensitivity analysis with the FDTD method

Y.S. Rickard, N.K. Georgieva and H.W. Tam. "Absorbing boundary conditions for adjoint problems in the design sensitivity analysis with the FDTD method." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 526-529.

In this paper, absorbing boundary conditions (ABCs) for adjoint problems with a backward time variable are derived from first principles. It is shown that all single-layer ABCs for the adjoint backward time problem, which are based on the one-way wave equation, have the same form as for the original forward time problem. In the case of the adjoint perfectly matched layer (PML) ABC, the signs before the spatial derivatives are opposite to those in the PML ABC of the original forward time problem. To verify the theoretical findings, the numerical reflections from the adjoint ABCs are investigated in a microstrip-line example. The reflections from the ABCs of the forward- and backward time schemes are shown to be identical for the same type of ABCs.

Abstracts

Calibrated waveform measurement with high-impedance probes

P. Kabos, H.C. Reader, U. Arz and D.F. Williams. "Calibrated waveform measurement with high-impedance probes." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 530-535.

We develop an on-wafer waveform calibration technique that combines a frequency-domain mismatch correction to account for the effects of the probe on the measurement with an oscilloscope calibration. The mismatch correction is general and can be applied to any type of microwave probe, including scanning and internal-node probes for noninvasive integrated-circuit tests. We show that, for the commercial high-impedance probe we used, this calibration approach allows accurate on-wafer waveform reconstruction for a variety of probe ground configurations.

Abstracts

Multisection impedance-transforming coupled-line baluns

Kian Sen Ang, Y.C. Leong and Chee How Lee. "Multisection impedance-transforming coupled-line baluns." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 536-541.

A new class of multisection impedance-transforming coupled-line baluns is presented in this paper. It is based on the quarter-wavelength coupled-line balun. By cascading several coupled and uncoupled-line sections, broad-band baluns with good amplitude and phase balance can be realized using simple microstrip coupled lines. The resulting circuit has a simple structure with minimal discontinuities that is highly suited for very high-frequency applications. Simple design equations and experimental verifications will be presented. Using microstrip coupled sections with even-mode impedance of 159 /spl Omega/, the fabricated balun achieved 0.5-dB amplitude balance over 30% bandwidth. With higher even-mode impedance, almost perfect amplitude balance was achieved over 100% bandwidth.

Abstracts

A novel bi-directional amplifier with applications in active Van Atta retrodirective arrays

Shyh-Jong Chung, Shing-Ming Chen and Yang-Chang Lee. "A novel bi-directional amplifier with applications in active Van Atta retrodirective arrays." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 542-547.

A novel two-port bi-directional amplifier, which may simultaneously amplify the waves coming from both ports, is proposed and demonstrated in this paper. Using this amplifier, a two-element active Van Atta retrodirective array is implemented and compared to a four-element passive array. The bi-directional amplifier is constructed by two identical one-port reflection-type amplifiers and a 3-dB 90/spl deg/ hybrid. The reflection-type amplifier is designed using an FET with a single-power-supply configuration. A quarter-wavelength microstrip radial stub is connected to the device's source terminal to narrow down the negative-resistance frequency range so as to avoid oscillation at undesired frequencies. The fabricated bi-directional amplifier provides the transmission gain over the frequency band from 5.76 to 6.88 GHz, with a peak value of 9.1 dB at 6.04 GHz. Printed Yagi antennas with four directors are adopted to build both the active and passive Van Atta arrays. The 3-dB back-scattering beamwidth of the active array is measured as wide as 74/spl deg/. Finally, it is observed from the measurements that, although only half of the antenna elements are used, the active Van Atta array produces a back-scattering field level 4.5 dB, on average, higher than the passive one does. This verifies the performance of the bi-directional amplifier.

Abstracts

Kahn EER technique with single-carrier digital modulations

D. Rudolph. "Kahn EER technique with single-carrier digital modulations." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 548-552.

The Kahn envelope elimination and restoration (EER) technique allows for linear RF power amplification by combining nonlinear, but efficient, radio frequency (RF) and audio frequency (AF) power amplifiers. The EER technique requires a coordinate transform of the Cartesian digital in-phase and quadrature (I & Q) signals to polar amplitude (A) and phase-modulated RF (RF-P) signals. An ideal recombination of the A and RF-P signals in the output stage of the transmitter yields perfect amplified I & Q signals in the output of the transmitter. However, any small mismatch of the delay between A and RF-P paths or bandwidth restrictions within the A path reveal the dominant nonlinearity inherent with the coordinate transform, resulting in out-of-band (OOB) radiation. In this paper, the EER technique is investigated for single-carrier digital modulations. It is shown that the characteristics of the resulting OOB radiation merely depends on the size of the hole in the vector diagram of the digital modulation and is practically independent of other parameters of a digital modulation. Universal curves are given, which can be useful for developing and aligning EER digital transmitters.

Abstracts

A novel generalized low-frequency signal-injection method for multistage amplifier linearization

K.-K.M. Cheng and Chi-Shuen Leung. "A novel generalized low-frequency signal-injection method for multistage amplifier linearization." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 553-559.

This paper presents for the first time the investigation of multistage amplifier linearization based on the generalized low-frequency signal-injection technique. Difference-frequency signals, generated by a predistortion circuit, are fed to the biasing circuitry of a multistage amplifier for third-order intermodulation-distortion cancellation. The reason that two-stage injection shows better linearization performance than the single-stage injection case is analytically derived. Furthermore, issues on the optimum operating condition, gain error, and bandwidth limitation are also addressed. For demonstration, the measured performance of an experimental system using both the two-tone and digitally modulated test signals are shown.

Abstracts

A class of analytical absorbing boundary conditions originating from the exact surface impedance boundary condition

M.K. Karkkainen and S.A. Tretyakov. "A class of analytical absorbing boundary conditions originating from the exact surface impedance boundary condition." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 560-563.

A new class of analytical absorbing boundary conditions (ABCs) for the truncation of the finite-difference time-domain (FDTD) lattice is introduced. These ABC originate from the exact impedance boundary operator and contain both electric and magnetic fields. The performance of the proposed second-order ABCs is studied with a two-dimensional FDTD program. The results indicate that the proposed ABCs work approximately as well as the third-order analytical ABCs, even if they are essentially as easy to implement as the second-order Mur ABC. Also, in this paper, the relation between the so-called Engquist-Majda operator for the absorption of plane waves and the exact surface impedance boundary condition is discussed.

Abstracts

Investigations into nonuniform photonic-bandgap microstripline low-pass filters

N.C. Karmakar and M.N. Mollah. "Investigations into nonuniform photonic-bandgap microstripline low-pass filters." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 564-572.

With the advent of planar photonic bandgap (PBG) materials, different PBG topologies have been proposed to improve bandgap performances of microwave signals. Conventional circular-patterned PBGs have constraints in the wide stopband performance due to high passband ripples. In this paper, we suggest two novel configurations with nonuniform dimensions of circular-patterned PBGs to improve the stop bandwidth and passband ripples. The dimensions of PBG units are varied proportionally to the coefficients of binomial and Chebyshev polynomials. The simulated and measured responses of the proposed PBG units are presented. It is seen that Chebyshev distribution produces excellent performance by suppressing passband ripples and producing distinct stopband. These performances of passband ripples and stop bandwidth are further improved with Chebyshev distributed annular-ring PBG units with their unique feature of aspect ratio control.

Abstracts

Reconfigurable bandpass filter with a three-to-one switchable passband width

C. Rauscher. "Reconfigurable bandpass filter with a three-to-one switchable passband width." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 573-577.

A reconfigurable bandpass filter is described that aims to preserve the optimal performance of a broad-band system under changing signal conditions. It does so by allowing the passband width of the system's receiver to adapt. The filter can be switched between two discrete states with widely differing bandwidths of 500 and 1500 MHz, respectively, while keeping the passband responses centered at 10 GHz. The physical implementation comprises a hybrid-integrated microstrip circuit on a 0.010-in-thick quartz substrate. The circuit employs commercial beam-lead p-i-n diodes to switch fixed-valued reactance elements. Despite the presence of semiconductor switching devices, the filter behaves very linearly, exhibiting measured passband third-order output-referenced intercept points that exceed 46 dBm in both switched states.

Abstracts

Rectangular waveguide diplexers with a circular waveguide common port

Tao Shen, K.A. Zaki and T.G. Dolan. "Rectangular waveguide diplexers with a circular waveguide common port." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 578-582.

Design of rectangular waveguide diplexers with a circular waveguide common port is presented. Ridged H- and E-plane circular-to-rectangular-waveguide T-junctions are proposed as an optimum diplexing manifold. Full-wave optimization is used in the diplexer design. Ka-band H- and E-plane rectangular waveguide diplexers with a circular waveguide common port are designed. Measured results are in good agreement with computed results. The sensitivity of the diplexer performance with respect to the manufacturing tolerance is examined through tolerance analysis.

Abstracts

Fundamental wave phenomena on biased-ferrite planar slab waveguides in connection with singularity theory

A.B. Yakovlev and G.W. Hanson. "Fundamental wave phenomena on biased-ferrite planar slab waveguides in connection with singularity theory." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 583-587.

In this paper, characteristic dispersion phenomena and interactions of the discrete surface- and leaky-wave modes supported by a grounded biased-ferrite slab waveguide are analyzed using singularity and critical-point theory. Surface- and space-wave leaky modes are studied for different orientations of the applied magnetic bias field. As the bias field is rotated away from a coordinate axis, the modes become hybrid, and mode coupling or modal degeneracies may occur. Mode coupling, in general, is governed by a Morse critical point (MCP), and the behavior of the MCP is found to be useful in explaining and predicting modal behavior on this complicated waveguiding structure. In addition, leaky-wave dispersion behavior and leaky-wave cutoff associated with a fold singular point is studied by varying the orientation of the applied magnetic bias field.

Abstracts

Bias and frequency dependence of FET characteristics

A.E. Parker and J.G. Rathmell. "Bias and frequency dependence of FET characteristics." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 588-592.

A novel measurement of the dynamics of high electron-mobility transistor (HEMT) and MESFET behavior permits classification of rate-dependence mechanisms and identification of operating regions that they affect. This reveals a simple structure to the otherwise complicated behavior that has concerned circuit designers. Heating, impact ionization, and trapping contribute to transient behavior through rate-dependence mechanisms. These are illustrated by a simple description. Each has an effect on specific regions of bias and operating frequency. With this insight, it is possible to determine true isodyamic characteristics of HEMTs and MESFETs and to predict operating conditions that will or will not be affected by rate dependence. It is interesting to note that, for some devices, rate dependence can be seen to exist at microwave frequencies and may, therefore, contribute to intermodulation distortion.

Abstracts

Single-substrate integration technique of planar circuits and waveguide filters

D. Deslandes and Ke Wu. "Single-substrate integration technique of planar circuits and waveguide filters." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 593-596.

The integrated planar technique has been considered as a reliable candidate for low-cost mass production of millimeter-wave circuits and systems. This paper presents new concepts that allow for a complete integration of planar circuits and waveguide filters synthesized on a single substrate by means of metallized post (or via-hole) arrays. Analysis of the synthesized integrated waveguide and design criteria are presented for the post pitch and diameter. A filter design method derived from a synthesis technique using inductive post is presented. An experimental three-pole Chebyshev filter having 1-dB insertion loss and return loss better than 17 dB is demonstrated. Integrating such planar and nonplanar circuits on a substrate can significantly reduce size, weight, and cost, and greatly enhance manufacturing repeatability and reliability.

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Direct determination of the bias-dependent series parasitic elements in SiC MESFETs

S. Manohar, A. Pham and N. Evers. "Direct determination of the bias-dependent series parasitic elements in SiC MESFETs." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part I [T-MTT]): 597-600.

We propose a simple and direct extraction procedure for the determination of bias-dependent parasitic resistive elements in SiC MESFETs. This extraction technique is based on a frequency evolution of measured Z-parameters of a metal semiconductor field effect transistor (MESFET) under active bias conditions. Using this method, the equivalent-circuit parameters of an SiC MESFET have been extracted at different bias points, and the variation of the bias-dependent series resistive elements studied. The measured and modeled S-parameters demonstrate a good correlation up to 20 GHz.

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Guest Editorial (Feb. 2003, Part II [T-MTT])

P.A. Parikh, T.E. Kazior and U.K. Mishra. "Guest Editorial (Feb. 2003, Part II [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part II [T-MTT] (Special Issue on Wide Bandgap Semiconductor Devices and Circuits)): 605-606.

Abstracts

Comprehensive analysis of small-signal parameters of fully strained and partially relaxed high Al-content lattice mismatched Al/sub m/Ga/sub 1-m/N/GaN HEMTs

Rashmi, A. Kranti, S. Haldar, M. Gupta and R.S. Gupta. "Comprehensive analysis of small-signal parameters of fully strained and partially relaxed high Al-content lattice mismatched Al/sub m/Ga/sub 1-m/N/GaN HEMTs." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part II [T-MTT] (Special Issue on Wide Bandgap Semiconductor Devices and Circuits)): 607-617.

Proposes an accurate model to investigate the small-signal microwave parameters of fully strained (FS) and partially relaxed (PR) Al/sub m/Ga/sub 1-m/N/GaN high electron-mobility transistors (HEMTs). It is observed that elastic strain relaxation of the Al/sub m/Ga/sub 1-m/N layer imposes an upper limit on the maximum two-dimensional electron-gas sheet charge density and is, thus, extremely critical in determining the microwave performance of high Al-content Al/sub m/Ga/sub 1-m/N/GaN HEMTs. The model incorporates the effects of strain relaxation of the barrier layer, field-dependent mobility, parasitic source/drain resistance, and velocity saturation to evaluate drain current, transconductance, drain conductance, cutoff frequency, and transit time of FS and PR Al/sub m/Ga/sub 1-m/N/GaN HEMTs with different Al mole fractions. The proposed model predicts a high drain current of 5.94 A/mm for a PR 0.3-/spl mu/m Al/sub 0.4/Ga/sub 0.6/N/GaN HEMT, which is in close proximity with previously published simulated results. A peak transconductance of 154 mS/mm is also estimated for a 1-/spl mu/m gate-length device with aluminum concentration of 15% (FS), which is in close agreement with previously published measured data. A high cutoff frequency of 21.09 GHz was predicted for a 0.6-/spl mu/m device with an Al mole fraction of 0.5 (PR), thus showing the potential of AlGaN/GaN HEMTs for microwave applications.

Abstracts

Microwave power limits of AlGaN/GaN HEMTs under pulsed-bias conditions

B.M. Green, V. Tilak, V.S. Kaper, J.A. Smart, J.R. Shealy and L.F. Eastman. "Microwave power limits of AlGaN/GaN HEMTs under pulsed-bias conditions." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part II [T-MTT] (Special Issue on Wide Bandgap Semiconductor Devices and Circuits)): 618-623.

Dynamic loadline analysis illustrating the microwave performance limits of state-of-the-art AlGaN/GaN high electron-mobility transistors (HEMTs) under pulsed RF biasing and drive conditions are presented. Calculation of dynamic loadlines concurrent with load-pull measurements show the increase of the device RF knee voltage with increasing drain voltage as the cause of reduced output power-added efficiency (PAE) at high drain biases. In this study, an 8-GHz saturated output power of 14.1 W (9.4 W/mm) is achieved on a 1500 /spl times/ 0.25 /spl times/ /spl mu/m/sup 2/ AlGaN/GaN HEMT at a pulsed drain bias of V/sub D/=40 V. The pulsed-bias conditions considered here preclude device self-heating as a mechanism responsible for the lower than expected output power and decrease in PAE with increasing drain bias. These data suggest electron trapping associated with the surface of the device between the gate and drain as the mechanism that limits the ultimate power, PAE, and linearity of AlGaN/GaN HEMTs.

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Insulating gate III-N heterostructure field-effect transistors for high-power microwave and switching applications

M.A. Khan, G. Simin, Jinwei Yang, Jianping Zhang, A. Koudymov, M.S. Shur, R. Gaska, Xuhong Hu and A. Tarakji. "Insulating gate III-N heterostructure field-effect transistors for high-power microwave and switching applications." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part II [T-MTT] (Special Issue on Wide Bandgap Semiconductor Devices and Circuits)): 624-633.

Describes the properties of novel III-N-based insulating gate heterostructure field-effect transistors (HFETs). For the gate isolation, these devices use either SiO/sub 2/ layer (in metal-oxide-semiconductor HFET (MOSHFET) structures) or Si/sub 3/N/sub 4/ layer (in metal-insulator-semiconductor HFET structures). These insulating gate HFETs have the gate-leakage currents 4-6 orders of magnitude lower than HFETs, even at elevated temperatures up to 300/spl deg/C. A double-heterostructure MOSHFET with SiO/sub 2/ gate isolation exhibits current collapse-free performance with extremely low gate-leakage current. Insulating gate devices, including large periphery multigate structures, demonstrate high-power stable operation and might find applications in high-performance power amplifiers and microwave and high-power switches with operating temperatures up to 300/spl deg/C or even higher.

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Transient characteristics of GaN-based heterostructure field-effect transistors

E. Kohn, I. Daumiller, M. Kunze, M. Neuburger, M. Seyboth, T.J. Jenkins, J.S. Sewell, J. Van Norstand, Y. Smorchkova and U.K. Mishra. "Transient characteristics of GaN-based heterostructure field-effect transistors." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part II [T-MTT] (Special Issue on Wide Bandgap Semiconductor Devices and Circuits)): 634-642.

DC current-switching and power-switching transients of various GaN-based FET structures are investigated. Two different characteristics are compared, namely, thermal and electronic transients. While the thermal transients are mainly reflected in changes in channel carrier mobility, the electronic transients are dominated by charge instabilities caused by the polar nature of the material. The discussion of the electronic transients focuses, therefore, on instabilities caused by polarization-induced image charges. Three structures are discussed, which are: 1) a conventional AlGaN/GaN heterostructure FET; 2) an InGaN-channel FET; and 3) an AlGaN/GaN double-barrier structure. In structures 2) and 3), field-induced image charges are substituted by doping impurities, eliminating this source of related instability. This is indeed observed.

Abstracts

High linearity and high efficiency of class-B power amplifiers in GaN HEMT technology

V. Paidi, Shouxuan Xie, R. Coffie, B. Moran, S. Heikman, S. Keller, A. Chini, S.P. DenBaars, U.K. Mishra, S. Long and M.J.W. Rodwell. "High linearity and high efficiency of class-B power amplifiers in GaN HEMT technology." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part II [T-MTT] (Special Issue on Wide Bandgap Semiconductor Devices and Circuits)): 643-652.

A 36-dBm high-linearity single-ended common-source class-B monolithic-microwave integrated-circuit power amplifier is reported in GaN high electron-mobility transistor technology. We also describe the design and simulation of highly linear and highly efficient common-source and common-drain class-B power amplifiers. Single-ended class-B amplifiers with bandpass filtering have equivalent efficiency and linearity to push-pull configurations. The common-source class-B circuit demonstrates high linearity, greater than 35 dBc of third-order intermodulation (IM3) suppression and high power-added efficiency (PAE) of 34%. Simulations of common-drain class-B designs predict a PAE of 54% with a superior IM3 suppression of more than 45 dBc over a wider range of bias due to the strong series-series negative feedback offered by the load resistance.

Abstracts

AlGaN/GaN HFET power amplifier integrated with microstrip antenna for RF front-end applications

Younkyu Chung, C.Y. Hang, S. Cai, Yongxi Qian, C.P. Wen, K.L. Wang and T. Itoh. "AlGaN/GaN HFET power amplifier integrated with microstrip antenna for RF front-end applications." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part II [T-MTT] (Special Issue on Wide Bandgap Semiconductor Devices and Circuits)): 653-659.

A high-efficiency and compact AlGaN/GaN heterojunction field-effect transistor (HFET) power amplifier integrated with a microstrip antenna at 7.25 GHz is presented for RF front-end circuit applications. A microstrip circular sector antenna is employed as both a radiator and frequency-dependent output load. Higher order harmonics from the HFET in nonlinear operation are reactively terminated because of the harmonic termination characteristic of the antenna. Based on the optimum load impedance measured by a load-pull measurement setup, the AlGaN/GaN HFET power amplifier has been designed and fabricated at 7.25 GHz using the active integrated antenna concept. In this design approach, the measured antenna impedance is directly transformed to the optimum load impedance for maximum efficiency. The power amplifier with 1-mm gate periphery shows 42% peak power-added efficiency and 30.3-dBm saturated output power with a linear gain of 8 dB, which is in reasonably good agreement with measured discrete HFET load-pull data. Due to the antenna's characteristics, better than 30-dB harmonic suppression has been achieved at both the second and third harmonic frequencies in both the E- and H-planes. To the authors' best knowledge, this is the first demonstration of a high-frequency AlGaN/GaN HFET power amplifier integrated with an antenna.

Abstracts

Linearity characteristics of microwave-power GaN HEMTs

W. Nagy, J. Brown, R. Borges and S. Singhal. "Linearity characteristics of microwave-power GaN HEMTs." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part II [T-MTT] (Special Issue on Wide Bandgap Semiconductor Devices and Circuits)): 660-664.

The RF linearity of a 9-mm 10-W GaN high electron-mobility transistor (HEMT) grown on a 100-mm silicon substrate is presented. The quantitative results display promising device linearity as measured by intermodulation distortion and adjacent channel power ratio at 2.0 GHz for various power backoff levels and different quiescent points. These initial results demonstrate that larger periphery GaN HEMTs grown on silicon provide device linearity commensurate with current semiconductor device technology used for power-amplifier applications.

Abstracts

AlGaN/GaN HEMTs - operation in the K-band and above

I.P. Smorchkova, M. Wojtowicz, R. Sandhu, R. Tsai, M. Barsky, C. Namba, P.-S. Liu, R. Dia, MinhDao Truong, D. Ko, J. Wang, H. Wang and A. Khan. "AlGaN/GaN HEMTs - operation in the K-band and above." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part II [T-MTT] (Special Issue on Wide Bandgap Semiconductor Devices and Circuits)): 665-668.

Reports on the power and microwave noise performance of AlGaN/GaN high electron-mobility transistors (HEMTs) at frequencies f>18 GHz (K- and Ka-bands). At 20 GHz, a record continuous-wave output power of 1.6 W has been achieved on an eight-finger 500-/spl mu/m total gate-periphery device. At 29 GHz, a 120-/spl mu/m gate-periphery device showed a pulsed output density of 1.6 W/mm with an associated gain of 6.7 dB and power-added efficiency of 26%. Minimum noise figure of 1.5 dB has been achieved on a 0.2 /spl mu/m /spl times/ 200 /spl mu/m device at 26 GHz. The data demonstrate the viability of AlGaN/GaN HEMTs for high-frequency power and low-noise amplifier applications.

Abstracts

Intermodulation-distortion performance of silicon-carbide Schottky-barrier RF mixer diodes

R.N. Simons and P.G. Neudeck. "Intermodulation-distortion performance of silicon-carbide Schottky-barrier RF mixer diodes." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part II [T-MTT] (Special Issue on Wide Bandgap Semiconductor Devices and Circuits)): 669-672.

This paper presents the fabrication and characterization of silicon carbide (SiC) Schottky-barrier mixer diodes of 25- and 50-/spl mu/m diameter on a conducting 4H-SiC wafer. The single-balanced mixer circuits with a diode in each arm (two diodes total) were tested at 200 MHz (VHF) and 1.5 GHz [global positioning system (GPS)]. The experiments show that the conversion loss/input third-order intercept point (IP3) are 8.0 dB/+25 dBm and 7.5 dB/+22 dBm at these frequencies, respectively. The measured second-order intercept point (IP2) over the VHF frequency band is +38 dBm. The above conversion-loss values are about the same as that of commercially available single-balanced mixers with silicon Schottky-barrier diodes. However, to achieve a comparable input IP3 performance with Si Schottky-barrier diodes, a more complex mixer design involving double-balanced mixers with two diodes in each arm of a quad (eight diodes total) is required. Applications include RF-based navigational instruments on board commercial/general aviation aircraft and GPSs.

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Information for Authors (Feb. 2003, Part II [T-MTT])

"Information for Authors (Feb. 2003, Part II [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.2 (Feb. 2003, Part II [T-MTT] (Special Issue on Wide Bandgap Semiconductor Devices and Circuits)): 0_4-0_4.

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Bias dependence of high-frequency noise in heterojunction bipolar transistors

M.M. Jahan, Kuo-Wei Liu and A.F.M. Anwar. "Bias dependence of high-frequency noise in heterojunction bipolar transistors." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 677-683.

Hawkins' isothermal model developed to study noise in bipolar junction transistors (BJTs) is modified to investigate bias-dependent noise in heterojunction bipolar transistors (HBTs) by incorporating thermal effects. It is shown that the inclusion of thermal effects into the high-frequency noise model of HBTs is necessary as the temperature of the device may become very different from the ambient temperature, especially at high bias current. Calculation of the noise figure by including the thermal effect shows that the isothermal calculation may underestimate the noise figure at high bias current. It is observed that noise at low bias is ideality factor n dependent whereas high bias noise is insensitive to the variation of n. Moreover, the common base current gain plays a major role in the calculation of the minimum noise figure. The excellent fit obtained between the theoretical calculation and the measured data are attributed to the inclusion of the bias-dependent junction heating as well as C/sub De/ and C/sub bc/ into the present calculation.

Abstracts

Spatial power amplifier using a passive and active TEM waveguide concept

M. Belaid and Ke Wu. "Spatial power amplifier using a passive and active TEM waveguide concept." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 684-689.

A new spatial power amplifier is presented in which power is spatially combined within a TEM waveguide using a low-loss transition array of E-plane integrated finlines to microstrip lines. The TEM-mode waveguide is implemented using a periodically patterned surface called a uniplanar compact electromagnetic bandgap (UC-EBG) structure. Our designed Ku-band back-to-back transition array demonstrates a maximum return loss of 17.5 dB and a maximum insertion loss of 0.65 dB. The TEM waveguide is found to have a 1-GHz bandwidth centered at 14.5 GHz. Tuning of the center frequency may be accomplished via an active UC-EBG structure that incorporates varactor diodes. The use of the UC-EBG surface allows more power cards to be inserted within the TEM waveguide since the amplifier cells saturate uniformly. The spatial power combiner is used to combine the output powers of 12 20-mW monolithic-microwave integrated-circuit amplifier chips. The designed power module yields an output power of 23.15 dBm and a combining efficiency of 86%. A comparison between the passive and active UC-EGB surfaces is experimentally demonstrated.

Abstracts

Extension of the Leeson formula to phase noise calculation in transistor oscillators with complex tanks

J.-C. Nallatamby, M. Prigent, M. Camiade and J.J. Obregon. "Extension of the Leeson formula to phase noise calculation in transistor oscillators with complex tanks." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 690-696.

For phase noise evaluation in feedback oscillators, the Leeson formula is a useful tool. Nevertheless, a direct application to oscillator circuits with complex feedback tanks can lead to erroneous results because the Leeson formula contains a coefficient, namely, "the loaded quality factor of the circuit," which is not the right coefficient to be used in the expression. It turns out that, in the Leeson formula, this latter coefficient coincides with the loaded Q-factor of the circuit only for specific elemental feedback tanks. We have derived the right coefficient in terms of the energy stored and power dissipated in the circuit. It may be shown that its expression is definitively different from that of the loaded Q-factor of the circuit. We obtain a modified Leeson formula valid for all feedback oscillator circuits. It should be noted that all the electrical models and calculations presented in this paper are valid for FETs as well as for bipolar transistors. A comparison with nonlinear simulations of the phase noise in oscillator circuits with complex feedback tanks demonstrates the validity of the new expression.

Abstracts

An unconditionally stable scheme for the finite-difference time-domain method

Young-Seek Chung, T.K. Sarkar, Baek Ho Jung and M. Salazar-Palma. "An unconditionally stable scheme for the finite-difference time-domain method." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 697-704.

In this work, we propose a numerical method to obtain an unconditionally stable solution for the finite-difference time-domain (FDTD) method for the TE/sub z/ case. This new method does not utilize the customary explicit leapfrog time scheme of the conventional FDTD method. Instead we solve the time-domain Maxwell's equations by expressing the transient behaviors in terms of weighted Laguerre polynomials. By using these orthonormal basis functions for the temporal variation, the time derivatives can be handled analytically, which results in an implicit relation. In this way, the time variable is eliminated from the computations. By introducing the Galerkin temporal testing procedure, the marching-on in time method is replaced by a recursive relation between the different orders of the weighted Laguerre polynomials if the input waveform is of arbitrary shape. Since the weighted Laguerre polynomials converge to zero as time progresses, the electric and magnetic fields when expanded in a series of weighted Laguerre polynomials also converge to zero. The other novelty of this approach is that, through the use of the entire domain-weighted Laguerre polynomials for the expansion of the temporal variation of the fields, the spatial and the temporal variables can be separated.

Abstracts

Real-time spectrum analysis in microstrip technology

M.A.G. Laso, T. Lopetegi, M.J. Erro, D. Benito, M.J. Garde, M.A. Muriel, M. Sorolla and M. Guglielmi. "Real-time spectrum analysis in microstrip technology." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 705-717.

We report on a time-domain analog in microwave lines to the spatial Fraunhofer (far-field) diffraction in paraxial conditions. Microstrip lines are used to design filtering configurations acting as spectrum analyzers. They are based on linearly chirped distributed Bragg coupling between the fundamental microstrip mode and the same but counterpropagating mode. Linearly chirped continuous impedance modulation in a microstrip line with varying upper plane strip-width is shown to yield a mode-coupling location and group delay linearly distributed in frequency. Under the condition of a temporal equivalent to the spatial Fraunhofer inequality, the energy spectral density of the input signal is directly recoverable from the average output (reflected) power. It is only necessary to take into account a linear axis-change, given by the dispersion coefficient (group-delay slope) of the structure, from time to Fourier frequency. Both pulsed and nonpulsed RF signals are studied. Sequential time-gated segments of the input have to be processed in the nonpulsed case. The maximum frequency resolution achievable in this situation is discussed. The devices developed here could have important potential applications in the field of temporal signal processing, such as filtering using time-division techniques.

Abstracts

3-D FE discontinuous sheet for microwave heating

R.A. Ehlers and A.C.R. Metaxas. "3-D FE discontinuous sheet for microwave heating." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 718-726.

This paper presents a method for modeling the electromagnetic properties of thin metallic films typical of electromagnetically active food packages within multimode microwave applicators. A discontinuous sheet with six degrees of freedom (DOF) is incorporated within a time- or frequency-domain edge finite-element formulation by splitting the tetrahedral-element discretized domain on the thin-film surface and adding new DOF. Superior accuracy is observed when comparing with existing surface sheet conditions. Thermal image validation is provided for multimode applications.

Abstracts

Complex permittivity measurements of common plastics over variable temperatures

B. Riddle, J. Baker-Jarvis and J. Krupka. "Complex permittivity measurements of common plastics over variable temperatures." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 727-733.

In this paper, we present complex permittivity data at microwave frequencies (approximately 10 GHz) for many common plastics over a temperature range of 122 to 375 K. The measurements were made with a TE/sub 01/spl delta// dielectric resonator placed inside an environmental chamber. Data are presented for the following materials: acrylonitrile butadiene styrene, polytetrafluoroethylene, cross-linked polystyrene, tetrafluorethylene-perfluorpropylene, polypropylene, polysulfone, polymethylmethacrylate, polyvinyl chloride, polycarbonate, high-density polyethylene, polyoxy-methylene (acetal homopolymer), and polyamide.

Abstracts

Narrow bandpass filters using dual-behavior resonators

C. Quendo, Eric Rius and C. Person. "Narrow bandpass filters using dual-behavior resonators." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 734-743.

This paper reports on a new concept of narrow bandpass filters leading to perfectly controlled electrical responses within both the required operating bandwidth and adjacent undesired bands. A specific topology is considered for such a "global synthesis": in comparison with conventional filter performances, it provides significant improvements in terms of rejection control. The attenuated frequencies are each located apart from the bandpass frequencies and controlled by means of n transmission zeros introduced through original dual-behavior resonators (DBRs). These resonators are based on the association of different parallel open-ended stubs and allow the designer to independently control the in-band and out-of-band responses of the filter. A global synthesis approach is also discussed on a simplified architecture based on stepped impedance stubs, and the experimental results shown clearly validate the proposed concept. This simplification reduces the number of degrees of freedom when designing a DBR, and consequently the two transmission zeros become dependent.

Abstracts

Electrodynamic theory of multiport structures using magnetostatic waves in ferrite films and its applications

S.V. Zagriadski, Jaehoon Choi and Hyeongdong Kim. "Electrodynamic theory of multiport structures using magnetostatic waves in ferrite films and its applications." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 744-751.

The paper presents an electrodynamic analysis of tunable multiport ferrite-dielectric structures with parallel transmission lines of an arbitrary type, coupled through propagating magnetostatic modes of magnetized multilayered ferrite films. The structures are supposed to be excited at one port by an incident electromagnetic wave, and amplitudes and phases of electromagnetic waves at other ports are obtained by an analytical procedure. The model holds for an arbitrary direction of a magnetizing field and describes the interaction of magnetostatic modes in ferrite films of a finite width. The solution is obtained in a self-consistent approach, i.e., a reaction of magnetostatic waves (MSWs) on transducers, which excite them, is taken into account. Derived closed-form expressions for response functions of multiports provide the base for the modeling of a wide class of MSW devices: multichannel adjustable filters and delay lines, directional couplers, frequency-selective power dividers, tunable oscillators and active filters, and multiport resonators. The theory is also valid for the analysis of multi-element, interdigital, and meander MSW transducers. Applications of a general theory are demonstrated for numerical calculations of frequency responses of surface and forward volume MSW filters, delay lines with new types of strip-line transducers (two-port and T-type), and for the analysis of a phenomenon of mutual coupling of transducers in conventional devices.

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Ceramic synthetic substrates using solid freeform fabrication

W.J. Chappell, C. Reilly, J. Halloran and L.P.B. Katehi. "Ceramic synthetic substrates using solid freeform fabrication." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 752-760.

Three-dimensional (3-D) printing techniques were used to create lost molds for advanced inhomogeneous materials made of ceramics. The utility of this process is the ability to manipulate low-loss materials, such as alumina illustrated here, into precise, fine features as periodic macroscopic inclusions in a larger host material or air. Three periodic structures were formed using solid freeform (SFF) fabrication techniques; a two-dimensional (2-D) all-dielectric electromagnetic bandgap (EBG) substrate, a 2-D metallo-dielectric substrate filter, and a 3-D woodpile EBG structure. The design of these structures is discussed and the fabricational steps are presented in detail. This process has been utilized to develop a simple two-pole filter embedded in a substrate at 10 GHz, a single resonator at 30 GHz, and a 3-D bandgap structure from 88 to 115 GHz. The wide range of features and structures that can be accurately fabricated are highlighted.

Abstracts

Propagation of EM waves in composite bianisotropic cylindrical structures

I.O. Vardiambasis, J.L. Tsalamengas and K. Kostogiannis. "Propagation of EM waves in composite bianisotropic cylindrical structures." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 761-766.

Propagation of electromagnetic waves in a bianisotropic cylinder embedded in an unbounded bianisotropic space and enclosing an array of parallel bianisotropic circular rods is studied. Based on a separation of variables technique which is facilitated by the use of suitable translation-addition relations, the analysis ends up with an infinite homogeneous system of linear algebraic equations. All matrix elements are given by pole-free, single-term, closed-form expressions. Numerical results are presented for several cases along with comparisons with previously published data. These results reveal the possibility to dynamically control the dispersion characteristics of the structure via changes in the constitutive parameters of the materials involved.

Abstracts

A mathematical characterization and analysis of a feedforward circuit for CDMA applications

A.H. Coskun and S. Demir. "A mathematical characterization and analysis of a feedforward circuit for CDMA applications." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 767-777.

Feedforward is known to be one of the best methods for power amplifier linearization due to its superior linearization performance albeit with relatively poor power efficiency. Here we present the derived closed-form expressions, which relate the main channel power and distortion products at the output of a simple feedforward circuitry to the circuit parameters. Consequently, a mathematical handy tool is achieved toward specifying the circuit parameters rapidly for optimum linearity performance and efficiency. The main and error amplifiers used in the feedforward are assumed to have a third-order AM/AM nonlinearity. The derived expressions are verified by simulation. The conditions for the validity of the model choice are highlighted. For the matched and lossless case, a compact relationship is obtained, which clearly demonstrates the tradeoff between nonlinearities of main and error amplifier for a given system linearity and output power. Delay mismatch is also included in the analysis.

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A compact and low-phase-noise Ka-band pHEMT-based VCO

B. Piernas, K. Nishikawa, T. Nakagawa and K. Araki. "A compact and low-phase-noise Ka-band pHEMT-based VCO." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 778-783.

A low phase-noise Ka-band monolithic voltage-controlled oscillator (VCO) designed using the negative resistance concept is reported. A circuit fabricated using the three-dimensional monolithic microwave integrated circuit technology exhibits a high integration level; its size is a record at just 0.5 mm/sup 2/. On-wafer measurements demonstrate a low phase noise of -102 dBc/Hz at a 1-MHz offset. The VCO delivers an output power of 11.8 dBm at the center frequency of 28.3 GHz. The frequency tuning range is more than 3.8 GHz. Dependence of the circuit performance on the bias conditions is also reported and suggests that an optimum phase-noise characteristic can be achieved when biasing the transistor to optimize its transconductance and noise figure.

Abstracts

Wide- and narrow-band bandpass coplanar filters in the W-frequency band

Eric Rius, G. Prigent, H. Happy, G. Dambrine, S. Boret and A. Cappy. "Wide- and narrow-band bandpass coplanar filters in the W-frequency band." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 784-791.

This paper deals with the design of passive coplanar devices in the W-frequency band. As long as coplanar transmission lines are correctly dimensioned, analytical models based on quasi-TEM approximation can be used. Such models are associated with a correct definition of the reference planes at the junctions and employed for junction discontinuities, T- and cross-junctions. In order to validate these assertions, simulated and experimental data on classical quarter-wavelength shunt-stub filters are first presented. Then the design of traditional coupled-line filters is examined. The problems in terms of insertion loss associated with these kinds of narrow-band applications are discussed here. Minimization of insertion losses requires increasing the width of the strips. Consequently, the design becomes complex and modeling using transmission-line models less accurate. Nevertheless, as an optimization procedure is needed to tune the filter theoretically, such a very fast design method is necessary. Simulated and experimental results in the range 500 MHz to 110 GHz are compared throughout the paper.

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High-T/sub c/ superconducting planar filter with pseudo-Chebyshev characteristic

M.S. Gashinova, M.N. Goubina, Guoyong Zhang, I.A. Kolmakov, Y.A. Kolmakov and I.B. Vendik. "High-T/sub c/ superconducting planar filter with pseudo-Chebyshev characteristic." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 792-795.

This paper presents design and measurement results of a high-T/sub c/ superconducting planar filter based on a pair of coupled modified hairpin resonators considered to be a key constituent of the filter structure. This provides the filter characteristics, which are very close to the Chebyshev prototype of the same order.

Abstracts

4H-silicon carbide Schottky barrier diodes for microwave applications

J. Eriksson, N. Rorsman and H. Zirath. "4H-silicon carbide Schottky barrier diodes for microwave applications." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 796-804.

In this paper, physical models for vertical 4H-silicon carbide (4H-SiC) Schottky diodes are used to develop a design method, where a maximum cutoff frequency for a given punch-through is achieved. The models presented are also used to extract microwave simulator computer-aided design (CAD) models for the devices. A device process was developed and Schottky diodes were fabricated in-house. Characterization of the devices was performed and compared to the theoretical models with good agreement. A demonstrator singly balanced diode mixer was simulated using the developed models. The mixer was fabricated using the in-house developed diodes, and measurements on the mixer show good agreement with the CAD simulations. A conversion loss of 5.2 dB was achieved at 850 MHz, and an excellent IIP/sub 3/ of 31 dBm at 850-MHz RF was measured, at 30-dBm P/sub LO/. These results verify the enhanced properties of the SiC Schottky diode compared to other nonwide bandgap diodes.

Abstracts

High-performance V-band cascode HEMT mixer and downconverter module

Junghyun Kim, Moon-Suk Jeon, Dongki Kim, Jinho Jeong and Youngwoo Kwon. "High-performance V-band cascode HEMT mixer and downconverter module." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 805-810.

A high-performance V-band cascode HEMT mixer is presented together with a compact downconverter module integrating the mixer with other receiver MMICs. The cascode mixer was optimized for conversion gain and/or linearity by employing the low-pass interstage networks and by optimizing the bias voltages. The low-pass interstage network effectively filters out the unwanted harmonics and spurious signals, and therefore, enhances the gain and the linearity of the cascode mixer. On a two-tone test, the cascode mixer showed a high conversion gain of 6.3 dB with an LO power of 2.6 dBm at 60 GHz. When the gate bias to the upper common-gate HEMT was tuned for the intermodulation distortion "sweet spot" theoretically predicted by the authors , the mixer showed a high third-order intercept point of 11.2 dBm with a decent gain of 4.1 dB under a small DC power consumption of 8 mW. To benchmark the performance of the cascode mixer of this work, a waveguide-based compact V-band downconverter module was built by integrating the mixer with an MMIC LNA, a VCO, and a LO driving amplifier. The downconverter module showed a conversion gain higher than 20 dB from 57.5 to 61.7 GHz. This paper shows the potential of the cascode FET mixer for high-performance compact downconverter applications at millimeter-wave frequencies.

Abstracts

A three-dimensional angle-optimized finite-difference time-domain algorithm

Shumin Wang and F.L. Teixeira. "A three-dimensional angle-optimized finite-difference time-domain algorithm." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 811-817.

We present a three-dimensional finite-difference time-domain (FDTD) algorithm to minimize the numerical dispersion error at preassigned angles. Filtering schemes are used to further optimize its frequency response for broad-band simulations. A stability analysis of the resulting FDTD algorithm is also provided. Numerical results show that the dispersion error around any preassigned angle can be reduced significantly in a broad range of frequencies with small computational overhead.

Abstracts

Analysis of a large number of vias and differential signaling in multilayered structures

Houfei Chen, Qin Li, Leung Tsang, Chung-Chi Huang and V. Jandhyala. "Analysis of a large number of vias and differential signaling in multilayered structures." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 818-829.

A method is presented for full-wave modeling of vertical vias in multilayered circuits. The analysis of the interior problem is based upon the cylindrical wave expansion of the magnetic field Green's function. The multiple interaction among vertical vias is modeled by the Foldy-Lax scattering formula. Multilayered effects are included by using cascaded network of the single-layer components. The exterior problem of the via and the transmission line is analyzed using the method of moments approach. The exterior and interior problems are combined into a system of equations to facilitate the solution of a large number of vias. Using this approach, the scattering matrix of problems of several thousand vias can be calculated with moderate CPU and memory requirement. Numerical results have been obtained for different via configurations and for a large range of frequency. Also illustrated are results for common and differential mode in differential signaling with surrounding idle and shorting vias.

Abstracts

Physical/electromagnetic pHEMT modeling

A. Cidronali, G. Leuzzi, G. Manes and F. Giannini. "Physical/electromagnetic pHEMT modeling." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 830-838.

An effective technique, which is based only on geometrical and physical data, is presented for the analysis of high-frequency FETs. The intrinsic part of this electron device is described by a quasi-two-dimensional hydrodynamic transport model, coupled to a numerical electromagnetic field time domain solver in three dimensions that analyzes the passive part of the FET. Such an analysis is entirely performed in the time domain, thus allowing linear and nonlinear operations. The obtained data give insights to some parameters affecting the signal distribution through the entire device structure; a comprehensive discussion of these is given for a test device. In order to prove the validity of the approach, the bias-dependent small-signal analysis is compared with the corresponding measurements up to 50 GHz for two 0.3-/spl mu/m gate-length AlGaAs-InGaAs-GaAs pseudomorphic high electron-mobility transistors, each having two gate fingers of 25-/spl mu/m and 100-/spl mu/m width, at bias points ranging from Idss to the pinchoff regime. The accuracy and the efficiency of the approach make it suitable for device optimization.

Abstracts

A systematic and topologically stable conformal finite-difference time-domain algorithm for modeling curved dielectric interfaces in three dimensions

T.I. Kosmanis and T.D. Tsiboukis. "A systematic and topologically stable conformal finite-difference time-domain algorithm for modeling curved dielectric interfaces in three dimensions." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 839-847.

A systematic conformal finite-difference time-domain (FDTD) algorithm for the direct modeling of dielectric interfaces in three dimensions is presented in this paper. The straightforward procedure is based on the proper reformation of the grid cells in the vicinity of the dielectric surface, leading thus to the creation of five-faced prisms on the primary grid, apart from the standard hexagonal ones. The new scheme overcomes any topological deficiency that forbids the contour path FDTD and conformal FDTD technique to directly simulate dielectric boundaries, since it maintains the lattice duality. Therefore, no instabilities, even late-time ones, are observed. On the other hand, the accuracy obtained, even with very coarse meshes, is very good as is proved by the numerical analysis of various resonance problems.

Abstracts

Finite-element method coupled with method of lines for the analysis of planar or quasi-planar transmission lines

Hao-Hui Chen. "Finite-element method coupled with method of lines for the analysis of planar or quasi-planar transmission lines." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 848-855.

A full-wave analysis incorporating the finite-element method (FEM) and the method of lines (MoL) is presented in this paper to investigate a planar or quasi-planar transmission-line structure containing complex geometric/material features. For a transmission-line structure being considered, the regions containing complex media are modeled by the FEM while those consisting of simple media with simple geometry are analyzed using the MoL. From the field solutions calculated by MoL, the boundary conditions are constructed. The boundary integrals involved in finite-element analysis are then carried out using these boundary conditions. Since the finite-element analysis is employed only in the complex parts of the structures, while other parts are handled by the MoL, this approach not only retains the major advantage of the FEM in simulating complex structures but also becomes more efficient than the conventional finite-element analysis. Good agreement between the calculated results and those reported in the available literature is obtained and thus validates the present approach. Furthermore, proficient computational efficiency of this method is demonstrated by examining its convergence property. Finally, a number of relevant transmission-line structures are analyzed to illustrate the applications of this approach.

Abstracts

A generalized higher order finite-difference time-domain method and its application in guided-wave problems

Zhenhai Shao, Zhongxiang Shen, Qiuyang He and Guowei Wei. "A generalized higher order finite-difference time-domain method and its application in guided-wave problems." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 856-861.

In this paper, a (2M,4) scheme of the finite-difference time-domain (FDTD) method is proposed, in which the time differential is of the fourth order and the spatial differential using the discrete singular convolution is of order 2M. Compared with the standard FDTD and the scheme of (4, 4), the scheme of (2M, 4) has much higher accuracy. By choosing a suitable M/spl ges/2, the (2M, 4) scheme can arrive at the highest accuracy. In addition, an improved approximation of the symplectic integrator propagator is presented for the time differential. On the one hand, it can directly simulate unlimited conducting structures without the air layer between the perfectly matched layer and inner structure; on the other hand, it needs only a quarter of the memory space required by the Runge-Kutta time scheme and requires one third of the meshes in every direction of the standard FDTD method. By choosing suitable meshes and bandwidth M, our scheme not only retains higher accuracy but also saves memory space and CPU time. Numerical examples are provided to show the high accuracy and effectiveness of the proposed scheme.

Abstracts

Estimation of Q-factors and resonant frequencies

K.J. Coakley, J.D. Splett, M.D. Janezic and R.F. Kaiser. "Estimation of Q-factors and resonant frequencies." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 862-868.

We estimate the quality factor Q and resonant frequency f/sub 0/ of a microwave cavity based on observations of a resonance curve on an equally spaced frequency grid. The observed resonance curve is the squared magnitude of an observed complex scattering parameter. We characterize the variance of the additive noise in the observed resonance curve parametrically. Based on this noise characterization, we estimate Q and f/sub 0/ and other associated model parameters using the method of weighted least squares (WLS). Based on asymptotic statistical theory, we also estimate the one-sigma uncertainty of Q and f/sub 0/. In a simulation study, the WLS method outperforms the 3-dB method and the Estin method. For the case of measured resonances, we show that the WLS method yields the most precise estimates for the resonant frequency and quality factor, especially for resonances that are undercoupled. Given that the resonance curve is sampled at a fixed number of equally spaced frequencies in the neighborhood of the resonant frequency, we determine the optimal frequency spacing in order to minimize the asymptotic standard deviation of the estimate of either Q or f/sub 0/.

Abstracts

Modeling of the influence of parasitic coupling between a component and its feeding line on scattering parameters

B.L.A. Van Thielen and G.A.E. Vandenbosch. "Modeling of the influence of parasitic coupling between a component and its feeding line on scattering parameters." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 869-873.

In this paper, a method is discussed that allows a more precise modeling of the S-parameters of a component by taking into account the way it is connected. The coupling between the feeding line and the component changes the S-parameters of the component by more than just a mere shift in the reference plane. This coupling is approximated by assuming that the feeding line only carries a travelling wave and by using elementary dipoles to model the radiation of the component.

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Abstracts

Full-wave analysis of multiconductor multislot planar guiding structures in layered media

E.A. Soliman, G.A.E. Vandenbosch, E. Beyne and R.P. Mertens. "Full-wave analysis of multiconductor multislot planar guiding structures in layered media." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 874-886.

In this paper, a generalized two-dimensional formulation for solving planar guiding structures is presented. The formulation is capable of analyzing guiding structures consisting of an arbitrary number of slots and strips with arbitrary width, thickness, and conductivity in a full-wave regime. Integral equations solved with the method of moments in the spatial domain are used in the analysis. All information related to the fundamental modes of the guiding structure are available from the presented theory. This information includes (for each mode) the propagation constant, electric and magnetic current distribution, modal power, and the characteristic impedance. Numerical results for a number of planar guiding structures are presented, which validate the proposed theoretical formulation.

Abstracts

Experimental feasibility study of confocal microwave imaging for breast tumor detection

E.C. Fear, J. Sill and M.A. Stuchly. "Experimental feasibility study of confocal microwave imaging for breast tumor detection." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 887-892.

Initial experimental verification of confocal microwave imaging for breast tumor detection is described. Simple phantoms, consisting of a PVC pipe and objects representing tumors, are scanned with resistively loaded monopole or horn antennas. Successful reduction of clutter and detection of a variety of two-dimensional objects is demonstrated.

Abstracts

A new hybrid multibias analytical/decomposition-based FET parameter extraction algorithm with intelligent bias point selection

C. van Niekerk, J.A. du Preez and D.M.M.-P. Schreurs. "A new hybrid multibias analytical/decomposition-based FET parameter extraction algorithm with intelligent bias point selection." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 893-902.

A new hybrid multibias analytical/decomposition-based parameter extraction procedure for GaAs FETs is described. The analytical calculations are integrated into an existing decomposition-based optimizer in a complementary approach, further increasing the robustness of the existing algorithm. It is illustrated that, in order to increase the reliability with which the full 15-element small-signal model can be extracted, it is necessary to exploit the underlaying characteristics of the system and the measured data used. This is achieved through the use of cold S-parameter data, along with simple modifications to the extraction algorithm, and a new intelligent selection algorithm for the active bias points used in the multi-bias extraction. The selection algorithm employs a simple geometric abstraction for the S-parameter data that allows it to select bias points that maximize the information available to the extraction procedure. The new selection algorithm shows for the first time what the influence of the bias points is on the performance of a multibias extraction procedure. Experimental results proving the robustness and accuracy of the described procedures are presented.

Abstracts

Full-wave analysis of the excitation of magnetostatic-surface waves by a semi-infinite microstrip transducer - theory and experiment

M.J. Freire, R. Marques and F. Medina. "Full-wave analysis of the excitation of magnetostatic-surface waves by a semi-infinite microstrip transducer - theory and experiment." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 903-907.

This paper presents a new method for the complete characterization of the radiation of magnetostatic-surface waves in microstrip transmission lines with longitudinal magnetization. This method is based on the analysis of the excitation of leaky modes in microstrip lines and provides both the propagation constant and the complex impedance of the microstrip. From these quantities, the radiation resistance and other relevant characteristics of the line can be directly obtained.

Abstracts

Impedance matching for the multilayer medium - toward a design methodology

K.M. Hock. "Impedance matching for the multilayer medium - toward a design methodology." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 908-914.

A graphical analysis of the impedance matching problem for the multilayer dielectric and magnetic coating of metallic surfaces, for normal plane wave incidence, is presented, with a view to providing insight into design principles. Methods for visual design using Smith-chart-type graphical tools, which can complement computationally intensive optimization, are derived. The problem of estimating the required permittivity and permeability for given frequency and thickness is also discussed.

Abstracts

Microstrip conductor loss models for electromagnetic analysis

J.C. Rautio and V. Demir. "Microstrip conductor loss models for electromagnetic analysis." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 915-921.

This paper describes and rigorously validates single- and multiple-layer models of microstrip conductor loss appropriate for high-accuracy application in electromagnetic analysis software. The models are validated by comparison with measurement and by comparison with converged results. It is shown that in some cases an extremely small cell size is needed in order to achieve convergence. Several effects that make a significant contribution to loss and are not modeled by the classic square root of frequency loss model are investigated including dispersion and current on the side of transmission lines. Finally, the counterintuitive result that there is an optimum metal thickness for minimum planar conductor loss is explored.

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Closed-form eigenfrequencies in prolate spheroidal conducting cavity

Le-Wei Li, Zhong-Cheng Li and Mook-Seng Leong. "Closed-form eigenfrequencies in prolate spheroidal conducting cavity." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 922-927.

In this paper, an efficient approach is proposed to analyze the interior boundary-value problem in a spheroidal cavity with perfectly conducting wall. Since the vector wave equations are not fully separable in spheroidal coordinates, it becomes necessary to double-check validity of the vector wave functions employed in analysis of the vector boundary problems. In this paper, a closed-form solution has been obtained for the eigenfrequencies f/sub ns0/ based on TE and TM cases. From a series of numerical solutions for these eigenfrequencies, it is observed that the f/sub ns0/ varies with the parameter /spl xi/ among the spheroidal coordinates (/spl eta/, /spl xi/, /spl phi/) in the form of f/sub ns0/(/spl xi/) =f/sub ns/(0)[1+g/sup (1)///spl xi//sup 2/+g/sup (2)///spl xi//sup 4/+g/sup (3)///spl xi//sup 6/+/spl middot//spl middot//spl middot/]. By means of the least squares fitting technique, the values of the coefficients, g/sup (1)/, g/sup (2)/, g/sup (3)/, ..., are determined numerically. It provides analytical results and fast computations of the eigenfrequencies, and the results are valid if /spl xi/ is large (e.g., /spl xi//spl ges/100).

Abstracts

A broad-band adaptive-frequency-sampling approach for microwave-circuit EM simulation exploiting Stoer-Bulirsch algorithm

Yan Ding, Ke-Li Wu and Da Gang Fang. "A broad-band adaptive-frequency-sampling approach for microwave-circuit EM simulation exploiting Stoer-Bulirsch algorithm." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 928-934.

In this paper, the general Stoer-Bulirsch (S-B) algorithm is employed in developing a new AFS scheme (S-B AFS). Since the S-B algorithm is a recursive tabular method and requires no matrix inversion, it can process a large number of sampling data for obtaining a rational interpolation function without suffering from singularity problems. This attribute virtually leads the proposed AFS approach to an ultra broad-band interpolation with a single rational function. The new proposed approach greatly improves the efficiency of the traditional AFS techniques and simplifies the AFS process. In order to enable the S-B algorithm to be used in the proposed S-B AFS approach, three legitimate grid paths for constructing two pairs of complementary rational models are being proposed in this paper for modeling a general microwave circuit. Four practical broad-band examples are given to demonstrate the effectiveness of the S-B AFS, including waveguide harmonic filters, a waveguide diplexer, and a broad-band microstrip diplexer.

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Human exposure to the near field of radiobase antennas - a full-wave solution using parallel FDTD

L. Catarinucci, P. Palazzari and L. Tarricone. "Human exposure to the near field of radiobase antennas - a full-wave solution using parallel FDTD." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 935-940.

The problem of human exposure to the near field of radiobase antennas is a complex and challenging task. A numerical full-wave solution is highly recommended because of the accuracy needed. Unfortunately, the problem is computationally heavy. In this paper, a parallel finite-difference time-domain tool is proposed for the solution of the addressed problem so that the use of supercomputing platforms is combined with appropriate numerical human phantoms. Results demonstrate the good accuracy of the proposed solution. A detailed discussion is presented on the case of human exposure to real radiobase antennas, as well as on some critical issues concerning safety standards.

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Abstracts

Characterization and design of two-dimensional electromagnetic band-gap structures by use of a full-wave method for diffraction gratings

F. Frezza, L. Pajewski and G. Schettini. "Characterization and design of two-dimensional electromagnetic band-gap structures by use of a full-wave method for diffraction gratings." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 941-951.

In this paper, an accurate and efficient characterization of a two-dimensional (2-D) electromagnetic band-gap (EBG) structures is performed, which exploits a full-wave diffraction theory developed for one-dimensional diffraction gratings. EBG materials constituted by 2-D arrays of dielectric rods with arbitrary shape and lattice configuration are analyzed, and the transmission and reflection efficiencies are determined. The high convergence rate of the proposed technique is demonstrated. Results are presented for both TE and TM polarizations, showing the efficiencies as a function of frequency and physical parameters. Comparisons with other theoretical results reported in the literature are shown with a very good agreement, and the authors' theory is also favorably compared with available experimental data. Useful design contour plots are reported by which a very immediate and accurate visualization of the band-gap configurations can be obtained, and design formulas are also included. Finally, the behavioral differences when a periodical defect is present are also highlighted.

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Abstracts

Synchronization design of a coupled phase-locked loop

J.F. Buckwalter, T.H. Heath and R.A. York. "Synchronization design of a coupled phase-locked loop." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 952-960.

Coupled phase-locked loops (CPLLs) are introduced as novel circuits for phased-array antennas. Successful implementation relies on characterizing the synchronization behavior of CPLL circuits over a broad range of circuit parameters. Considering inherent time delay in the phase-locked loop demonstrates the degradation in the pull-in and hold-in ranges, as well as circuit instabilities, suggesting circuit parameter limits in a phased-array design. We compare the theoretical limits, in the form of analytic equations and numerical simulations, with measurements of the pull-in and hold-in processes of a 1.5-GHz prototype CPLL.

Abstracts

How to calibrate through balun transformers to accurately measure balanced systems

C.R. Curry. "How to calibrate through balun transformers to accurately measure balanced systems." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 961-965.

Balun transformers are used in front of network analyzers to measure the balanced- and common-mode characteristics of transmission lines and electronic networks. The nonideal nature of real baluns will cause measurements made with this technique to be in error. This paper shows that by following a calibration procedure similar to the conventional network analyzer calibration of Kruppa and Sodomsky, where known standards are measured, and these measurements are used to correct measurements of unknown devices, one can compensate for the nonideal nature of the measurement baluns. In this procedure, a conventional two-port network analyzer is connected to the balun transformer and, without disconnecting the network analyzer, inaccuracies in the balun can be calibrated out. Balanced mode, common mode, and mode conversion parameters can be accurately measured. This paper applies the previously published method of Silvonen for conventional network analyzer calibration to correct the measurement errors when using balun transformers.

Abstracts

Comparison and evaluation of electromagnetic absorption characteristics in realistic human head models of adult and children for 900-MHz mobile telephones

Jianqing Wang and O. Fujiwara. "Comparison and evaluation of electromagnetic absorption characteristics in realistic human head models of adult and children for 900-MHz mobile telephones." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 966-971.

The controversy on the dosimetry in children's heads for mobile telephones is still inconsistent. Gandhi's group [1996, 2002] reported a considerable increase of the spatial peak specific absorption rate (SAR) in children's heads, while Kuster's group [1998] claimed that there was not a significant difference in the SAR between children and adults. In this paper, based on Japanese children's statistical data on external shapes of heads, we developed two kinds of children's models from a Japanese adult head model. Using the children's head models, we calculated the local peak SAR under the same conditions as those previously employed by Gandhi's and Kuster's groups. Compared to the local peak SAR in the adult head model, we found a considerable increase in the children's heads when we fixed the output power of the monopole-type antenna, but no significant differences when we fixed the effective current of the dipole-type antenna. This finding suggests that the contradictory conclusions drawn by the above two groups may be due to the different conditions in their numerical peak SAR calculations.

Abstracts

Linearity analysis of CMOS for RF application

Sanghoon Kang, Byounggi Choi and Bumman Kim. "Linearity analysis of CMOS for RF application." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 972-977.

The linearity of CMOS has been analyzed using the Taylor series. Transconductance and output conductance are two dominant nonlinear sources of CMOS. At a low frequency, the transconductance is a dominant nonlinear source for a low load impedance, but for a usual operation level impedance the output conductance is a dominant nonlinear source. Capacitances and the substrate network do not generate any significant nonlinearity, but they suppress output-conductance nonlinearity at a high frequency because output impedance is reduced by the capacitive shunts, and output voltage swing is also reduced. Therefore, above 2-3 GHz, the transconductance becomes a dominant nonlinear source for a usual load impedance. If these capacitive elements are tuned out for a power match, the behavior becomes similar to the low-frequency case. As gate length is reduced, the transconductance becomes more linear, but the output conductance becomes more nonlinear. At a low frequency, CMOS linearity is degraded as the gate length becomes shorter, but at a higher frequency (above 2-3 GHz), linearity can be improved.

Abstracts

Accurate and direct characterization of high-Q microwave resonators using one-port measurement

Lye Heng Chua and D. Mirshekar-Syahkal. "Accurate and direct characterization of high-Q microwave resonators using one-port measurement." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 978-985.

An accurate and direct characterization of high-Q microwave resonators using one-port vector network measurement technique is presented. In this characterization, the delay due to the connector between the resonator and network analyzer is first deembedded. The elements of the equivalent-circuit of the resonator are then readily extracted from the experimental data in a straightforward manner without any numerical optimization. The extraction method works very accurately for high-Q resonators coupled to external circuits electrically or magnetically, and can deal with universal cases including external lossy couplings and weak under-coupled resonators. Parameters such as coupling coefficient, loaded quality factor, and loaded resonant frequency can also be directly computed. For the loaded resonant frequency, an original expression is derived in this paper. This paper also provides an approximate relation between the loaded resonant frequency and measured frequency at which the minimum magnitude of the reflection coefficient occurs. The high accuracy of the method is demonstrated with two examples: a hollow cavity resonator and a dielectric loaded cavity resonator, which is also supported by the well-established one-port multipoint technique.

Abstracts

A fully matched N-way Doherty amplifier with optimized linearity

Youngoo Yang, Jeonghyeon Cha, Bumjae Shin and Bumman Kim. "A fully matched N-way Doherty amplifier with optimized linearity." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 986-993.

This paper presents a new fully matched N-way Doherty amplifier. The basic principles of operation and important features are described. For the experimental verification, 2.14-GHz Doherty amplifiers having two-, three-, and four-way structures are implemented using silicon LDMOSFETs and tested using down-link WCDMA signal. The linearity performances of the two-, three-, and four-way Doherty amplifiers are optimized for better efficiency versus linearity by a bias adjustment of the peaking amplifiers. For simultaneously improving the efficiency and linearity to achieve maximum efficiency versus linearity, the gate biases of the peaking amplifiers for the N-way Doherty amplifier are optimized. As a result, the efficiency versus linearity characteristics are drastically improved by N-way extension of the Doherty amplifier.

Abstracts

Broad-band coaxial directional couplers for high-power applications

V. Teppati, M. Goano, A. Ferrero, V. Niculae, A. Olivieri and G. Ghione. "Broad-band coaxial directional couplers for high-power applications." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 994-997.

A new class of coaxial broad-band directional couplers for high-power RF testing is presented. These devices overcome the drawbacks of classical stripline and coaxial couplers, and allow simple low-cost mechanical construction. A design technique for the new longitudinally nonuniform transversally nonsymmetrical couplers is described, providing the synthesis of any coupling shape versus frequency. As a first demonstration of the proposed method, a set of broad-band (2-7.5 GHz) low-coupling (-30, -33, -35 dB) nonsymmetrical coaxial directional couplers in air has been designed, built, and characterized, showing very good agreement between predicted and obtained performances.

Abstracts

Scattering in junction by posts consisting of a segment of conducting cylinder

R. Lech, M. Polewski and J. Mazur. "Scattering in junction by posts consisting of a segment of conducting cylinder." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 998-1002.

The theory of scattering in junction by posts consisting of a segment of conducting cylinder is developed using a combination of a modified iterative scattering procedure and an orthogonal expansion method. The multimode scattering matrix of the junction is obtained. The change of the post's configuration, as well as a simple rotation of the post, makes it possible to vary the electrical characteristic. The validity and accuracy of the method is verified by comparing the numerical results with those given in literature, received from finite-difference time-domain (FDTD) simulation and our own measurements. The proposed procedure is efficient and faster than alternative numerical solutions such as the FDTD method used for comparison.

Abstracts

Accurate solution of periodic microstrips for digital applications

Changhua Wan and J.-X. Zheng. "Accurate solution of periodic microstrips for digital applications." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 1003-1008.

This paper presents a conformal-mapping analysis of periodic microstrips (PMSs) with zero-thickness strips. The analysis yields closed-form expressions for the common-mode and alternate-differential-mode capacitances, characteristic impedances, and effective dielectric constants of PMSs. The accuracy of the capacitances against electromagnetic simulations is found to be better than 4% in three test cases. The accuracy of approximating the differential-mode capacitance of PMSs using their alternate-differential-mode one is also found to be within 4%. In the case of an air substrate, the capacitances and impedances become exact. These expressions allow a quick estimate of crosstalk-induced impedance and velocity changes on a signal line at or near the center of a data bus consisting of multiconductor microstrips in digital design. A cell of the periodic structure in an alternate differential mode is actually a single microstrip (SMS) with sidewalls and, therefore, the alternate-differential-mode results are equally useful in the design of such an SMS. As expected, calculated alternate-differential-mode data for a large strip spacing approach corresponding common-mode ones and those of a corresponding SMS without sidewalls.

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Analysis and design of miniaturized lumped-distributed impedance-transforming baluns

Kian Sen Ang, Yoke Choy Leong and Chee How Lee. "Analysis and design of miniaturized lumped-distributed impedance-transforming baluns." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 1009-1017.

Conventional distributed baluns employ /spl lambda//2 transmission lines or /spl lambda//4 coupled lines. By adding only one or two lumped capacitors, the required coupled-line lengths of a new balun structure can be made as short as /spl lambda//24. Design curves for these miniaturized impedance-transforming baluns are derived using a systematic even- and odd-mode analysis technique. This approach also provides valuable insight into the tradeoffs between coupled-line lengths, number of capacitors, bandwidth, and impedance-transforming ratios. Experimental results of a single-capacitor balun with /spl lambda//9 coupled lines and a two-capacitor balun with /spl lambda//24 coupled lines will be presented. Both baluns achieved 0.5-dB amplitude balance and 5/spl deg/ phase balance, with over 10-dB return loss from 1.1 to 1.6 GHz.

Abstracts

An algorithm for interpolating the frequency variations of method-of-moments matrices arising in the analysis of planar microstrip structures

Junho Yeo and R. Mittra. "An algorithm for interpolating the frequency variations of method-of-moments matrices arising in the analysis of planar microstrip structures." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 1018-1025.

This paper presents a new impedance matrix interpolation algorithm, in the context of method of moments, for planar microstrip structures. Three different interpolating functions are implemented depending upon the distance between the basis and testing functions. To demonstrate its efficiency, the technique is applied to several planar microstrip structures, viz. a patch antenna fed by microstrip line and a 4/spl times/4 planar patch array. It is demonstrated that the use of the proposed impedance matrix interpolation scheme can result in significant savings in the computation time with little or no compromise in the accuracy of the solution.

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Abstracts

Higher order hierarchical curved hexahedral vector finite elements for electromagnetic modeling

M.M. Ilic and B.M. Notaros. "Higher order hierarchical curved hexahedral vector finite elements for electromagnetic modeling." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 1026-1033.

A novel higher order finite-element technique based on generalized curvilinear hexahedra with hierarchical curl-conforming polynomial vector basis functions is proposed for microwave modeling. The finite elements are implemented for geometrical orders from 1 to 4 and field-approximation orders from 1 to 10 in the same Galerkin-type finite-element method and applied to eigenvalue analysis of arbitrary electromagnetic cavities. Individual curved hexahedra in the model can be as large as approximately 2/spl lambda//spl times/2/spl lambda//spl times/2/spl lambda/, which is 20 times the traditional low-order modeling discretization limit of /spl lambda//10 in each dimension. The examples show excellent flexibility and efficiency of the higher order (more precisely, low-to-high order) method at modeling of both field variation and geometrical curvature, and its excellent properties in the context of p-refinement of solutions, for models with both flat and curved surfaces. The reduction in the number of unknowns is by an order of magnitude when compared to low-order solutions.

Abstracts

Analysis and design of cavity-coupled microstrip couplers and transitions

D.M. Pozar. "Analysis and design of cavity-coupled microstrip couplers and transitions." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 1034-1044.

This paper describes a full-wave moment-method analysis of an aperture-coupled microstrip coupler using a resonant cavity (rectangular or circular) between the substrate ground planes. Structures of this type are useful for millimeter-wave integrated circuits and phased arrays, as they allow the use of a relatively thick central ground plane to provide isolation, as well as heat dissipation. Both four-port coupler geometries and two-port transitions are treated. Equivalent circuits are derived for each of these problems, and computed results are validated with data from the literature and with independent calculations from commercial computer-aided design (CAD) packages and measured data. These comparisons show that the solutions derived here are accurate and computationally efficient, and have the added advantage over commercial CAD packages in that equivalent-circuit parameters can be obtained directly. The vector Bessel transform is used to derive the required Green's function for the circular cavity.

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Abstracts

Effect of baseband impedance on FET intermodulation

J. Brinkhoff and A.E. Parker. "Effect of baseband impedance on FET intermodulation." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 1045-1051.

The intermodulation performance of an FET in the common-source configuration is dependent on the impedance presented to its gate and drain terminals, not only at fundamental, but also at harmonic and baseband frequencies. At baseband frequencies, these terminating impedances are usually determined by the bias networks, which may have varying impedance over the frequencies involved. This can give rise to asymmetry in two-tone intermodulation levels, and changing intermodulation levels with tone spacing, as previous studies have shown. In this paper, an FET is analyzed to gain an understanding, useful to the circuit designer, of the contributing mechanisms, and to enable the prediction of bias points and the design of networks that can minimize or maximize these effects. Compact formulas are given to facilitate this. An amplifier was tested, showing good agreement between the theoretical and measured results.

Abstracts

Small-signal and power evaluation of novel BiCMOS-compatible short-channel LDMOS technology

O. Bengtsson, A. Litwin and J. Olsson. "Small-signal and power evaluation of novel BiCMOS-compatible short-channel LDMOS technology." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 1052-1056.

We describe a very short-channel 0.15-/spl mu/m LDMOS transistor with a breakdown voltage of up to 60 V, manufactured in a standard 0.35-/spl mu/m BiCMOS process. At 1900 MHz and a 12-V supply voltage, the 0.4-mm-gatewidth device with shortest drain drift region gives 100-mW output power P/sub 1dB/ at a drain efficiency of 43%. It has a transducer power gain of over 20 dB. The maximum current gain cutoff frequency f/sub T/ is 15 GHz, and the maximum available gain cutoff frequency f/sub MAX/ is 38 GHz. We show the dependence of f/sub T/, an f/sub MAX/ of gate and drain bias for transistors with different drain drift region length. The LDMOS process module does not affect the performance or the models of other devices. We present for the first time a simple way to create high-voltage high-performance LDMOS transistors for an RF power amplifier use even in a very downscaled silicon technology.

Abstracts

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"Information for Authors (Mar. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.3 (Mar. 2003 [T-MTT]): 0_5-0_5.

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Measurement of the dielectric constant and loss tangent of high dielectric-constant materials at terahertz frequencies

P.H. Bolivar, M. Brucherseifer, J.G. Rivas, R. Gonzalo, I. Ederra, A.L. Reynolds, M. Holker and P. de Maagt. "Measurement of the dielectric constant and loss tangent of high dielectric-constant materials at terahertz frequencies." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1062-1066.

Low-loss high dielectric-constant materials are analyzed in the terahertz frequency range using time-domain spectroscopy. The dielectric constant and loss tangent for steatite, alumina, titania loaded polystyrene, and zirconium-tin-titanate are presented and compared to measurements on high-resistivity silicon. For these materials, the real part of the dielectric constant ranges from 6 to 90. All of the samples were found to have reasonable low-loss tangents. Applications as photonic crystal substrates for terahertz frequency antenna are envisaged.

Abstracts

Development of three-dimensional inductors using plastic deformation magnetic assembly (PDMA)

Jun Zou, Chang Liu, D.R. Trainor, J. Chen, J.E. Schutt-Aine and P.L. Chapman. "Development of three-dimensional inductors using plastic deformation magnetic assembly (PDMA)." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1067-1075.

On-chip inductors are critical for enabling portable power-efficient wireless communication systems. Existing on-chip spiral inductors based on conventional planar integrated-circuit fabrication technology suffer from substrate loss and parasitics, and have relatively large footprints. In this paper, we discuss the development of two types of on-chip three-dimensional (3-D) inductors-a vertical spiral inductor and a solenoid inductor-by using a 3-D assembly process called plastic deformation magnetic assembly. Prototype vertical spiral inductors and solenoid inductors have been fabricated and tested. Experimental results show that the vertical spiral inductors can achieve better performance and a smaller footprint than the in-plane ones.

Abstracts

Millimeter-wave MMIC single-pole-double-throw passive HEMT switches using impedance-transformation networks

Kun-You Lin, Yu-Jiu Wang, Dow-Chih Niu and Huei Wang. "Millimeter-wave MMIC single-pole-double-throw passive HEMT switches using impedance-transformation networks." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1076-1085.

This paper proposes a new design method for passive FET switches in the millimeter-wave (MMW) regime. In contrast to the conventional resonant-type switch design method, this passive FET switch circuit utilizes impedance transformation to compensate the drain-source capacitance effect for the off state at high frequencies. By means of this new design concept, a Q- and V-band monolithic-microwave integrated-circuit single-pole double-throw (SPDT) switches using a GaAs pseudomorphic high electron-mobility-transistor process are demonstrated. The Q-band SPDT switch has a measured isolation better than 30 dB for the off state and 2-dB insertion loss for the on state from 38 to 45 GHz, while the V-band switch also shows a measured isolation better than 30 dB for the off state and 4-dB insertion loss for the on state from 53 to 61 GHz. The obtained isolation performance using this design approach outmatches previously published FET switches in the MMW frequency range.

Abstracts

Adjoint high-order vectorial finite elements for nonsymmetric transversally anisotropic waveguides

V. Schulz. "Adjoint high-order vectorial finite elements for nonsymmetric transversally anisotropic waveguides." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1086-1095.

In this paper, a vector finite-element method (FEM) for the investigation of microwave and optical waveguides with arbitrary cross section is presented. In particular, the FEM solves the vector wave equation in the frequency domain for waveguides, containing nonsymmetric transversally anisotropic (passive and active) materials. Therefore, a bilinear form has been derived that is solved for the original and adjoint wave equation. Biorthogonality, relations of original and adjoint solutions for simpler materials, the role of nonphysical solutions for both problems, and their proper approximations are discussed in detail. Special focus has been set on shifting the propagation constants of the nonphysical modes for nonzero frequencies to infinity. Therefore, an excellent rate of convergence for iterative solvers is observed. The occurrence of nonphysical solutions is shown. Different nth-order basis functions are systematically derived, which are identical to the well-known tangential continuous finite elements. Both algebraic eigenvalue problems are solved via a generalized Lanczos algorithm, which solves both eigenvalue problems efficiently. The capability of the FEM is illustrated by critical examples.

Abstracts

Self-consistent time-domain large-signal model of high-speed traveling-wave electroabsorption modulators

F. Cappelluti and G. Ghione. "Self-consistent time-domain large-signal model of high-speed traveling-wave electroabsorption modulators." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1096-1104.

A new self-consistent large-signal model for traveling-wave electroabsorption modulators (TW EAMs) is presented. A time-domain finite-difference approach is exploited to carry out a fully coupled analysis of the nonlinear distributed interaction between the microwave and optical fields in the device. RF and optical nonlinearities and saturation effects are taken into account, as well as the influence on the microwave electrode propagation parameters of the nonuniform distribution of the optical power along the traveling direction. The model is applied to the analysis of a InGaAsP/InP TW EAM in small- and large-signal operation. Its performance in terms of bandwidth, linearity, and chirp are investigated as examples of application. The technique is validated in small-signal low optical-power condition through a comparison with the results of a small-signal frequency-domain approach.

Abstracts

Comparison of fully distributed and periodically loaded nonlinear transmission lines

J.-M. Duchamp, P. Ferrari, M. Fernandez, A. Jrad, X. Melique, Junwu Tao, S. Arscott, D. Lippens and R.G. Harrison. "Comparison of fully distributed and periodically loaded nonlinear transmission lines." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1105-1116.

Two different approaches to realizing nonlinear transmission lines (NLTLs) are investigated in detail. In the first approach, the nonlinearity is continuously distributed along the line; in the second, the line is periodically loaded (PL) with discrete nonlinear elements. Measured heterostructure-barrier varactor (HBV) characteristics are used as the nonlinearities in both pulse-compression and harmonic-generation (20-60-GHz tripler) simulations. We point out that the choice of simulation step size is critical in the case of fully distributed (FD) NLTLs, and should be made sufficiently small that no numerical Bragg cutoff frequency appears. For the frequency tripler considered in this paper, simulations show that with PL (PL) NLTLs, 21% efficiency at 210-mW output power and 30% bandwidth can be obtained, whereas only 4.8% efficiency is possible using FD NLTLs. For pulse compression, we find that when properly matched, the FD NLTLs can deliver pulses that are five times sharper than can be obtained with the PL NLTLs. Measured results for an HBV-based PL NLTL frequency multiplier are reported that agree with our simulations, in particular, the 30% bandwidth. The confirmation of the role of the Bragg cutoff frequency in preventing the generation and propagation of undesired harmonics (this improving the conversion efficiency) is obtained from experimental results carried out from hybrid Schottky diodes NLTL measurements.

Abstracts

Microwave CAD circuit modeling of a traveling-wave electroabsorption modulator

R. Lewen, S. Irmscher and U. Eriksson. "Microwave CAD circuit modeling of a traveling-wave electroabsorption modulator." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1117-1128.

Conformal-mapping techniques are used to derive an effective and advanced calculation model for the microwave properties of a light-intensity traveling-wave electroabsorption modulator, resulting in a quasi-TEM computer-aided-design circuit model. For a given device geometry, the model provides the transmission-line (TML) parameters' characteristic impedance and waveguide (WG) propagation constant. Closed-form expressions are derived for the reactive circuit elements. The calculation model includes both the effect of metal conduction loss, as well as losses due to induced currents in the semiconductor substrate. We treat both the buried heterostructure, as well as the ridge-mesa optical WG implementations. The model is validated with full-wave simulations and compared to measured TML parameters.

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Trap-free process and thermal limitations on large-periphery SiC MESFET for RF and microwave power

F. Villard, J.-P. Prigent, E. Morvan, C. Dua, C. Brylinski, F. Temcamani and P. Pouvil. "Trap-free process and thermal limitations on large-periphery SiC MESFET for RF and microwave power." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1129-1134.

In this paper, we present recent results on an SiC MESFET and we describe two of the main limitation mechanisms encountered: the self-heating and the trapping effects. Results on recent MESFET devices processed by THALES Research and Technology (TRT), Colombes, France, show that the trapping effects has been solved by using epitaxial layers on a higher purity 4H-SiC semi-insulating substrate sample made with a new technique by Okmetic, Vantaa, Finland. The association of two chips in the same case showed that the main limitation mechanism for power density originates from self-heating effects, which could be solved by optimizing the chip layout. 37.8-W output power at 500 MHz, 1.78-W/mm power density, and 35-dB third-order intermodulation-distortion ratio are the best obtained performances. An experimental analysis of trapping and self-heating effects on large-periphery SiC MESFETs is proposed in this paper.

Abstracts

Varactor-loaded transmission-line phase shifter at C-band using lumped elements

F. Ellinger, H. Jackel and W. Bachtold. "Varactor-loaded transmission-line phase shifter at C-band using lumped elements." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1135-1140.

The design of varactor-loaded transmission-line phase shifters using lumped elements is discussed in this paper. A monolithic-microwave integrated-circuit (MMIC) phase shifter is fabricated to verify the proposed topology. Only one control voltage is required for phase control. Within a continuously adjustable phase-control range of 360/spl deg/ and a frequency range from 5 to 6 GHz, a low transmission loss of 4 dB/spl plusmn/1.7 dB is measured. The phase shifter is realized with a commercial 0.6-/spl mu/m GaAs MESFET process and requires a chip area of only 0.8 mm/sup 2/. To the knowledge of the authors, the best results reported to date are reached for a continuously adjustable passive phase shifter with comparable circuit size. The presented circuit is well suited to wireless adaptive antenna transceivers, operating in accordance with the 802.11a, high-performance radio local-area-network and high-speed wireless-access-network type-a standard.

Abstracts

High-efficiency piezoelectric-transducer-tuned feedback microstrip ring-resonator oscillators operating at high resonant frequencies

Lung-Hwa Hsieh and Kai Chang. "High-efficiency piezoelectric-transducer-tuned feedback microstrip ring-resonator oscillators operating at high resonant frequencies." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1141-1145.

A tunable-feedback ring-resonator oscillator using a voltage-controlled piezoelectric transducer (PET) is introduced. The new oscillator is constructed by a ring resonator with a pair of orthogonal feed lines as a feedback structure. The ring resonator with two orthogonal feed lines can suppress odd modes and operate at even modes. This operation shows a similar characteristic of high operating oscillation frequencies as that of the push-push oscillators. The high operating resonant frequency characteristic is predicted by a simple transmission-line model. The simulated and measured results agree well with each other. At a fixed frequency of 12.09 GHz, the oscillator has a high DC-to-RF efficiency of 48.7% with an output power of 5.33 dBm. A voltage-controlled PET is used to vary the resonant frequencies of the ring resonator, which, in turn, tunes the oscillator with a good tuning rage of 4.25% around 12 GHz. This tuned oscillator operating at high oscillation frequency can be used in many wireless and sensor systems.

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An efficient numerical interface between FDTD and Haar MRTD-formulation and applications

C.D. Sarris and L.P.B. Katehi. "An efficient numerical interface between FDTD and Haar MRTD-formulation and applications." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1146-1156.

A hybrid finite-difference time-domain (FDTD)/Haar multiresolution time-domain (MRTD) technique for the time-domain analysis of microwave structures is proposed in this paper. The salient features of the presented algorithm are, first, its inherent stability that stems from the matching of the dispersion properties of FDTD and Haar MRTD and, second, its applicability to arbitrarily high wavelet order MRTD schemes. Thus, the application of the MRTD technique to the modeling of open structures and inhomogeneous circuit geometries is facilitated. In particular, the straightforward implementation of perfectly matched layer type and Mur's absorbing boundary conditions is attained. The fact that the proposed interface involves no spatial or temporal interpolations or extrapolations indicates its potential to efficiently connect FDTD and Haar MRTD.

Abstracts

A small dual-frequency transformer in two sections

C. Monzon. "A small dual-frequency transformer in two sections." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1157-1161.

One of the most useful transmission-line constructs is the quarter-wave transformer that is used to impedance match a line at a single frequency f/sub 0/. The feasibility of an electrically small transformer with two sections and capable of achieving ideal impedance matching at two arbitrary frequencies is demonstrated analytically. To achieve this, the exact solution to the resulting transcendental transmission-line equations for two sections is obtained with no restrictions. The parameters of the transformer are presented in explicit closed form, and are exact. The results of this study are useful for a number of practical design problems, including dual-band antennas and RF circuits in general. In particular, feasibility of ideal operation at the important first harmonic frequency 2f/sub 0/ is demonstrated.

Abstracts

A new methodology based on an iterative multiscaling for microwave imaging

S. Caorsi, M. Donelli, D. Franceschini and A. Massa. "A new methodology based on an iterative multiscaling for microwave imaging." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1162-1173.

In this paper, the problem of the localization, shaping, and dielectric permittivity reconstruction of dielectric targets is addressed. The scatterers under test are inhomogeneous cylinders of arbitrary cross sections probed by a set of incident electromagnetic fields of TM type. The scattered field data are processed in order to locate and roughly recover the objects' shapes. The scatterers under test are then reconstructed with an increasing accuracy by means of an iterative multiscaling procedure until stationary reconstructions are achieved. The proposed method is presented jointly with a modified conjugate-gradient inversion procedure in order to minimize the rising cost function. However, this methodology is independent from the minimization algorithm, and other and more efficient algorithms can be used. In order to assess the effectiveness of the iterative multiscaling method, the results of several test cases (with and without noise) are presented and discussed in more detail.

Abstracts

Design of asymmetrical RF and microwave bandpass filters by computer optimization

D. Budimir and G. Goussetis. "Design of asymmetrical RF and microwave bandpass filters by computer optimization." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1174-1178.

This paper presents an optimization-based approach to the design of asymmetrical filter structures having the maximum number of return- or insertion-loss ripples in the passband such as those based upon Chebyshev function prototypes. The proposed approach has the following advantages over the general purpose optimization techniques adopted previously such as: less frequency sampling is required, optimization is carried out with respect to the Chebyshev (or minimax) criterion, the problem of local minima does not arise, and optimization is usually only required for the passband. When implemented around an accurate circuit simulation, the method can be used to include all the effects of discontinuities, junctions, fringing, etc. to reduce the amount of tuning required in the final filter. The design of asymmetrical ridged-waveguide bandpass filters is considered as an example. Measurements on a fabricated filter confirm the accuracy of the design procedure.

Abstracts

Conformal microwave imaging for breast cancer detection

Dun Li, P.M. Meaney and K.D. Paulsen. "Conformal microwave imaging for breast cancer detection." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1179-1186.

An important feature of our Gauss-Newton iterative scheme for microwave breast image reconstruction is that only the heterogeneous target zone within the antenna array is represented using the finite-element method, while the surrounding homogeneous coupling medium is modeled with the boundary-element (BE) method. The interface between these two zones may be arbitrary in shape and position with the restriction that the BE region contains only the homogeneous coupling liquid. In this paper, we demonstrate through simulation and phantom experiments, as well as in patient examinations, that the detection of tumor inclusions can be enhanced as the target zone approaches the exact breast perimeter. It is also shown that central artifacts that often appear in the reconstructed images that may potentially confound the ability to distinguish benign and malignant conditions have also been reduced.

Abstracts

The circular wire-patch resonator-theory, numerical analysis, and filter design application

M. Simeoni, R. Sorrentino and S. Verdeyme. "The circular wire-patch resonator-theory, numerical analysis, and filter design application." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1187-1193.

In this paper, a new type of microstrip resonator is presented, i.e., the circular wire-patch resonator. This component exhibits interesting electrical performances, including very compact dimensions and the possibility of high integration in multilayer low-temperature co-fired ceramic modules. For this new resonator, a transmission-line model, a finite-element-method analysis, and an application in filter design and some measurements are presented. Experimental results are discussed and compared with the theoretical and numerical ones showing a good agreement.

Abstracts

Sensing volume of open-ended coaxial probes for dielectric characterization of breast tissue at microwave frequencies

D.M. Hagl, D. Popovic, S.C. Hagness, J.H. Booske and M. Okoniewski. "Sensing volume of open-ended coaxial probes for dielectric characterization of breast tissue at microwave frequencies." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1194-1206.

We have used open-ended coaxial probes to determine the dielectric properties of freshly excised normal and diseased breast tissue specimens. The considerable variability in size and composition of these specimens predicates the need for determining the minimum surgical specimen size that yields accurate measurements for a given probe diameter. We investigate the sensing volume of 2.2- and 3.58-mm-diameter flange-free coaxial probes for both lowand high-water-content tissue using standard liquids that exhibit dielectric properties similar to breast tissue over the microwave frequency range from 1 to 20 GHz. We also present an innovative graphical technique based on the use of Cole-Cole diagrams to determine the error thresholds in the magnitude and phase of the reflection coefficient, which bound the errors in the measured complex permittivity to an acceptable level. Results from self-consistent experiments and finite-difference time-domain simulations indicate that a tissue specimen with a thickness of 3.0 mm and a transverse dimension of 1.1 cm is the minimum size that yields accurate measurements with the 3.58-mm-diameter probe. For the 2.2-mm-diameter probe, the specimen's thickness and width should be at least 1.5 and 5 mm, respectively. These conclusions are relevant not only to breast tissue characterization, but also more generally to the dielectric characterization of a variety of low- and high-water-content biological tissues.

Abstracts

A microwave measurement procedure for a full characterization of ortho-mode transducers

O.A. Peverini, R. Tascone, A. Olivieri, M. Baralis, R. Orta and G. Virone. "A microwave measurement procedure for a full characterization of ortho-mode transducers." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1207-1213.

Ortho-mode transducers (OMTs) are key components in both dual-polarized antenna feed systems for telecommunication and radioastronomy applications. The evaluation of the overall system performance requires the measurement of the return loss, isolation, and cross-coupling levels of the OMTs. In this paper, a novel technique for the microwave measurements of the full 4/spl times/4 scattering matrix of such devices is reported, which is based on different measurements at the single-polarized ports.

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Narrow-band, fixed-tuned, and tunable bandpass filters with zig-zag hairpin-comb resonators

G.L. Matthaei. "Narrow-band, fixed-tuned, and tunable bandpass filters with zig-zag hairpin-comb resonators." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1214-1219.

"Hairpin-comb" filters have been previously shown to have special properties that are advantageous for the design of compact, narrow-band, and bandpass microstrip filters. Herein, a new "zig-zag" form of hairpin-comb filter is introduced, which is shown to have additional important advantages for designing compact narrow-band filters. Examples with computed responses and the measured results from high-temperature superconductor trial designs are presented. The considerable flexibility available in the design of bandpass filters of this sort is shown to be helpful in the design of tunable bandpass filters having nearly constant bandwidth and passband shape as they are tuned. Measured results for tuning over nearly an octave range are presented.

Abstracts

Analysis of packaging effects and optimization in inductively degenerated common-emitter low-noise amplifiers

P. Sivonen, S. Kangasmaa and A. Parssinen. "Analysis of packaging effects and optimization in inductively degenerated common-emitter low-noise amplifiers." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1220-1226.

The effects of packaging on the performance of inductively degenerated common-emitter low-noise amplifiers (LNAs) are examined and the equations describing the input impedance, transconductance, voltage gain, and noise figure of the packaged amplifier are derived. From the equations, several guidelines for the LNA design are obtained and a systematic approach for the LNA design can be derived. Furthermore, by applying the formulas, the performance of the amplifier can be readily estimated and optimized in the very early stage of the circuit design, immediately as the process data is available. The measurement results of the implemented 0.35-/spl mu/m SiGe RF front-end with an inductively degenerated common-emitter LNA at 1.575 GHz agree well with calculations and simulations.

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A time-delay equivalent-circuit model of ultrafast p-i-n photodiodes

Gang Wang, T. Tokumitsu, I. Hanawa, Y. Yoneda, K. Sato and M. Kobayashi. "A time-delay equivalent-circuit model of ultrafast p-i-n photodiodes." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1227-1233.

A time-delay equivalent-circuit model of ultrafast p-i-n photodiodes (PDs) is proposed to describe the operation at high-input power levels. This model includes both the carrier transit-induced time-delay effect and stored charge effect of p-i-n PDs in high-power operation. These effects were represented as a linear RC circuit and capacitance, respectively, both combined in parallel to a voltage-controlled current source. The validity of this model was confirmed with good curve fitting to the measured optical-frequency responses of an ultrafast side-illuminated p-i-n PD.

Abstracts

Uni-planar CPW-fed slot launchers for efficient TM/sub 0/ surface-wave excitation

H.F. Hammad, Y.M.M. Antar, A.P. Freundorfer and S.F. Mahmoud. "Uni-planar CPW-fed slot launchers for efficient TM/sub 0/ surface-wave excitation." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1234-1240.

Several new uni-planar coplanar-waveguide-fed slot surface-wave launchers are presented in this paper. The launchers are used to efficiently excite the dominant transverse-magnetic surface-wave mode inside a grounded dielectric slab for possible use in power combiners and other applications. Analysis of the surface waves and optimization of the slab thickness and other needed parameters are presented. Next, the launchers design and optimization using two commercially available software are described. The launchers were fabricated and tested. Good agreement is obtained between the numerical and experimental results.

Abstracts

Compact, low insertion-loss, sharp-rejection, and wide-band microstrip bandpass filters

Lung-Hwa Hsieh and Kai Chang. "Compact, low insertion-loss, sharp-rejection, and wide-band microstrip bandpass filters." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1241-1246.

This paper presents a new compact, low insertion-loss, sharp-rejection, and wide-band microstrip bandpass filter. A bandstop filter is introduced that uses a ring resonator with direct-connected orthogonal feed lines. A new bandpass filter based on the bandstop filter uses two tuning stubs to construct a wide-band passband with two sharp stopbands. Without coupling gaps between feed lines and rings, there are no mismatch and radiation losses between them and, therefore, the new filters show low insertion loss. In addition, a dual-mode characteristic is used to increase the stopband bandwidth of the new filters. A simple transmission-line model used to calculate the frequency responses of the filters shows good agreement with measurements. The filter using three cascaded rings has 3-dB fractional bandwidth of 49.3%, an insertion loss of better than 1.6 dB in the passband, a return loss of larger than 13 dB from 4.58 to 7.3 GHz, and two rejections of greater than 40 dB within 2.75-4.02 and 7.73-9.08 GHz. The high-performance, compact-size, and low-cost filter was designed for reducing the interference in full duplex systems in satellite communications.

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Abstracts

Intermodulation distortion and power handling in RF MEMS switches, varactors, and tunable filters

L. Dussopt and G.M. Rebeiz. "Intermodulation distortion and power handling in RF MEMS switches, varactors, and tunable filters." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1247-1256.

This paper presents a theoretical and experimental study of the nonlinear effects generated RF-microelectromechanical system (MEMS) varactors and capacitive switches. The theoretical part includes an analytic derivation, as well as an electromechanical model suitable for computer-aided design (CAD) simulation. The simulations agree very well with measurements performed on a 24-GHz three-pole MEMS tunable filter. It is shown that MEMS capacitive components with a spring constant k>10 N/m generate very low intermodulation, as compared to semiconductor devices, and lead to a two-tone third-order intermodulation intercept point (IIP3) greater than +40 dBm for /spl Delta/f>3-5f/sub 0/, where f/sub 0/ is the mechanical resonant frequency. In fact, the IIP3 increases to +80 dBm for a difference signal (/spl Delta/f) of 5 MHz. The CAD model also allows the evaluation of the power-handling capabilities of the tunable filter and, it is seen that, for the case presented here, distortions become significant for an input power greater than +20 dBm. Noise generation due to thermal effects on a movable membrane (Brownian noise) is also modeled and it is shown that the tunable filter results in a very low phase-noise level close to the carrier.

Abstracts

A miniature broad-band pHEMT MMIC balanced distributed doubler

Kuo-Liang Deng and Huei Wang. "A miniature broad-band pHEMT MMIC balanced distributed doubler." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1257-1261.

A miniature broad-band balanced frequency doubler has been designed to operate from 30 to 50 GHz. It comprises a reduced-size 180/spl deg/ rat-race hybrid and two distributed doublers to form a balanced doubler configuration. The balanced distributed doubler suppresses the 180/spl deg/ out-of-phase fundamental and third harmonic signals at the output port while combining the in-phase second harmonic signal. A measured conversion loss of 5-7 dB from 30- to 50-GHz output frequencies is achieved with fundamental and third harmonic signals rejection better than 13 and 25 dB, respectively. The chip size is only 1.5/spl times/1 mm/sup 2/.

Abstracts

Investigation of boundary algorithms for multiresolution analysis

M. Peschke and W. Menzel. "Investigation of boundary algorithms for multiresolution analysis." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1262-1268.

An investigation on the multiresolution time-domain (MRTD) method utilizing different wavelet levels in one mesh is presented. Contrary to adaptive thresholding techniques, only a rigid addition of higher order wavelets in certain critical cells is considered. Their effect is discussed analytically and verified by simulations of plain and dielectrically filled cavities with Daubechies' and Battle-Lemarie orthogonal, as well as Cohen-Daubechies-Feauveau (CDF) biorthogonal wavelets, showing their insufficiency unless used as a full set of expansion. It is pointed out that improvements cannot be expected from these fixed mesh refinements. Furthermore, an advanced treatment concerning thin metallization layers in CDF algorithms is presented, leading to a reduction in cell number by a factor of three per space dimension compared to conventional finite difference time domain (FDTD), but limited to very special structures with infinitely thin irises. All MRTD results are compared to those of conventional FDTD approaches.

Abstracts

Dual-band power divider based on semiloop stepped-impedance resonators

S. Avrillon, I. Pele, A. Chousseaud and S. Toutain. "Dual-band power divider based on semiloop stepped-impedance resonators." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1269-1273.

Presents a power-divider architecture whose characteristics are adjustable independently at two frequencies. The circuits uses a single semiloop stepped-impedance resonator filter coupled to the input and output lines. A specific methodology has been developed to design such a circuit.

Abstracts

Millimeter-wave beam shaping using holograms

J. Meltaus, J. Salo, E. Noponen, M.M. Salomaa, V. Viikari, A. Lonnqvist, T. Koskinen, J. Saily, J. Hakli, J. Ala-Laurinaho, J. Mallat and A.V. Raisanen. "Millimeter-wave beam shaping using holograms." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1274-1280.

We synthesize amplitude- and phase-type computer-generated holograms (diffractive gratings) for shaping millimeter-wave fields. We design holograms using quasi-optical back-propagation and rigorous optimization methods adopted from diffractive optics. We present experimental results from a plane-wave-generating hologram and a custom-designed field shaper at 310 GHz. Holograms can be applied, e.g., in a compact antenna test range and we propose their use for alignment purposes.

Abstracts

Ka-band waveguide phase shifter using tunable electromagnetic crystal sidewalls

J.A. Higgins, Hao Xin, A. Sailer and M. Rosker. "Ka-band waveguide phase shifter using tunable electromagnetic crystal sidewalls." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1281-1288.

Tunable electromagnetic crystal (EMXT) structures have been used as sidewalls in special waveguides for frequencies of 30-40 GHz. This has the effect of substituting tunable impedance surfaces in place of the normal conducting metal sidewalls. The resulting EMXT waveguide boundary conditions can then be controlled in situ to achieve desired phase shifting and/or field flattening effects. Proof-of-concept experiments have been done using fix-tuned EMXT sidewalls with various resonant frequencies, and the measurements indicate that the insertion loss is low. An InP quantum barrier varactor approach is used to implement the tunable Ka-band EMXT waveguide phase shifter. The dependence of transmission amplitude and phase on the center frequency of sidewall resonance has been simulated and measured. Measurements and simulation results agree very well. The loss mechanism of the demonstrated phase shifter is well understood. Our results indicate that tunable EMXT waveguide will provide simple and low-loss phase-shifting systems.

Abstracts

Application of C-COM for microwave integrated-circuit modeling

Kang Lan, S.K. Chaudhuri and S. Safavi-Naeini. "Application of C-COM for microwave integrated-circuit modeling." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1289-1295.

The concurrent complementary operators method (C-COM) is extended to simulate microwave planar circuits with the finite-difference time-domain (FDTD) method for the first time. The dispersive boundary condition (DBC) and its complementary operator are used to truncate the FDTD lattices and the fields in the boundary layers are calculated, respectively. Then these two simulations are averaged to annihilate the first-order reflections. Numerical error analysis shows that the performance of the DBC is improved greatly due to the implementation of complementary operators, and the setup of its parameters becomes easier and more robust. A flexible and high-performance absorbing boundary condition is thus obtained through the combination of the DBC and C-COM. This method has been successfully used to simulate a variety of planar circuit structures. Simulations of a microstrip low-pass filter, coupled-line bandpass filter, modified microstrip transmission lines, and dielectric resonator antenna, are presented in this paper.

Abstracts

Time-domain reflectometry using arbitrary incident waveforms (Comments)

J. Izydorczyk. "Time-domain reflectometry using arbitrary incident waveforms (Comments)." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1296-1298.

This paper suggests slight changes to the time-domain reflectometry algorithm presented in the above paper [see ibid., vol. 50, no. 11, p 2558-63, 2002]. Proposed changes make the algorithm simpler to implement. An example of computations is given.

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Time-domain reflectometry using arbitrary incident waveforms (Authors' Reply)

Te-Wen Pan, Ching-Wen Hsue and Jhin-Fang Huang. "Time-domain reflectometry using arbitrary incident waveforms (Authors' Reply)." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 1298-.

For original paper see ibid., vol. 50, no. 11, p. 2558-63 (2002). For comments see ibid., vol. 51, no. 4, p. 1296-8 (2003). The proposed algorithm is simple and accurate enough for some practical applications. The comments further prove that an incident wave having the duration of pulsewidth longer than the time needed for the wave to travel across the NLTL can be employed to characterize the impedance profile of an NLTL.

Abstracts

Design of an Interdigital Hairpin Bandpass Filter Utilizing a Model of Coupled Slots (Corrections)

A.N. Deleniv, M.S. Gashinova, I.B. Vendik and A. Eriksson. "Design of an Interdigital Hairpin Bandpass Filter Utilizing a Model of Coupled Slots (Corrections)." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]).

Abstracts

Information for Authors (Apr. 2003, Part I [T-MTT])

"Information for Authors (Apr. 2003, Part I [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part I [T-MTT]): 0_5-0_5.

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Guest Editorial (Apr. 2003, Part II [T-MTT])

K.C. Gupta. "Guest Editorial (Apr. 2003, Part II [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part II [T-MTT] (Special Issue on RF and Microwave Tutorials)): 1301-1305.

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Concept mapping and concept modules for Web-based and CD-ROM-based RF and microwave education

K.C. Gupta, R. Ramadoss and Huantong Zhang. "Concept mapping and concept modules for Web-based and CD-ROM-based RF and microwave education." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part II [T-MTT] (Special Issue on RF and Microwave Tutorials)): 1306-1311.

This paper suggests the use of concept mapping and an approach for the use of concept modules as primary-learning units for Web-based and CD-ROM-based RF and microwave education. A brief discussion on the notion of concepts relates them to the assimilation theory of education. The role of concept mapping in the learning process is emphasized. A generic structure for proposed concept modules is discussed. Examples are included to illustrate the approach. For a detailed case study, a hyperlink to a companion tutorial article in this TRANSACTIONS is provided in the electronic version of this paper. Advantages of the proposed approach for a Web-based asynchronous learning environment are highlighted.

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Microwave education supported by animations of wave propagation effects

W. Menzel. "Microwave education supported by animations of wave propagation effects." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part II [T-MTT] (Special Issue on RF and Microwave Tutorials)): 1312-1317.

Dealing with electromagnetic (EM) fields and microwaves for the first time, many students have problems to get an idea of the fields and their behavior in transmission-line structures and components. To reduce these barriers, animations generated by a time-domain field simulator can be used to demonstrate some basic time- and space-dependent properties of EM waves. In this paper, the application of a two-dimensional transmission-line matrix (2D-TLM) code for this purpose is described. Starting points are some introductory animations of basic wave propagation, e.g., in a parallel-plate waveguide, the incidence of a wave onto a lossy wall (skin effect), or the excitation of a wave in a dielectric slab (dielectric line). Later on, the fields in a number of transmission-line components like couplers or filters can be demonstrated in a very nice way. Further applications of this tool are found in demonstrating basic problems of electromagnetic compatibility like penetration through a metal shielding or through openings in a shell including resonance effects. Such animations are shown during the lectures using a video projector. In addition, the examples are offered to the students on a Web page both as animated gifs and as applications files for a 2D-TLM program to repeat and/or modify the experiment.

Abstracts

A time-domain virtual electromagnetics laboratory for microwave engineering education

W.J.R. Hoefer and P.P.M. So. "A time-domain virtual electromagnetics laboratory for microwave engineering education." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part II [T-MTT] (Special Issue on RF and Microwave Tutorials)): 1318-1325.

Electrical-engineering students look upon electromagnetic-field theory as a difficult, abstract, and highly mathematical subject. The use of computer modeling and simulation is helpful in making the subject matter more accessible to students in electromagnetics and microwaves courses. In this paper, a complimentary two-dimensional time-domain field simulation software tool (MEFiSTo-2D Classic) is used to illustrate fundamental electromagnetic concepts that are traditionally described by mathematical formulas. The user-friendly interactive features and field animation capabilities of this software transform abstract electromagnetic-field theory into realistic images on the screen. Once the fundamental modeling concepts have been comprehended, students can create advanced structures to explore the subject matter further.

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RF and microwave network characterization - a concept-map-based tutorial

K.C. Gupta, R. Ramadoss and Huantong Zhang. "RF and microwave network characterization - a concept-map-based tutorial." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part II [T-MTT] (Special Issue on RF and Microwave Tutorials)): 1326-1329.

Characterization of RF and microwave networks based on scattering parameters formalism is one of the most basic themes that microwave engineers need to fully comprehend. This topic is included in most of the common textbooks on microwave circuits. However, alternative tutorial presentations that help in clearer understanding of the topic are always welcome. This tutorial is such an attempt and makes use of the "concept-maps and concept-modules" approach discussed in another paper in this TRANSACTIONS . Concept maps are visual representations of relationship among various concepts relevant to topic and contribute to better understanding of concepts. In addition to S-parameters, this tutorial includes A-, Z-, and Y-parameters and their relevance to microwave network representation and design.

Abstracts

Potential formalisms in electromagnetic-field analysis

N.K. Georgieva and H.W. Tam. "Potential formalisms in electromagnetic-field analysis." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part II [T-MTT] (Special Issue on RF and Microwave Tutorials)): 1330-1338.

The theory of electromagnetic (EM) potentials is as old as the Maxwell equations, which treat the field vectors E and H directly. Yet the vector and scalar potentials are often regarded as nothing more than an auxiliary mathematical concept, which does not necessarily reflect a physically existing phenomenon. This widely accepted opinion does not have sound theoretical or experimental validation. The EM potentials are as "real" as the field vectors - they describe observable phenomena and play a crucial role in the explanation of light-matter interactions, radiation, and propagation. We discuss the methodological value of the potential formalism in electromagnetism and the advantages of the potential-based computational approaches in EM analysis. The key points of the discussion are supported by examples of the analysis of classical problems such as the radiation from a small dipole and the field propagation in waveguide structures: a waveguide bend and an H-plane filter. These examples include animations of the propagation of the EM-field potentials and the respective field vectors.

Abstracts

Artificial neural networks for RF and microwave design - from theory to practice

Qi-Jun Zhang, K.C. Gupta and V.K. Devabhaktuni. "Artificial neural networks for RF and microwave design - from theory to practice." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part II [T-MTT] (Special Issue on RF and Microwave Tutorials)): 1339-1350.

Neural-network computational modules have recently gained recognition as an unconventional and useful tool for RF and microwave modeling and design. Neural networks can be trained to learn the behavior of passive/active components/circuits. A trained neural network can be used for high-level design, providing fast and accurate answers to the task it has learned. Neural networks are attractive alternatives to conventional methods such as numerical modeling methods, which could be computationally expensive, or analytical methods which could be difficult to obtain for new devices, or empirical modeling solutions whose range and accuracy may be limited. This tutorial describes fundamental concepts in this emerging area aimed at teaching RF/microwave engineers what neural networks are, why they are useful, when they can be used, and how to use them. Neural-network structures and their training methods are described from the RF/microwave designer's perspective. Electromagnetics-based training for passive component models and physics-based training for active device models are illustrated. Circuit design and yield optimization using passive/active neural models are also presented. A multimedia slide presentation along with narrative audio clips is included in the electronic version of this paper. A hyperlink to the NeuroModeler demonstration software is provided to allow readers practice neural-network-based design concepts.

Abstracts

MMIC applications of heterostructure interband tunnel devices

A. Cidronali, V. Nair, G. Collodi, J.H. Lewis, M. Camprini, G. Manes and H. Goronkin. "MMIC applications of heterostructure interband tunnel devices." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part II [T-MTT] (Special Issue on RF and Microwave Tutorials)): 1351-1367.

This paper deals with recent achievements in the field of an emerging technology termed the quantum monolithic microwave integrated circuit (QMMIC). QMMIC consists of a heterojunction interband tunneling diode and a high electron-mobility transistor monolithically integrated to obtain a new functional device. This technology enables the realization of low-voltage, high-density, and high-functionality circuits. A detailed description of the design and analysis techniques for several circuits such as an amplifier, an oscillator, and a mixer, along with the analytical treatment of the principle of operation are given in this paper. A number of prototypes implemented in InP technology constitute the proof-of-concept of the unique features of QMMIC circuit blocks for low-power wireless systems.

Abstracts

Cross-coupling in coaxial cavity filters - a tutorial overview

J.B. Thomas. "Cross-coupling in coaxial cavity filters - a tutorial overview." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part II [T-MTT] (Special Issue on RF and Microwave Tutorials)): 1368-1376.

This paper presents a tutorial overview of the use of coupling between nonadjacent resonators to produce transmission zeros at real frequencies in microwave filters. Multipath coupling diagrams are constructed and the relative phase shifts of multiple paths are observed to produce the known responses of the cascaded triplet and quadruplet sections. The same technique is also used to explore less common nested cross-coupling structures and to predict their behavior. A discussion of the effects of nonzero electrical length coupling elements is presented. Finally, a brief categorization of the various synthesis and implementation techniques available for these types of filters is given.

Abstracts

Active frequency-multiplier design using CAD

D.M. Klymyshyn and Zhen Ma. "Active frequency-multiplier design using CAD." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part II [T-MTT] (Special Issue on RF and Microwave Tutorials)): 1377-1385.

A tutorial paper on active frequency multiplier design is presented. Rough calculations for a /spl times/2 multiplier using classical theory are developed and used as a starting point for implementation with nonlinear computer-aided design (CAD) software. The power of the nonlinear CAD software for visualizing and understanding concepts important to frequency multiplier design, and also for optimization of critical design parameters is demonstrated through realistic examples. Important design considerations for higher order multipliers are discussed, including design of output termination circuitry for a /spl times/4 multiplier at 28 GHz.

Abstracts

Phase noise in oscillators - Leeson formula revisited

J.-C. Nallatamby, M. Prigent, M. Camiade and J. Obregon. "Phase noise in oscillators - Leeson formula revisited." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part II [T-MTT] (Special Issue on RF and Microwave Tutorials)): 1386-1394.

In the field of linear feedback-systems formalism, the Leeson formula is a useful tool for the determination of phase noise in feedback oscillators. Nevertheless, a direct application of the Leeson model without care can lead to erroneous results because the formula contains hidden parameters that are generally unwittingly ill evaluated or neglected. Thus, a brute-force calculation of phase noise with the Leeson formula can lead to errors of several orders of magnitude (i.e., several tens of decibels). A detailed analysis enables us to enlighten the hidden parameters leading to a modified Leeson formula that is valid for all oscillator circuits. It explicitly takes into account all the parameters needed for phase-noise calculation. In order to demonstrate the ease of use and accuracy of the new formula, we apply it to several oscillator circuits with lumped elements, transmission lines, and high-Q resonators. Finally the analytical results are confirmed by numerical simulations with a nonlinear transistor model.

Abstracts

Digital receivers and transmitters using polyphase filter banks for wireless communications

F.J. Harris, C. Dick and M. Rice. "Digital receivers and transmitters using polyphase filter banks for wireless communications." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part II [T-MTT] (Special Issue on RF and Microwave Tutorials)): 1395-1412.

Provides a tutorial overview of multichannel wireless digital receivers and the relationships between channel bandwidth, channel separation, and channel sample rate. The overview makes liberal use of figures to support the underlying mathematics. A multichannel digital receiver simultaneously down-converts a set of frequency-division-multiplexed (FDM) channels residing in a single sampled data signal stream. In a similar way, a multichannel digital transmitter simultaneously up-converts a number of baseband signals to assemble a set of FDM channels in a single sampled data signal stream. The polyphase filter bank has become the architecture of choice to efficiently accomplish these tasks. This architecture uses three interacting processes to assemble or to disassemble the channelized signal set. In a receiver, these processes are an input commutator to effect spectral folding or aliasing due to a reduction in sample rate, a polyphase M-path filter to time align the partitioned and resampled time series in each path, and a discrete Fourier transform to phase align and separate the multiple baseband aliases. In a transmitter, these same processes operate in a related manner to alias baseband signals to high order Nyquist zones while increasing the sample rate with the output commutator.

Abstracts

Selected topics in RF coplanar probing

S.A. Wartenberg. "Selected topics in RF coplanar probing." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part II [T-MTT] (Special Issue on RF and Microwave Tutorials)): 1413-1421.

The RF coplanar probe is a popular tool for launching high-frequency signals onto and off of a wafer. Physically contacting the die, it establishes a crucial link between the test system and wafer. Their proper use permits a higher degree of measurement accuracy compared to test fixturing. To augment the reader's understanding, this tutorial reviews selected issues related to the design, construction, characterization, selection, calibration, and repeatability of RF on-wafer coplanar probes.

Abstracts

Calibrated measurement of optoelectronic frequency response

P.D. Hale and D.F. Williams. "Calibrated measurement of optoelectronic frequency response." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part II [T-MTT] (Special Issue on RF and Microwave Tutorials)): 1422-1429.

Describes the most straightforward method for accurately measuring the frequency response of optoelectronic devices. The method uses a calibrated optical reference receiver, a modulated optical source, and a calibrated electrical vector network analyzer.

Abstracts

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"Information for Authors (Apr. 2003, Part II [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.4 (Apr. 2003, Part II [T-MTT] (Special Issue on RF and Microwave Tutorials)): 0_4-0_4.

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Volterra-mapping-based behavioral modeling of nonlinear circuits and systems for high frequencies

Tianhai Wang and T.J. Brazil. "Volterra-mapping-based behavioral modeling of nonlinear circuits and systems for high frequencies." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1433-1440.

Presents and validates a discrete-time/frequency-domain approach to the problem of Volterra-series-based behavioral modeling for high-frequency systems. The proposed technique is based on the acquisition of samples of the input/output data, both of which are sampled at the Nyquist rate corresponding to the input signal. The method is capable of identifying the time-/frequency-domain Volterra kernels/transfer functions of arbitrary causal time-invariant weakly nonlinear circuits and systems operating at high frequencies subject to essentially a general random or multitone excitation. The validity and efficiency of the proposed modeling approach has been demonstrated by several examples in high-frequency applications and good agreement has been obtained between results calculated using the proposed model and results measured or simulated with commercial simulation tools.

Abstracts

A new multiple-tuned six-port Riblet-type directional coupler in rectangular waveguide

F. Alessandri, M. Giordano, M. Guglielmi, G. Martirano and F. Vitulli. "A new multiple-tuned six-port Riblet-type directional coupler in rectangular waveguide." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1441-1448.

Directional couplers are fundamental components for the realization of power splitting and combining networks. A basic component is the four-port coupler realized in a wide range of different electrical and geometrical configurations. Using multiport directional couplers, with six or more ports, compact power splitting and combining networks can be designed. Most of the multiport directional couplers in a rectangular waveguide found in literature use an E-plane branch-line layout. A special configuration of a six-port narrow-wall short-slot directional coupler (Riblet type) is presented here. The coupler has only one central coupling region, following the Riblet concept based on the differences among the propagation constants of the modes through the coupling region. A number of different solutions have been investigated and some examples are presented here. Moreover, a multituning realized by using input resonators permits one to significantly enlarge the bandwidth. A six-port coupler equally splitting on the output ports the power injected at each input port has been designed for a 8.4% working band. The theoretical and measured responses presented here prove the effectiveness of the multituning concept.

Abstracts

Low conversion-loss fourth subharmonic mixers incorporating CMRC for millimeter-wave applications

Quan Xue, Kam Man Shum and Chi Hou Chan. "Low conversion-loss fourth subharmonic mixers incorporating CMRC for millimeter-wave applications." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1449-1454.

Low conversion-loss millimeter-wave fourth subharmonic (SH) mixer designs are proposed in this paper. A millimeter-wave (35 GHz) fourth SH mixer with four open/shorted stubs is designed and measured. The conversion loss is less than 15 dB within a 2.4-GHz bandwidth. The minimum loss is 11.5 dB at the center frequency. By replacing two of the shunt stubs with a dual-frequency in-line stub consisting of newly developed compact microstrip resonating cells (CMRCs), the performance of the SH mixer is improved significantly. At 35 GHz, the conversion loss of this new fourth SH mixer is as low as 6.1 dB with a 3-dB bandwidth of 6 GHz. The conversion loss in the whole Ka-band (26.5-40 GHz) is less than 16 dB. The proposed fourth SH mixer incorporating with CMRCs provides a low-cost high-performance solution for RF subsystem design.

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W-band waveguide photomixer using a uni-traveling-carrier photodiode with 2-mW output

A. Ueda, T. Noguchi, H. Iwashita, Y. Sekimoto, M. Ishiguro, S. Takano, T. Nagatsuma, H. Ito, A. Hirata and T. Ishibashi. "W-band waveguide photomixer using a uni-traveling-carrier photodiode with 2-mW output." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1455-1459.

Developed a W-band (75-110 GHz) waveguide photomixer with a uni-traveling carrier photodiode, which can be driven by two 1.5-/spl mu/m lasers. It generates an output power of 2.2/spl plusmn/0.2 mW at 100 GHz with a laser power of less than 100 mW, and its relative power variation is as small as 3 dB across the entire frequency range of the W-band. A 100-GHz superconductor-insulator-superconductor receiver driven by this photomixer shows the same noise temperature around 26 K as that driven by a conventional Gunn oscillator.

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Efficient calculation of the band structure of artificial materials with cylindrical metallic inclusions

M.G. Silveirinha and C.A. Fernandes. "Efficient calculation of the band structure of artificial materials with cylindrical metallic inclusions." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1460-1466.

We present a new hybrid method that makes the calculation of the band structure of artificial materials with cylindrical metallic inclusions very efficient. We derive an auxiliary problem whose band structure is that of the metallic crystal along with several dispersionless bands. The eigenfunctions of the auxiliary problem have continuous derivatives up to order 2. Thus, the spectrum of the auxiliary problem can be efficiently computed using the plane-wave method. The band structure of the metallic crystal is then obtained by extracting from the computed results the dispersionless bands.

Abstracts

New recovery error indicator for adaptive finite-element analysis on waveguiding structures

A.B. Diaz-Morcillo, J.V. Balbastre and L. Nuno. "New recovery error indicator for adaptive finite-element analysis on waveguiding structures." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1467-1475.

The adaptive finite-element method (FEM) is an iterative variant of the FEM where, in a first step, an initial mesh with few and low-order elements is generated, the corresponding algebraic problem is solved and the error in the solution is estimated in order to add degrees of freedom in those regions of the domain with the biggest error estimation. This process is repeated until an ending condition is reached. The two basic stages in this method are the error indication and the mesh enrichment. In this paper, within the analysis of waveguiding structures, a new error indicator based on the curl recovery is described. In addition, an overview on refinement techniques is presented, and the h-refinement employed in this study is briefly described. Results obtained with the curl-recovery indicator are discussed and compared with the classical nonadaptive FEM and two previously developed error indicators: the residual and flux continuity indicators.

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Measurements of a leaky-wave ferrite isolator

A.S. Akyol and L.E. Davis. "Measurements of a leaky-wave ferrite isolator." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1476-1481.

A single ferrite/dielectric image line is analyzed using the effective permittivity method adapted for ferrites. E/sub pq//sup x/ modes are used in association with a transverse bias direction to obtain nonreciprocal behavior. It is shown that the required conditions can be obtained that enable the composite image line to guide in one direction and leak in the other. Thus, the structure behaves as a "leaky-wave isolator." Dispersion diagrams showing this behavior in the frequency range of 14-30 GHz are obtained for a 2 /spl times/ 2 mm/sup 2/ ferrite (type TT1-390) rod with adjacent dielectric loading with /spl epsiv/r=10. The structure is built and the bias is applied externally in a direction transverse to and in the plane of the direction of propagation. The required modes are excited and probed by semirigid coaxial cables mounted on vernier mechanisms. The S-parameters indicating the nonreciprocal behavior in the frequency range expected are shown.

Abstracts

Integrated antenna with direct conversion circuitry for broad-band millimeter-wave communications

Ji-Yong Park, Seong-Sik Jeon, Yuanxun Wang and T. Itoh. "Integrated antenna with direct conversion circuitry for broad-band millimeter-wave communications." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1482-1488.

A compact integrated antenna with direct quadrature conversion circuitry for broad-band millimeter-wave communications is proposed. The conversion circuits include two even-harmonic mixers based on antiparallel diode pairs (APDPs). The equivalent circuit of the APDP derived here provides good agreement with the measured data from 17 to 23 GHz. Overall phase and amplitude imbalance between the in-phase/quadrature (I/Q) output channels are less than 1.2/spl deg/ and 1 dB at IFs of 10 and 100 MHz, respectively. An overall RF power conversion loss of 14.6 dB at the quadrature I/Q channels including the antenna is achieved in the frequency range from 39.75 to 40.25 GHz with a local oscillator (LO) power level of 11.8 dBm. LO leakages at 20 and 40 GHz are -31.5 and -44.8 dBm, respectively. In order to demonstrate the system capabilities for broad-band digital communication, a communication link is built with a pair of the proposed front-ends. Data transmission up to 1 Gb/s data rate for quadrature phase-shift keying modulation is demonstrated.

Abstracts

A wide-band on-wafer noise parameter measurement system at 50-75 GHz

M. Kantanen, M. Lahdes, T. Vaha-Heikkila and J. Tuovinen. "A wide-band on-wafer noise parameter measurement system at 50-75 GHz." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1489-1495.

A wide-band on-wafer noise parameter measurement system at 50-75 GHz is presented. This measurement system is based on the cold-source method with a computer-controlled waveguide tuner. Calibrations and measurement methods are discussed and measured results for passive and active on-wafer devices are shown over a 50-75 GHz range. An InP high electron-mobility transistor device is used as a test item for the active device. A Monte Carlo analysis to study measurement uncertainties is also shown. The measurement system is a useful tool in the development and verification of device noise models, as well as in device characterization.

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Abstracts

Characteristics of striplines with inhomogeneous cylindrical substrate

Jean-Fu Kiang, Chung-Rung Lee and Chun Hsiung Chen. "Characteristics of striplines with inhomogeneous cylindrical substrate." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1496-1505.

A mode-matching technique combined with Galerkin's method is proposed in this paper to analyze the characteristics of striplines embedded in an inhomogeneous cylindrical medium. The potential in each layer is expressed in terms of eigenmodes obtained numerically. Coupling between two sets of eigenmodes in contiguous layers is described by defining potential ratio coefficient matrices. An integral equation is derived based on these eigenmodes with charge on the stripline as unknown. The method of moments is then applied to solve this integral equation. Various parameters are analyzed for their effects on transmission characteristics.

Abstracts

Finite-difference analysis of a loaded hemispherical resonator

A. Cwikla, M. Mrozowski and M. Rewienski. "Finite-difference analysis of a loaded hemispherical resonator." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1506-1511.

A rotationally symmetric inhomogeneously loaded open hemispherical resonator is analyzed using the finite-difference (FD) frequency-domain method. State-of-the art or new techniques are proposed to achieve high accuracy and efficiency of computations. These include applying the Galerkin method followed by an inexact shift-and-inverse Lanczos technique with an approximate starting eigenvector for selective computation of a single desired high-order mode, and compensating numerical dispersion error with the modified FD formulas. As a result, the final value of the computed resonant frequency for a desired mode agrees within 0.1% with the measured value and the computations involving a few 100000 unknowns are carried out in minutes on a personal computer.

Abstracts

Millimeter-wave active imaging using neural networks for signal processing

K. Watabe, K. Shimizu, M. Yoneyama and K. Mizuno. "Millimeter-wave active imaging using neural networks for signal processing." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1512-1516.

A neural network has been successfully implemented in an active-mode millimeter-wave (60 GHz) imaging system with a Yagi-Uda antenna array in order to recognize objects and reconstruct images that appear distorted under coherent millimeter-wave illumination. With 10 /spl times/ 10 sampling points and five teaching trials, a recognition rate of 98% has been obtained for ten dissimilar alphabetical letters used as objects. The success rate of reconstruction of distorted millimeter-wave images was 80% when five dissimilar letters were used for the reconstruction. The recognition rate after changing the spatial resolution of the optical system and sampling interval of the image is also discussed.

Abstracts

Transmission-line filters with capacitively loaded coupled lines

Chih-Ming Tsai, Sheng-Yuan Lee and Hong-Ming Lee. "Transmission-line filters with capacitively loaded coupled lines." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1517-1524.

Coupled lines with loads at one end, which can create tunable transmission zeros, are studied in this paper. The equation for the transmission zeros is derived from the analysis of even- and odd-mode excitations. Based on this equation, coupled lines with different loads are analyzed and the rules for controlling the transmission-zero frequency are given. The structures are used in the designs of several second-order filters and they are experimentally verified. The use of a skew-symmetric (0/spl deg/) feed structure in these filters is also discussed and an example is given.

Abstracts

Multiport scattering matrix measurement using a reduced-port network analyzer

Hsin-Chia Lu and Tah-Hsiung Chu. "Multiport scattering matrix measurement using a reduced-port network analyzer." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1525-1533.

A novel method for acquiring the scattering matrix of an n-port network from measurements using a reduced-port network analyzer is developed. This method can obtain the scattering matrix of a nonreciprocal or reciprocal n-port network with the use of a three- or two-port network analyzer. The formulation of this method considers the imperfection of terminators used in the measurement, and only two of the terminators are required to be known. Experimental results from a four-port microstrip circuit show good accuracy using the developed method.

Abstracts

An analysis of small-signal substrate resistance effect in deep-submicrometer RF MOSFETs

Yo-Sheng Lin and Shey-Shi Lu. "An analysis of small-signal substrate resistance effect in deep-submicrometer RF MOSFETs." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1534-1539.

Two different explanations of the S/sub 22/ kink phenomenon in deep-submicrometer RF MOSFETs have been reported: Hjelmgren and Litwin (see IEEE Trans. Electron Devices, vol.48, no.2, p.397-399, 2001) attributed the phenomenon to the substrate resistance, while Lu et al. (see ibid., vol.49, no.2, p.333-340, 2001) concluded that it results from the transconductance, or simply speaking, the size of the transistor. In this paper, we extend the dual-feedback circuit methodology for the three-terminal FET model proposed by Lu et al. into a more general four-terminal model in order to account for the influence of the substrate resistance. Our results show that, for a given MOSFET, either substrate resistance or transconductance may cause a kink in S/sub 22/. In addition to the single kink, which results from the above two factors, the double kinks, which appear when the substrate resistance of a MOSFET is within a middle range (approximately 10/sup 2/ to 10/sup 4/ /spl Omega/), can also be accounted for by our extended model. Experimental data representative of 0.25 /spl mu/m gate MOSFETs are adopted to verify our theory. Excellent agreement between theoretical values and experimental data has been found, which indicates our theory can successfully explain the S/sub 22/ kink phenomenon in deep-submicrometer RF MOSFETs.

Abstracts

Microwave characterization of a microstrip line using a two-port ring resonator with an improved lumped-element model

J.R. Bray and L. Roy. "Microwave characterization of a microstrip line using a two-port ring resonator with an improved lumped-element model." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1540-1547.

A two-port ring resonator is used to characterize the microwave properties of a microstrip line printed on Ferro A6-S low-temperature co-fired ceramic. The ring and its coupling gaps are simulated using a simple lumped-element model. The coupling gaps are modeled as capacitors, the values of which are extracted using a commercial two-and-one-half-dimensional electromagnetic simulator. The validity of the lumped-element model is assessed by comparing the simulated and experimental resonant frequencies and, for the first time, the simulated magnitudes of both the reflection and transmission coefficients are also compared with those obtained experimentally. A correction for the frequency pushing due to the capacitive loading of the coupling gaps is also presented. The resulting model is then shown to predict the resonant frequencies to within 0.11% from 5 to 40 GHz. The simulated and experimental reflection magnitudes are within 0.5 dB across the band, whereas the transmission magnitudes are within 3.5 dB up to 22 GHz. Experimental results indicate that the loss of the microstrip ranges from approximately 0.11 to 0.42 dB/cm across the band and that the relative permittivity of the substrate is nearly constant versus frequency with an average value of 6.17.

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Abstracts

5.8-GHz circularly polarized dual-rhombic-loop traveling-wave rectifying antenna for low power-density wireless power transmission applications

B. Strassner and Kai Chang. "5.8-GHz circularly polarized dual-rhombic-loop traveling-wave rectifying antenna for low power-density wireless power transmission applications." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1548-1553.

This paper reports a right-hand circularly polarized (RHCP) high-efficiency traveling-wave rectifying antenna (rectenna) designed in a coplanar stripline (CPS) circuit that is etched on a Rogers Duroid 5870 substrate with /spl epsiv//sub r/=2.2 and 20-mil thickness. A 4 /spl times/ 1 traveling-wave array of RHCP high-gain dual-rhombic-loop antennas (DRLAs) and a reflecting plane are used to provide highly efficient RF-to-DC conversion in the presence of lower power densities regardless of the rectenna's broadside orientation. The DRLA array has a circularly polarized antenna gain of 14.6 dB with a 2:1 voltage standing-wave ratio bandwidth of 17% and a better than 3 dB axial ratio fractional bandwidth of 7% centered about 5.8 GHz. The rectenna achieves 82% RF-to-DC conversion efficiency at 5.8 GHz and uses a low-profile CPS band-reject filter to suppress the re-radiated second harmonic by over 14 dB. The rectenna operating at low power density should have many applications when the transmitting power is low and/or the transmission distance is long.

Abstracts

Microstrip stepped impedance resonator bandpass filter with an extended optimal rejection bandwidth

J.-T. Kuo and E. Shih. "Microstrip stepped impedance resonator bandpass filter with an extended optimal rejection bandwidth." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1554-1559.

Bandpass filters with an optimal rejection bandwidth are designed using parallel-coupled stepped impedance resonators (SIRs). The fundamental (f/sub o/) and higher order resonant harmonics of an SIR are analyzed against the length ratio of the high-Z and low-Z segments. It is found that an optimal length ratio can be obtained for each high-Z to low-Z impedance ratio to maximize the upper rejection bandwidth. A tapped-line input/output structure is exploited to create two extra transmission zeros in the stopband. The singly loaded Q(Q/sub si/) of a tapped SIR is derived. With the aid of Q/sub si/, the two zeros can be independently tuned over a wide frequency range. When the positions of the two zeros are purposely located at the two leading higher order harmonics, the upper rejection band can be greatly extended. Chebyshev bandpass filters with spurious resonances up to 4.4f/sub o/, 6.5f/sub o/, and 8.2f/sub o/ are fabricated and measured to demonstrate the idea.

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Modified transmission-reflection method for measuring constitutive parameters of thin flexible high-loss materials

T.C. Williams, M.A. Stuchly and P. Saville. "Modified transmission-reflection method for measuring constitutive parameters of thin flexible high-loss materials." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1560-1566.

The transmission-reflection method is modified for measuring constitutive parameters of thin high-loss materials used as radar absorbers. The method uses a two-layer structure, consisting of a layer of thin flexible unknown material supported by a thicker rigid known material. The analysis and measurements focus on nonmagnetic samples of a high dielectric constant and loss factor and on the waveguide configuration in the X-band. A nonlinear least-squares optimization is used to obtain the complex permittivity from the measured scattering parameters. The uncertainty analysis presented facilitates selection of the support layer thickness. Simulations with the finite-difference time-domain method explore the effects of sample imperfections. Accuracy of a few percent can be achieved for a sample thickness of a fraction of a millimeter, provided that the thickness of the support dielectric is close to optimum and sample has only small surface imperfections.

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Intrinsic noise equivalent-circuit parameters for AlGaN/GaN HEMTs

Sungjae Lee, K.J. Webb, V. Tilak and L.F. Eastman. "Intrinsic noise equivalent-circuit parameters for AlGaN/GaN HEMTs." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1567-1577.

Intrinsic noise sources and their correlation in gallium-nitride high electron-mobility transistors (HEMTs) are extracted and studied. Microwave noise measurements have been performed over the frequency range of 0.8-5.8 GHz. Using measured noise and scattering parameter data, the gate and drain noise sources and their correlation are determined using an equivalent-circuit representation. This model correctly predicts the frequency-dependent noise for two devices having different gate length. Three noise mechanisms are identified in these devices, namely, those due to velocity fluctuation, gate leakage, and traps.

Abstracts

Rapid coupling matrix reduction for longitudinal and cascaded-quadruplet microwave filters

R.N. Gajaweera and L.F. Lind. "Rapid coupling matrix reduction for longitudinal and cascaded-quadruplet microwave filters." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1578-1583.

To realize standard microwave filter structures, it is necessary to zero some of the elements in a general even-mode coupling matrix. The zeroing process involves solving a nonlinear set of equations, performed here by using the Newton-Raphson method. Thus, intelligence is added to the numerical iteration procedure, to ensure rapid convergence. The reproduced transmission coefficient S/sub 21/ from the reduced matrix agrees well with the one synthesized.

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2-D localization and identification based on SAW ID-tags at 2.5 GHz

T.F. Bechteler and H. Yenigun. "2-D localization and identification based on SAW ID-tags at 2.5 GHz." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1584-1590.

An identification and localization system based on surface acoustic wave (SAW) radio sensors is presented in this paper. This system is able to identify and localize objects within a two-dimensional area. Identification is achieved with a fixed coded passive SAW identification-tag. Localization is carried out with three receiving antennas and with a following analysis of time delay between the sent interrogation signal and the received signals. For practical tests, a special interrogator has been established, as well as the receiving and demodulation unit. The whole system is controlled by a computer.

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Analysis and reduction of cross-modulation distortion in CDMA receivers

V. Aparin and L.E. Larson. "Analysis and reduction of cross-modulation distortion in CDMA receivers." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1591-1602.

The jammer cross modulation (XM) transferred from a transmitter (TX) CDMA leakage by a receiver circuit is analyzed using the Volterra series and statistical theory. The measured "double-hump" XM spectrum is explained based on the CDMA signal statistics derived using the proposed system model of a reverse-link CDMA signal. The analysis shows that the XM distortion is affected by the circuit behavior not only at the jammer and the TX leakage frequencies, but also in the CDMA signal baseband and at the sum and difference of the excitation frequencies. This theory was verified on a 2-GHz Si bipolar junction transistor low-noise amplifier whose out-of-band terminations were optimally tuned to significantly reduce its XM distortion.

Abstracts

A microwave radar technique for dynamic testing of large structures

M. Pieraccini, G. Luzi, D. Mecatti, L. Noferini and C. Atzeni. "A microwave radar technique for dynamic testing of large structures." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1603-1609.

In this paper, the authors propose an innovative survey radar technique based on microwave holographic images for dynamic testing of large structures providing both vibration amplitude pattern and frequency. Theoretical background is provided and experimental results obtained during a dynamic test on a concrete and masonry building are reported.

Abstracts

General relations between IP2, IP3, and offsets in differential circuits and the effects of feedback

A.A. Abidi. "General relations between IP2, IP3, and offsets in differential circuits and the effects of feedback." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1610-1612.

In the presence of offsets, all balanced circuits show an apparent second-order distortion. Differential feedback lowers third-order nonlinearity and also these second-order effects. The results are important for the baseband circuits of zero-IF wireless receivers, which often need a very large second-order intercept point. It is shown that a published analysis of distortion in a bipolar double-balanced mixer is a special case of these general relationships.

Abstracts

A broad-band LTCC integrated transition of laminated waveguide to air-filled waveguide for millimeter-wave applications

Yong Huang and Ke-Li Wu. "A broad-band LTCC integrated transition of laminated waveguide to air-filled waveguide for millimeter-wave applications." 2003 Transactions on Microwave Theory and Techniques 51.5 (May 2003 [T-MTT]): 1613-1617.

In this paper, a compact and broad-band integrated transition between laminated waveguide in a multilayer low-temperature co-fired ceramic (LTCC) substrate and standard air-filled rectangular waveguide is presented. A parallel inter-coupled two-pole filter equivalent circuit is employed to interpret the working mechanism of the transition and to predict the performance. A Ka-band prototype of the proposed broad-band transition is designed and fabricated in an LTCC substrate. The simulated and measured results of the prototyped transition show good agreement. It has been demonstrated, through the experimental results of the Ka-band prototype that the proposed transition configuration gives an effective bandwidth of over 8% with -15-dB return loss and average -0.4-dB insertion loss over the bandwidth at the Ka frequency band.

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Abstracts

On-wafer noise-parameter measurements at W-band

T. Vaha-Heikkila, M. Lahdes, M. Kantanen and J. Tuovinen. "On-wafer noise-parameter measurements at W-band." 2003 Transactions on Microwave Theory and Techniques 51.6 (Jun. 2003 [T-MTT]): 1621-1628.

A wide-band on-wafer noise-parameter measurement setup has been developed for W-band. The system is based on a cold-source method and uses a simple manual impedance tuner. In addition to noise parameters, S-parameters can be measured with the same setup. Using the developed system, noise parameters of an InP high electron-mobility transistor have been measured and results are shown in the 79-94-GHz frequency band. This is the first comprehensive report of noise-parameter measurements made on active devices at W-band.

Abstracts

Metallo-dielectric electromagnetic bandgap structures for suppression and isolation of the parallel-plate noise in high-speed circuits

R. Abhari and G.V. Eleftheriades. "Metallo-dielectric electromagnetic bandgap structures for suppression and isolation of the parallel-plate noise in high-speed circuits." 2003 Transactions on Microwave Theory and Techniques 51.6 (Jun. 2003 [T-MTT]): 1629-1639.

A novel approach for the suppression of the parallel-plate waveguide (PPW) noise in high-speed printed circuit boards is presented. In this approach, one of the two conductors forming the PPW is replaced by an electromagnetic bandgap (EBG) surface. The main advantage of the proposed approach over the commonly practiced methods is the omnidirectional noise suppression it provides. For this purpose, two EBG structures are initially designed by utilizing an approximate circuit model. Subsequently, the corresponding band structures are characterized by analytical solutions using the transverse resonance method, as well as full-wave finite-element simulations. The designed EBG surfaces were fabricated and employed in a number of PPW test boards. The corresponding frequency-domain measurements exhibited bandgaps of approximately 2.21 and 3.35 GHz in the frequency range below 6 GHz. More importantly, suppression of the PPW noise by 53% was achieved based on time-domain reflectometry experiments, while maintaining the signal transmission quality within the required specifications for common signaling standards.

Abstracts

On the accuracy of direct extraction of the heterojunction-bipolar-transistor equivalent-circuit model parameters C/sub /spl pi//, C/sub BC/, and R/sub E/

M.W. Dvorak and C.R. Bolognesi. "On the accuracy of direct extraction of the heterojunction-bipolar-transistor equivalent-circuit model parameters C/sub /spl pi//, C/sub BC/, and R/sub E/." 2003 Transactions on Microwave Theory and Techniques 51.6 (Jun. 2003 [T-MTT]): 1640-1649.

Several basic small-signal equivalent-circuit models for bipolar transistors lead to simple analytical expressions for the model parameters in terms of measured values. This paper investigates the accuracy of these expressions for real transistors by applying the direct extraction equations to more complicated small-signal models. The extraction of the base/collector capacitance, base/emitter capacitance, and emitter resistance are considered. Analytically derived trends are illustrated using measurements on small-area high-speed InP/GaAsSb/InP double heterojunction bipolar transistors.

Abstracts

Silicon-based reconfigurable antennas-concepts, analysis, implementation, and feasibility

A.E. Fathy, A. Rosen, H.S. Owen, F. McGinty, D.J. McGee, G.C. Taylor, R. Amantea, P.K. Swain, S.M. Perlow and M. ElSherbiny. "Silicon-based reconfigurable antennas-concepts, analysis, implementation, and feasibility." 2003 Transactions on Microwave Theory and Techniques 51.6 (Jun. 2003 [T-MTT]): 1650-1661.

We report on an innovative reconfigurable antenna concept with significant practical relevance based on the dynamic definition of metal-like conductive plasma channels in high-resistivity silicon that are activated by the injection of DC current. The plasma channels are precisely formed and addressed using current high-resolution silicon fabrication technology. These dynamically defined plasma-reconfigurable antennas enable frequency hopping, beam shaping, and steering without the complexity of RF feed structures. This concept shows promise for delivering the performance and capabilities of a phased array, but at a reduced cost. However, challenges such as p-i-n biasing circuit complexity and their nonlinearities, as well as antenna efficiency, would still require further investigations.

Abstracts

Class-E/sub M/ switching-mode tuned power amplifier-high efficiency with slow-switching transistor

A. Telegdy, B. Molnar and N.O. Sokal. "Class-E/sub M/ switching-mode tuned power amplifier-high efficiency with slow-switching transistor." 2003 Transactions on Microwave Theory and Techniques 51.6 (Jun. 2003 [T-MTT]): 1662-1676.

In class-E switching-mode power amplifiers, the switch-current waveform includes a step change ("jump"), approximated by a ramp of <15% of the period. At a transistor's highest useful frequency, the large input drive required for fast-enough switching yields marginal power gain. Objective: a high-efficiency power amplifier with jumpless current and voltage waveforms. Previously, that was proven impossible for amplifiers using only linear passive components and an ideal switch. We present the theory of a new topology that does achieve the objective: a class-E amplifier with nonlinear passive or active components in the load network. A "biharmonic" version was simulated, built, and tested. It comprises a main stage switching at the output frequency f/sub 1/, drawing DC power of approximately 3/4(P/sub OUT RF//drain efficiency), and an auxiliary amplifier switching at 2f/sub 1/, injecting 2f/sub 1/-current into the circuit node at the main-stage transistor's output port to shape jumpless voltage and current waveforms. That switching (nonlinear) output port converts 2f/sub 1/ power from the auxiliary amplifier to approximately 1/4 of the f/sub 1/ power at the load. Computer simulation, and measurement on a scaled-frequency 3.5-MHz prototype, show that switching losses practically disappear when the main-stage switch is operated in the jumpless regime.

Abstracts

The class-E/F family of ZVS switching amplifiers

S.D. Kee, I. Aoki, A. Hajimiri and D. Rutledge. "The class-E/F family of ZVS switching amplifiers." 2003 Transactions on Microwave Theory and Techniques 51.6 (Jun. 2003 [T-MTT]): 1677-1690.

A new family of switching amplifiers, each member having some of the features of both class E and inverse F, is introduced. These class-E/F amplifiers have class-E features such as incorporation of the transistor parasitic capacitance into the circuit, exact truly switching time-domain solutions, and allowance for zero-voltage-switching operation. Additionally, some number of harmonics may be tuned in the fashion of inverse class F in order to achieve more desirable voltage and current waveforms for improved performance. Operational waveforms for several implementations are presented, and efficiency estimates are compared to class-E.

Abstracts

Reflection characteristics of a PML with a shallow corrugation

M.E. Inchaussandague, M.L. Gigli and R.A. Depine. "Reflection characteristics of a PML with a shallow corrugation." 2003 Transactions on Microwave Theory and Techniques 51.6 (Jun. 2003 [T-MTT]): 1691-1695.

The constitutive characteristics of anisotropic materials can be exploited to construct absorbers that provide reflectionless interfaces for waves at arbitrary angles of incidence. In this paper, we investigate how a weak corrugation affects the reflectivity of the anisotropic perfectly matched absorber developed by Sacks et al. (1995) for a flat interface. To do so, we develop a Rayleigh method to calculate the fields diffracted at the periodically corrugated boundary of an anisotropic absorber with constant constitutive tensors, which correspond to a planar (Cartesian) perfectly matched layer. We present numerical results in the nondiffractive regime (where only a specularly reflected wave can propagate) for sinusoidal corrugations with different groove height-to-period ratios. Our results show that the reflectivity of the anisotropic absorber near normal incidence remains very low (less than 0.4% for a 10% modulation), whereas it changes dramatically near grazing incidences.

Abstracts

A new configuration of polarization-rotating dual-beam interferometer for space use

T. Manabe, J. Inatani, A. Murk, R.J. Wylde, M. Seta and D.H. Martin. "A new configuration of polarization-rotating dual-beam interferometer for space use." 2003 Transactions on Microwave Theory and Techniques 51.6 (Jun. 2003 [T-MTT]): 1696-1704.

This paper presents a new configuration of quasi-optical polarization-rotating dual-beam interferometer, which uses a pair of frequency-selective polarizers (FSPs) consisting of a wire-grid placed in front of a flat mirror, and has a function similar to the conventional Martin-Puplett interferometer (MPI). Advantages of this new configuration over the conventional MPI are lower residual reflection at the input and output ports and suitability to fixed-tuned applications. An experiment has shown it to have an MPI-like frequency characteristic as calculated. Careful machining was successful in achieving accuracy needed for a specified filter characteristic. This FSP-based quasi-optical device is to be used as a sideband separator in a space-borne submillimeter receiver for atmospheric research.

Abstracts

Cryogenic wide-band ultra-low-noise IF amplifiers operating at ultra-low DC power

N. Wadefalk, A. Mellberg, I. Angelov, M.E. Barsky, S. Bui, E. Choumas, R.W. Grundbacher, E.L. Kollberg, R. Lai, N. Rorsman, P. Starski, J. Stenarson, D.C. Streit and H. Zirath.
"Cryogenic wide-band ultra-low-noise IF amplifiers operating at ultra-low DC power." 2003 Transactions on Microwave Theory and Techniques 51.6 (Jun. 2003 [T-MTT]): 1705-1711.

This paper describes cryogenic broad-band amplifiers with very low power consumption and very low noise for the 4-8-GHz frequency range. At room temperature, the two-stage InP-based amplifier has a gain of 27 dB and a noise temperature of 31 K with a power consumption of 14.4 mW per stage, including bias circuitry. When cooled to 15 K, an input noise temperature of 1.4 K is obtained at 5.7 mW per stage. At 0.51 mW per stage, the input noise increases to 2.4 K. The noise measurements have been repeated at different laboratories using different methods and are found consistent.

Abstracts

A hybrid finite-element-modal-expansion method with a new type of curvilinear mapping for the analysis of microwave passive devices

E. Martini, G. Pelosi and S. Selleri. "A hybrid finite-element-modal-expansion method with a new type of curvilinear mapping for the analysis of microwave passive devices." 2003 Transactions on Microwave Theory and Techniques 51.6 (Jun. 2003 [T-MTT]): 1712-1717.

A hybrid finite-element-modal-expansion procedure for the three-dimensional analysis of passive microwave devices exploiting higher order vector basis functions and an innovative class of curved elements is presented. If modal expansions on ports are not analytically known, they can be numerically obtained via a preliminary two-and-one-half-dimensional finite-element analysis; curved triangular and tetrahedrical elements are defined by a rational Bezier mapping, which provides a remarkable increase in accuracy and flexibility over the conventional polynomial mapping without a significant increase in computational burden. Numerical results are provided to illustrate the efficiency and feasibility of the proposed technique.

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Abstracts

The epHEMT gate at microwave frequencies

S.A. Wartenberg and J.R. Hauser. "The epHEMT gate at microwave frequencies." 2003 Transactions on Microwave Theory and Techniques 51.6 (Jun. 2003 [T-MTT]): 1718-1723.

This paper examines the high-frequency behavior of the enhancement-mode pseudomorphic high electron-mobility transistor (epHEMT) gate. During this study, no bias was applied between the drain and source. Rather, the gate was forward biased with either the drain, source, or channel (drain and source connected together) grounded. While applying positive voltage V/sub g/ to the gate, one-port S-parameters were measured from 0.1 to 10 GHz and then converted to Z-parameters. Plotting the real part R of the impedance reveals two sharp peaks. The first peak occurs near the device threshold voltage for conduction in the InGaAs well. A second peak occurs at higher voltages where conduction begins to occur in the surface AlGaAs layer. An equivalent-circuit model is proposed to account for the epHEMT gate's high-frequency behavior and the proposed model is shown to be in good agreement with the experimental data.

Abstracts

A displacement measurement technique using millimeter-wave interferometry

Seoktae Kim and Cam Nguyen. "A displacement measurement technique using millimeter-wave interferometry." 2003 Transactions on Microwave Theory and Techniques 51.6 (Jun. 2003 [T-MTT]): 1724-1728.

A displacement measurement sensor, capable of sub-millimeter resolution, using millimeter-wave interferometry has been developed. The sensor operates at 37.6 GHz and is realized using both microwave integrated circuits and monolithic microwave integrated circuits. It has been used to accurately measure the displacement of metal plate location and water level. A resolution of only 0.05 mm is achieved. A maximum error of 0.3 mm is also attained without correction for the nonlinearity of the phase-detection processor and agrees well with the theoretical calculation.

Abstracts

Rapidly converging spectral-domain analysis of rectangularly shielded layered microstrip lines

J.L. Tsalamengas and G. Fikioris. "Rapidly converging spectral-domain analysis of rectangularly shielded layered microstrip lines." 2003 Transactions on Microwave Theory and Techniques 51.6 (Jun. 2003 [T-MTT]): 1729-1734.

A moment-method-oriented direct integral-equation technique is presented for the exact analysis of rectangularly shielded layered microstrip lines. This technique retains the simplicity of conventional moment methods while optimizing them by recasting all matrix elements into rapidly converging series. Filling up the matrix requires no numerical integration. The proposed algorithms yield highly accurate results both for the modal currents and propagation constants.

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Abstracts

Inline TM/sub 110/-mode filters with high-design flexibility by utilizing bypass couplings of nonresonating TE/sub 10/01/ modes

U. Rosenberg, S. Amari and J. Bornemann. "Inline TM/sub 110/-mode filters with high-design flexibility by utilizing bypass couplings of nonresonating TE/sub 10/01/ modes." 2003 Transactions on Microwave Theory and Techniques 51.6 (Jun. 2003 [T-MTT]): 1735-1742.

This paper presents a new class of pseudoelliptic function filters that are based on compact inline TM/sub 110/-mode cavity configurations. No structural folding is required. The bypass couplings are implemented through the nonresonating TE/sub 10/01/ modes so that arbitrarily positioned transmission zeros can be implemented. Design guidelines to generate a given transmission zero on the desired side of the passband and how to control it are presented. To demonstrate its flexibility, the approach is illustrated at examples of four-pole inline filters providing Chebyshev, elliptic-function-type, and asymmetric characteristics. Performance comparisons with different numerical codes validate the designs. A fourth-order pseudoelliptic filter with four transmission zeros is then designed, constructed, and measured. Excellent agreement between simulated and experimental results verifies the approach.

Abstracts

Novel coupled-line conductor-backed coplanar and microstrip directional couplers for PCB and LTCC applications

A. Sawicki and K. Sachse. "Novel coupled-line conductor-backed coplanar and microstrip directional couplers for PCB and LTCC applications." 2003 Transactions on Microwave Theory and Techniques 51.6 (Jun. 2003 [T-MTT]): 1743-1751.

Novel coupled-line conductor-backed coplanar and microstrip directional couplers, convenient for manufacturing in standard printed circuit board (PCB) or low-temperature co-fired ceramic (LTCC) technology, are proposed. The coplanar coupler, consisting of a layered structure with four strips and covering a -10 to -2.6 dB coupling coefficient, is theoretically ideally impedance matched and perfectly isolated at all frequencies under the assumption of validity of quasi-static approximation and two-mode propagation. The microstrip coupler, a modification of the coplanar one, can be ideally compensated only in an area of strong coupling coefficients. The novel couplers are not sensitive to lateral misalignment of conductive layers, and not sensitive to thickness and dielectric permittivity tolerances of applied dielectric substrates. Preliminary experimental results for 2.7-, 3-, and 8.34-dB couplers, designed both in PCB, as well as LTCC technology are presented.

Abstracts

Nonlinear analysis tools for the optimized design of harmonic-injection dividers

F. Ramirez, M.E. de Cos and A. Suarez. "Nonlinear analysis tools for the optimized design of harmonic-injection dividers." 2003 Transactions on Microwave Theory and Techniques 51.6 (Jun. 2003 [T-MTT]): 1752-1762.

New nonlinear analysis tools for harmonic-injection dividers are presented based on bifurcation concepts. The advantage of these tools is their application simplicity and efficiency, which has enabled their use for actual circuit design and optimization. The tools allow control over the divided frequency and output power and predict the variation of the synchronization bands versus the circuit element values, which facilitates design correction. They have been extended to the analysis and optimization of phase-locked harmonic-injection dividers, which contain a low-frequency feedback loop. The use of this loop, together with the accuracy of the analysis, has enabled the implementation of novel frequency-division functions, such as the division of variable order, versus a circuit parameter, or the division by fractional order. The output noise of the frequency dividers is analyzed through the conversion-matrix approach, studying the noise variation along the division bands. The new techniques have been applied to the design of a frequency divider by order 4 and 5, with 18-GHz input frequency, and excellent agreement with experimental results has been obtained.

Abstracts

Parameters extraction and modeling for planar spiral inductor on Si-SiO/sub 2/ substrates by DDM for conformal modules

Ji-Xiang Zhao and Jun-Fa Mao. "Parameters extraction and modeling for planar spiral inductor on Si-SiO/sub 2/ substrates by DDM for conformal modules." 2003 Transactions on Microwave Theory and Techniques 51.6 (Jun. 2003 [T-MTT]): 1763-1766.

In this paper, the domain decomposition method (DDM) for conformal modules is used to get simple analytic expressions for parameters of planar spiral inductors on Si-SiO/sub 2/ substrates. The conductor and substrate losses are considered in the expressions. The quality factor of the spiral inductor is computed with a transmission-line mode and compared with previously published experimental results, showing that DDM model is accurate and efficient for modeling an on-chip spiral inductor on Si-SiO/sub 2/ substrates.

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On the sensitivity of coupled resonator filters without some direct couplings

S. Amari and U. Rosenberg. "On the sensitivity of coupled resonator filters without some direct couplings." 2003 Transactions on Microwave Theory and Techniques 51.6 (Jun. 2003 [T-MTT]): 1767-1773.

This paper presents an analysis of the sensitivity of coupled resonator filters in which some direct couplings are missing. The effect of changes in the coupling coefficients and resonant frequencies of the resonators is investigated by directly computing the gradient of the scattering parameters. It is shown that structures that are modular in the input-to-output direction are much less sensitive than those with modularity in the orthogonal direction for the same frequency response.

Abstracts

Subcell FDTD modeling of electrically thin dispersive layers

M.K. Karkkainen. "Subcell FDTD modeling of electrically thin dispersive layers." 2003 Transactions on Microwave Theory and Techniques 51.6 (Jun. 2003 [T-MTT]): 1774-1780.

A novel technique for treating electrically thin dispersive layers with the finite-difference time-domain (FDTD) method is introduced. The proposed model is based on the subcell technique, where the constitutive relations are locally averaged in the FDTD grid. The most significant feature of the proposed model is its ability to model rather complicated dispersive layers having multiple pole pairs. The model is validated with several numerical examples making comparison with the exact results. Both time- and frequency-domain validations are presented.

Abstracts

Time-resolved measurements using conventional analog network analyzer

R.C. Woods. "Time-resolved measurements using conventional analog network analyzer." 2003 Transactions on Microwave Theory and Techniques 51.6 (Jun. 2003 [T-MTT]): 1781-1786.

A new method of making precise time-resolved measurements using an unmodified analog network analyzer is described. This technique is most useful in wafer probing unpackaged acoustic devices in production conditions or in characterizing development acoustic devices that are packaged to allow easy physical access to the device and which may, therefore, exhibit high levels of RF feedthrough.

Abstracts

50 years of RF and microwave sampling

M. Kahrs. "50 years of RF and microwave sampling." 2003 Transactions on Microwave Theory and Techniques 51.6 (Jun. 2003 [T-MTT]): 1787-1805.

Measurement of microwave and UHF signals is often done with sampling techniques. In this paper, the techniques and technology of sampling of electrical signals is reviewed from 1950 to the present. It includes both references to the open literature, as well as an extensive review of relevant patents. It also provides an overview of sampling applications and the use of computer technology to compensate and correct for errors in the sampling process.

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Information for Authors (Jun. 2003 [T-MTT])

"Information for Authors (Jun. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.6 (Jun. 2003 [T-MTT]): 0_5-0_5.

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Abstracts

Electromagnetic study of a ferrite coplanar isolator suitable for integration

B. Bayard, D. Vincent, C.R. Simovski and G. Noyel. "Electromagnetic study of a ferrite coplanar isolator suitable for integration." 2003 Transactions on Microwave Theory and Techniques 51.7 (Jul. 2003 [T-MTT]): 1809-1814.

The transmission coefficient of a nonreciprocal coplanar waveguide (CPW) using ferrite rods is studied. A new approximate method is proposed to evaluate the propagation constant of such a perturbed waveguide, which is based on the use of numerical data referring to the nonperturbed waveguide. We have estimated the value of the nonreciprocity effect and settled the condition of the validity of our theory. Some experimental data of a CPW with ferrite inclusions are also presented.

Abstracts

Antenna and receiver system with digital beamforming for satellite navigation and communications

A. Dreher, N. Niklasch, F. Klefenz and A. Schroth. "Antenna and receiver system with digital beamforming for satellite navigation and communications." 2003 Transactions on Microwave Theory and Techniques 51.7 (Jul. 2003 [T-MTT]): 1815-1821.

To demonstrate and investigate the possibilities of active antennas with digital beamforming, a compact breadboard model operating in C-band with planar patches as radiators is fabricated and measured. It was originally designed as a technology demonstrator for navigation purposes, but will be extended for future use in combined navigation and communication systems. Several parameters for beam position, sidelobe reduction, and nulling are set and controlled by a suitable user interface. A special calibration and error-correction procedure is developed to compensate for drift of active elements, mutual coupling of the patches, and finite-ground plane effects. The excellent results demonstrate the versatile features of digital beamforming for satellite navigation and communication systems.

Abstracts

Advanced microwave modeling framework exploiting automatic model generation, knowledge neural networks, and space mapping

V.K. Devabhaktuni, B. Chattaraj, M.C.E. Yagoub and Qi-Jun Zhang. "Advanced microwave modeling framework exploiting automatic model generation, knowledge neural networks, and space mapping." 2003 Transactions on Microwave Theory and Techniques 51.7 (Jul. 2003 [T-MTT]): 1822-1833.

In this paper, we propose an efficient knowledge-based automatic model generation (KAMG) technique aimed at generating microwave neural models of the highest possible accuracy using the fewest accurate data. The technique is comprehensively derived to integrate three distinct powerful concepts, namely, automatic model generation, knowledge neural networks, and space mapping. For the first time, we simultaneously utilize two types of data generators, namely, coarse data generators that are approximate and fast (e.g., two-and-one-half-dimensional electromagnetic), and fine data generators that are accurate and slow (e.g., three-dimensional electromagnetic). Motivated by the space-mapping concept, the KAMG technique utilizes extensive coarse data, but fewest fine data to generate neural models that accurately match the fine data. Our formulation exploits a variety of knowledge neural-network architectures to facilitate reinforced neural-network learning from coarse and fine data. During neural model generation by KAMG, both coarse and fine data generators are automatically driven using adaptive sampling. The KAMG technique helps to increase the efficiency of neural model development by taking advantage of a microwave reality, i.e., availability of multiple sources of training data for most high-frequency components. The advantages of the proposed KAMG technique are demonstrated through practical microwave examples of MOSFET and embedded passive components used in multilayer printed circuit boards.

Abstracts

Correlation of maximum temperature increase and peak SAR in the human head due to handset antennas

A. Hirata and T. Shiozawa. "Correlation of maximum temperature increase and peak SAR in the human head due to handset antennas." 2003 Transactions on Microwave Theory and Techniques 51.7 (Jul. 2003 [T-MTT]): 1834-1841.

This paper attempts to correlate the maximum temperature increase in the head and brain with the peak specific absorption rate (SAR) value due to handset antennas. The rationale for this study is that physiological effects and damage to humans through electromagnetic-wave exposure are induced by temperature increases, while the safety standards are regulated in terms of the local peak SAR. For investigating these correlations thoroughly, the total of 660 situations is considered. The numerical results are analyzed on the basis of statistics. We find that the maximum temperature increases in the head and brain can be estimated in terms of peak SARs averaged over 1 and 10 g of tissue in these regions. These correlations are less affected by the positions, polarizations, and frequencies of a dipole antenna. Also, they are reasonably valid for different antennas and head models. Further, we discuss possible maximum temperature increases in the head and brain for the SAR values prescribed in the safety standards. They are found to be 0.31/spl deg/C and 0.13/spl deg/C for the Federal Communications Commission Standard (1.6 W/kg for 1 g of tissue), while 0.60/spl deg/C and 0.25/spl deg/C for the International Commission on Non-Ionizing Radiation Protection Standard (2.0 W/kg for 10 g of tissue).

Abstracts

Extending multiresolution time-domain (MRTD) technique to the simulation of high-frequency active devices

Y.A. Hussein and S.M. El-Ghazaly. "Extending multiresolution time-domain (MRTD) technique to the simulation of high-frequency active devices." 2003 Transactions on Microwave Theory and Techniques 51.7 (Jul. 2003 [T-MTT]): 1842-1851.

We present a new time-domain simulation approach for large-signal physical modeling of high-frequency semiconductor devices using wavelets. The proposed approach solves the complete hydrodynamic model, which describes the transport physics, on nonuniform self-adaptive grids. The nonuniform grids are obtained by applying wavelet transforms followed by hard thresholding. This allows forming fine and coarse grids in locations where variable solutions change rapidly and slowly, respectively. A general criterion is mathematically defined for grid updating within the simulation. In addition, an efficient thresholding formula is proposed and verified. The developed technique is validated by simulating a submicrometer FET. Different numerical examples are presented along with illustrative comparison graphs, showing over 75% reduction in CPU time, while maintaining the same degree of accuracy achieved using a uniform grid case. Tradeoffs between threshold values, CPU time, and accuracy are discussed. To our knowledge, this is the first time in the literature to implement and report a wavelet-based hydrodynamic model simulator. This study also represents a fundamental step toward applying wavelets to Maxwell's equations in conjunction with the hydrodynamic model for accurate modeling of high-frequency active devices aiming to reduce the simulation time, while maintaining the same degree of accuracy.

Abstracts

Design of microwave wide-band quadrature hybrid using planar transformer coupling method

Wei-Shin Tung, Hsu-Hsiang Wu and Yi-Chyun Chiang. "Design of microwave wide-band quadrature hybrid using planar transformer coupling method." 2003 Transactions on Microwave Theory and Techniques 51.7 (Jul. 2003 [T-MTT]): 1852-1856.

A lumped-element quadrature hybrid consisting of two-section inductive coupled /spl pi/-networks is presented. A synthesizing method involving a new set of design equations are also developed to realize the proposed hybrid with very good balance in both magnitude and phase between the output ports over a 38% fractional bandwidth. The measurements of the two prototypes show quite good agreement with the theoretical predictions. The proposed hybrid is compact and suited to be implemented by conventional microwave-integrated-circuit technology.

Abstracts

W-band CPW RF MEMS circuits on quartz substrates

J.B. Rizk and G.M. Rebeiz. "W-band CPW RF MEMS circuits on quartz substrates." 2003 Transactions on Microwave Theory and Techniques 51.7 (Jul. 2003 [T-MTT]): 1857-1862.

This paper presents W-band coplanar waveguide RF microelectromechanical system (MEMS) capacitive shunt switches with very low insertion loss (-0.2 to -0.5 dB) and high-isolation (/spl les/ -30 dB) over the entire W-band frequency range. It is shown that full-wave electromagnetic modeling using Sonnet can predict the performance of RF MEMS switches up to 120 GHz. Also presented are W-band 0/spl deg//90/spl deg/ and 0/spl deg//180/spl deg/ switched-line phase shifters with very good insertion loss (1.75 dB/bit at 90 GHz) and a wide bandwidth of operation (75-100 GHz). These circuits are the first demonstration of RF MEMS digital-type phase shifters at W-band frequencies and they outperform their solid-state counterparts by a large margin.

Abstracts

An efficient X-band 16-element spatial combiner of switched-mode power amplifiers

S. Pajic and Z.B. Popovic. "An efficient X-band 16-element spatial combiner of switched-mode power amplifiers." 2003 Transactions on Microwave Theory and Techniques 51.7 (Jul. 2003 [T-MTT]): 1863-1870.

This paper describes the design, implementation, and characterization of a high-efficiency 10-GHz amplifier antenna array for spatial power combining. An average drain efficiency of 70% at 162 W effective isotropic radiated power, or about 1.5 W of transmitted power, is measured for an array of 16 amplifiers consisting of four four-element subarrays. The power-combining efficiency of the 16-element array is above 79%. The active device is a low-cost GaAs MESFET with a maximum available power in class A of 21 dBm. The single class-E power amplifier delivers 20.3 dBm with 67% drain efficiency and 58% power-added efficiency.

Abstracts

On a class of low-reflection transmission-line quasi-Gaussian low-pass filters and their lumped-element approximations

A.R. Djordjevic, A.G. Zajic, A.S. Stekovic, M.M. Nikolic, Z.A. Maricevic and M.F.C. Schemmann. "On a class of low-reflection transmission-line quasi-Gaussian low-pass filters and their lumped-element approximations." 2003 Transactions on Microwave Theory and Techniques 51.7 (Jul. 2003 [T-MTT]): 1871-1877.

Gaussian-like filters are frequently used in digital signal transmission. Usually, these filters are made of lumped inductors and capacitors. In the stopband, these filters exhibit a high reflection, which can create unwanted signal interference. To prevent that, a new low-reflection ladder network is introduced that consist of resistors, inductors, and capacitors. The network models fictitious transmission lines with Gaussian-like amplitude characteristics. Starting from the analysis of this network, a procedure is developed for synthesis of a new class of lumped-element RLC filters. These filters have transmission coefficients similar to the classical Bessel filters. In contrast to the Bessel filters, the new filters exhibit a low reflection both in the stopband and passband, they have a small span of element parameters, and they are easy for manufacturing and tuning.

Abstracts

Miniature and tunable filters using MEMS capacitors

A. Abbaspour-Tamijani, L. Dussopt and G.M. Rebeiz. "Miniature and tunable filters using MEMS capacitors." 2003 Transactions on Microwave Theory and Techniques 51.7 (Jul. 2003 [T-MTT]): 1878-1885.

Microelectromechanical system (MEMS) bridge capacitors have been used to design miniature and tunable bandpass filters at 18-22 GHz. Using coplanar waveguide transmission lines on a quartz substrate (/spl epsiv//sub r/ = 3.8, tan/spl delta/ = 0.0002), a miniature three-pole filter was developed with 8.6% bandwidth based on high-Q MEMS bridge capacitors. The miniature filter is approximately 3.5 times smaller than the standard filter with a midband insertion loss of 2.9 dB at 21.1 GHz. The MEMS bridges in this design can also be used as varactors to tune the passband. Such a tunable filter was made on a glass substrate (/spl epsiv//sub r/ = 4.6, tan/spl delta/ = 0.006). Over a tuning range of 14% from 18.6 to 21.4 GHz, the miniature tunable filter has a fractional bandwidth of 7.5 /spl plusmn/ 0.2% and a midband insertion loss of 3.85-4.15 dB. The IIP/sub 3/ of the miniature-tunable filter is measured at 32 dBm for the difference frequency of 50 kHz. The IIP/sub 3/ increases to >50 dBm for difference frequencies greater than 150 kHz. Simple mechanical simulation with a maximum dc and ac (ramp) tuning voltages of 50 V indicates that the filter can tune at a conservative rate of 150-300 MHz//spl mu/s.

Abstracts

Time-bandwidth product of the photonic time-stretched analog-to-digital converter

Yan Han and B. Jalali. "Time-bandwidth product of the photonic time-stretched analog-to-digital converter." 2003 Transactions on Microwave Theory and Techniques 51.7 (Jul. 2003 [T-MTT]): 1886-1892.

The time-bandwidth product of the photonic time-stretched system is modeled in terms of physical system parameters. Using the time-bandwidth product as figure-of-merit, the performances of optical double-sideband and single-sideband (SSB) intensity modulation are compared, and optical SSB intensity modulation is identified as a potential solution to extend the system's time-bandwidth product. An SSB-modulated time-stretched system is theoretically analyzed and experimentally demonstrated. As an important practical consideration, the analytical model relating the system performance to the phase and amplitude mismatches in the SSB modulator is presented. The results show that the system is tolerant to such unavoidable mismatches. Experiments using commercially available components suggest that the dispersion-induced power penalty can be kept below 2.5 dB over 4 - 20 GHz bandwidth for any stretch factor. Additional experiments demonstrating 120-GSamples/s real-time digitization of a 20-GHz SSB-modulated signal are also reported.

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Abstracts

Hierarchical vector finite elements for analyzing waveguiding structures

Seung-Cheol Lee, Jin-Fa Lee and R. Lee. "Hierarchical vector finite elements for analyzing waveguiding structures." 2003 Transactions on Microwave Theory and Techniques 51.8 (Aug. 2003 [T-MTT]): 1897-1905.

In this paper, we extend the finite-element method into hierarchical higher order bases and the inexact Helmholtz decomposition. With the help of hierarchical basis functions, the approach can adopt well into the p version adaptive process. On the other hand, the inexact Helmholtz decomposition enhances the stability of the finite-element procedure when the operating frequency is low or the element size is very small compared to the wavelength. This approach can also enhance the h version adaptive mesh refinement process since the process may cause very small elements near a singular region. To accomplish the inexact Helmholtz decomposition for the edge elements, the lowest order curl conforming basis functions, the tree-cotree splitting, is utilized, and the general procedure is presented. As a result, a combination of hierarchical higher order basis functions with the inexact Helmholtz decomposition can improve the efficiency and the stability of the hp adaptive mesh refinement process. The accuracy and stability of the proposed approach are also discussed through numerical examples.

Abstracts

A dual-mode bandpass filter with enhanced capacitive perturbation

Boon Tiong Tan, Siou Teck Chew, Mook Seng Leong and Ban Leong Ooi. "A dual-mode bandpass filter with enhanced capacitive perturbation." 2003 Transactions on Microwave Theory and Techniques 51.8 (Aug. 2003 [T-MTT]): 1906-1910.

A dual-mode ring bandpass filter with two pairs of capacitors has been designed. The capacitors are used to control the location of the even- and odd-mode frequencies independently, allowing weak coupling for narrow-band filter design with realizable capacitance values. Theoretical expressions have been derived for these frequencies. A 4% bandwidth bandpass filter centered at 1.9 GHz was designed and tested with good agreement between theoretical and measured results.

Abstracts

Traveling-wave tube amplifier performance evaluation and design optimization for applications in digital communications with multilevel modulations

J.X. Qiu, D.K. Abe, T.M. Antonsen, Jr., B.G. Danly and B. Levush. "Traveling-wave tube amplifier performance evaluation and design optimization for applications in digital communications with multilevel modulations." 2003 Transactions on Microwave Theory and Techniques 51.8 (Aug. 2003 [T-MTT]): 1911-1919.

In this paper, we demonstrate the use of a power margin as a figure-of-merit for evaluating the performance and optimizing the design of traveling-wave tube amplifiers (TWTAs) used in digital communication applications with multilevel modulations. The power margin is a system-level measure that balances both device efficiency and nonlinear distortion and provides a more direct prediction of the system-level performance of power amplifiers than device-level measures such as device efficiency or error-vector-magnitude. We calculate the power margin for M quadrature amplitude modulation for an existing TWTA to demonstrate the setting of an optimal amplifier operating drive level according to the criterion of the maximum power margin. The power margin can also be used to compare the performance of different traveling-wave tube (TWT) configurations. We compare the calculated power-margin performance for helix TWT circuits optimized with different optimization goal functions using the helix TWT design code CHRISTINE. The goal functions used in the optimization of the TWT circuits include AM/PM optimization, complex gain optimization, efficiency optimization, and a new digital goal function optimization. The digital goal function is shown to provide an enhanced power margin compared to the other three goal functions and demonstrates the potential of TWT device design optimization from a system perspective.

Abstracts

Wide-band S-parameter extraction from FD-TD simulations for propagating and evanescent modes in inhomogeneous guides

W.K. Gwarek and M. Celuch-Marcysiak. "Wide-band S-parameter extraction from FD-TD simulations for propagating and evanescent modes in inhomogeneous guides." 2003 Transactions on Microwave Theory and Techniques 51.8 (Aug. 2003 [T-MTT]): 1920-1928.

This paper proposes a new method of S-parameter extraction from finite-difference time-domain simulations. Unlike the previously published methods, the present method extracts the frequency-dependent mode impedance and propagation constant directly from the three-dimensional simulations. This makes it accurate and computationally effective in wide-band analysis. This paper provides examples of calculations including difficult cases of inhomogeneous or lossy structures, with the frequency band spanning below and above the cutoff frequency. Special attention is given to the S-parameter extraction for evanescent modes. It is shown that the available literature provides insufficient and sometimes confusing background in this regard. Thus, a new consistent theoretical background is presented.

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On the modeling of conducting media with the unconditionally stable ADI-FDTD method

Chenghao Yuan and Zhizhang Chen. "On the modeling of conducting media with the unconditionally stable ADI-FDTD method." 2003 Transactions on Microwave Theory and Techniques 51.8 (Aug. 2003 [T-MTT]): 1929-1938.

The Courant-Friedrich-Levy stability condition has prevented the conventional finite-difference time-domain (FDTD) method from being effectively applied to conductive materials because of the fine mesh required for the conducting regions. In this paper, the recently developed unconditionally stable alternating-direction-implicit (ADI) FDTD is employed because of its capability in handling a fine mesh with a relatively large time step. The results show that the unconditionally alternating-direction-implicit-finite-difference time-domain (ADI-FDTD) method can be used as an effective universal tool in modeling a medium regardless of its conductivity. In addition, the unsplit perfectly matched layer combined with the ADI-FDTD method is implemented in the cylindrical coordinates and is proven to be very effective even with the cylindrical structures that contain open conducting media.

Abstracts

The circular homogeneous-ferrite microwave circulator - an asymptotic Green's function and impedance analysis

J.L. Young and J.W. Sterbentz. "The circular homogeneous-ferrite microwave circulator - an asymptotic Green's function and impedance analysis." 2003 Transactions on Microwave Theory and Techniques 51.8 (Aug. 2003 [T-MTT]): 1939-1945.

A detailed analysis of the circular, homogeneous ferrite microwave circulator is provided. Particular emphasis is on the circulator's Green's function and the impact of the asymptotic term within the Green's function on convergence, data quality, and design methodology. The asymptotic term is shown to be logarithmic, which suggests that the Green's function is weakly singular when the source and observation points occupy the same location. With the Green's function properly understood, two techniques - one analytical and one numerical - are then offered to integrate that function in order to obtain Z-parameter data and, subsequently, S-parameter data. Data are provided to show rapid convergence of all parameters of interest. A small coupling angle approximation is then given for the Z-parameters and, from that approximation, a first-order design equation is obtained that relates the coupling angle to circulator radius. A circulator design example is presented and compared to a design associated with the Wu and Rosenbaum method; the comparison substantiates the small coupling angle approximation and design formula.

Abstracts

A new formulation for characterization of materials based on measured insertion transfer function

A.H. Muqaibel and A. Safaai-Jazi. "A new formulation for characterization of materials based on measured insertion transfer function." 2003 Transactions on Microwave Theory and Techniques 51.8 (Aug. 2003 [T-MTT]): 1946-1951.

A widely used method for noncontact electromagnetic characterization of materials is based on the measurement of an insertion transfer function. This function, defined as the ratio of two phasor signals measured in the presence and absence of the material under test, is related to the dielectric constant of the material through a complex transcendental equation. Solving this equation requires a numerical two-dimensional root search technique, which is often time consuming due to slow convergence and the existence of spurious solutions. In this paper, a new formulation is presented, which facilitates the evaluation of complex dielectric constant of low-loss materials by means of real equations, thus requiring only one-dimensional root search techniques. Two sample materials are measured, and it is shown that their dielectric constants obtained from the exact complex equation and the new formulation are in excellent agreement. The new formulation reduces the computation time significantly and is highly accurate for the characterization of low-loss materials.

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Abstracts

A 1-V 3.8 - 5.7-GHz wide-band VCO with differentially tuned accumulation MOS varactors for common-mode noise rejection in CMOS SOI technology

N.H.W. Fong, J.-O. Plouchart, N. Zamdmer, Duixian Liu, L.F. Wagner, C. Plett and N.G. Tarr. "A 1-V 3.8 - 5.7-GHz wide-band VCO with differentially tuned accumulation MOS varactors for common-mode noise rejection in CMOS SOI technology." 2003 Transactions on Microwave Theory and Techniques 51.8 (Aug. 2003 [T-MTT]): 1952-1959.

In this paper, a 1-V 3.8 - 5.7-GHz wide-band voltage-controlled oscillator (VCO) in a 0.13-/spl mu/m silicon-on-insulator (SOI) CMOS process is presented. This VCO features differentially tuned accumulation MOS varactors that: 1) provide 40% frequency tuning when biased between 0 - 1 V and 2) diminish the adverse effect of high varactor sensitivity through rejection of common-mode noise. This paper shows that, for differential LC VCOs, all low-frequency noise such as flicker noise can be considered to be common-mode noise, and differentially tuned varactors can be used to suppress common-mode noise from being upconverted to the carrier frequency. The noise rejection mechanism is explained, and the technological advantages of SOI over bulk CMOS in this regard is discussed. At 1-MHz offset, the measured phase noise is -121.67 dBc/Hz at 3.8 GHz, and -111.67 dBc/Hz at 5.7 GHz. The power dissipation is between 2.3 - 2.7-mW, depending on the center frequency, and the buffered output power is -9 dBm. Due to the noise rejection, the VCO is able to operate at very low voltage and low power. At a supply voltage of 0.75 V, the VCO only dissipates 0.8 mW at 5.5 GHz.

Abstracts

Amplifying active reflect-antenna using a microstrip-T coupled patch /sub e/sign and measurement

D.G. Kurup and A. Rydberg. "Amplifying active reflect-antenna using a microstrip-T coupled patch /sub e/sign and measurement." 2003 Transactions on Microwave Theory and Techniques 51.8 (Aug. 2003 [T-MTT]): 1960-1965.

A compact design of an amplifying active reflect-antenna using a novel microstrip-T coupled-patch antenna is proposed. The dual-polarized ports of the microstrip-T coupled-patch antenna provide excellent RF isolation as well as dc isolation. The dc isolation helps in avoiding additional coupling capacitors in the RF path, thereby achieving reduced layout size and cross-polarization levels for the active reflect-antenna. The gain and monostatic radar cross section (RCS) measurement of the active reflect-antenna has been carried out using a time-domain technique based on a single dual-polarized antenna and vector network analyzer. The measured monostatic RCS and gains are then compared with the calculated ones using two different modeling approaches.

Abstracts

An efficient method for nonlinear distortion calculation of the AM and PM noise spectra of FMCW radar transmitters

A. Laloue, J.-C. Nallatamby, M. Prigent, M. Camiade and J. Obregon. "An efficient method for nonlinear distortion calculation of the AM and PM noise spectra of FMCW radar transmitters." 2003 Transactions on Microwave Theory and Techniques 51.8 (Aug. 2003 [T-MTT]): 1966-1976.

The demand for autonomous cruise control and collision warning/avoidance systems has increased in recent years. Many systems based on frequency-modulated continuous-wave (FMCW) radar have emerged and are still in development. Due to the high complexity of such systems, the accurate evaluation of the noise spectra in the transmitter chain driven by complex modulated signals is today a severe drawback due to the limitation of simulation tools. In this paper, a method is proposed to compute easily with any commercially available nonlinear simulator, the amplitude and phase modulated signal distortion introduced by the nonlinearities of the transmitter on an FMCW signal. First, the amplitude modulation (AM) and phase modulation (PM) noise spectra of the driving FMCW signal is derived from the knowledge of the continuous wave (CW) AM and PM noise spectra of the voltage-controlled oscillator (VCO), and the modulating saw-tooth signal applied. Using the narrow band envelope concept and a first-order expansion of the nonlinear transfer function of the transmitter, the transfer of the AM and PM noise spectra of the driving FMCW signal through the nonlinear transmitter chain and the resulting output distortion are then computed. This novel approach allows to compute with reduced computation time and very good accuracy the AM/AM, AM/PM, PM/PM, and PM/AM conversion terms in any nonlinear system driven by CW or FMCW signals. This new method has been applied to the characterization of a whole car radar transmitter operating at 77 GHz driven by an FMCW signal issuing from a VCO. A successful comparison between measured and simulated PM-to-AM conversion coefficients of this transmitter is shown, validating the proposed method.

Abstracts

Analysis of a MEMS transmission line

A.T. Alastalo, T. Mattila and H. Seppa. "Analysis of a MEMS transmission line." 2003 Transactions on Microwave Theory and Techniques 51.8 (Aug. 2003 [T-MTT]): 1977-1981.

A microelectromechanical system (MEMS) sound waveguide is considered as a transmission line for RF signals. We analyze a device geometry of a straight one-dimensional microsize silicon rod, where a longitudinal acoustic wave is generated and detected using capacitive transducers. Linear, isotropic, and nondispersive acoustic-wave propagation is assumed. Based on the calculation of the electromechanical impedance, an electrical equivalent model is derived for the acoustic transmission line. A numerical example and a comparison to measured properties of a MEMS-transmission-line resonator shows that the characteristic impedance level of the waveguide is typically high, which causes challenges for matched termination. Solutions to overcome the matching problems are discussed.

Abstracts

Compact single-channel rotary joint using ridged waveguide sections for phase adjustment

K. Rambabu and J. Bornemann. "Compact single-channel rotary joint using ridged waveguide sections for phase adjustment." 2003 Transactions on Microwave Theory and Techniques 51.8 (Aug. 2003 [T-MTT]): 1982-1986.

A new design for single-channel waveguide rotary joints for high-power applications is presented. In order to obtain correct signal phase conditions along the ring and, at the same time, reduce the diameter of the rotary joint, tapered ridged waveguide sections are introduced. Design guidelines with respect to general transmission characteristics, H-plane aperture couplers, and ridge waveguide analysis are presented. Measurements of a 9.05-GHz prototype show less than 1-dB insertion loss over a 250-MHz bandwidth and, hence, verify the design concept.

Abstracts

Information for Authors (Aug. 2003 [T-MTT])

"Information for Authors (Aug. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.8 (Aug. 2003 [T-MTT]): 0_4-0_4.

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Abstracts

Stability analysis of self-injection-locked oscillators

Heng-Chia Chang. "Stability analysis of self-injection-locked oscillators." 2003 Transactions on Microwave Theory and Techniques 51.9 (Sep. 2003 [T-MTT]): 1989-1993.

This paper addresses the stability analysis of the self-injection-locked oscillators. The analysis is developed for arbitrary self-injection feedback loops and illustrated with the specific case of a simple time-delay cable. It is shown that the output phase stability in self-injection-locked oscillators depends on the feedback loop delay and the types of oscillator circuits, which are represented by equivalent parallel- or series-resonant oscillator models. The self-injection-locked technique can also be used to test the oscillator circuit model when the self-coupling phase is known. The theory is verified by using a self-injection-locked GaAs MESFET oscillator operating at X-band with delay loops.

Abstracts

Phase noise in self-injection-locked oscillators - theory and experiment

Heng-Chia Chang. "Phase noise in self-injection-locked oscillators - theory and experiment." 2003 Transactions on Microwave Theory and Techniques 51.9 (Sep. 2003 [T-MTT]): 1994-1999.

Phase-noise analysis of the self-injection-locked oscillator is presented in this paper. The analysis is developed for different oscillator models and arbitrary self-injection feedback loops. The results are illustrated with specific cases of simple time-delay cable and a high-Q factor resonator. It is shown that the behavior of the phase noise is similar to an oscillator locked to an external low phase-noise source. The output phase noise can be reduced at the noise offset frequency near the carrier frequency, and returning to the free-running oscillator noise far from the carrier frequency for certain stable feedback delay ranges. The phase-noise reduction is affected by the self-injection signal strength and feedback transfer function for different oscillator equivalent-circuit models. The theory is verified by using a self-injection-locked GaAs MESFET oscillator operating at the X-band with delay cable loops. The self-injection-locked technique may be used to improve the phase noise of the existing oscillators.

Abstracts

Frequency limitation in the calibration of microwave test fixtures

Ning Hua Zhu, Chen Qian, You Lin Wang, E.Y.B. Pun and Po-Shuen Chung. "Frequency limitation in the calibration of microwave test fixtures." 2003 Transactions on Microwave Theory and Techniques 51.9 (Sep. 2003 [T-MTT]): 2000-2006.

The problem of frequency limitation arising from the calibration of asymmetric and symmetric test fixtures has been investigated. For asymmetric test fixtures, a new algorithm based on the thru-short-match (TSM) method is outlined. It is found that the conventional TSM method does not have any inherent frequency limitation, but using the same procedure with an unknown match may lead to the said problem. This limitation can be avoided by using a different algorithm. The various calibration methods for symmetric test fixtures using known standards are also discussed and the origin of the frequency limitation is identified. Several ways in avoiding the problem are proposed. There is good agreement between the theories and experimental data.

Abstracts

Revisiting the partial-capacitance approach to the analysis of coplanar transmission lines on multilayered substrates

G. Ghione and M. Goano. "Revisiting the partial-capacitance approach to the analysis of coplanar transmission lines on multilayered substrates." 2003 Transactions on Microwave Theory and Techniques 51.9 (Sep. 2003 [T-MTT]): 2007-2014.

A theoretical justification is presented of the partial-capacitance (PC) approach, widely exploited in the modeling of coplanar waveguides on finite-thickness and multilayered substrates. The analysis is based on the static spectral-domain approach to the computation of the capacitance of a set of planar conductors embedded into a multilayered substrate. It is shown that the PC method can be derived from approximating the static Green's function of a multilayered dielectric as the sum of partial contributions; such a decomposition can be applied to the Green's function either in parallel (admittance) or series (impedance) form. The resulting (parallel or series) PC approaches are shown to be accurate with substrates having layers of decreasing or increasing permittivity, respectively. Lines backed by magnetic or electric walls are introduced as limiting cases of multilayered structures.

Abstracts

Analysis of the CDF biorthogonal MRTD method with application to PEC targets

Xianyang Zhu, T. Dogaru and L. Carin. "Analysis of the CDF biorthogonal MRTD method with application to PEC targets." 2003 Transactions on Microwave Theory and Techniques 51.9 (Sep. 2003 [T-MTT]): 2015-2022.

We consider the biorthogonal Cohen-Daubechies- Feauveau (CDF) wavelet family in the context of a biorthogonal multiresolution time-domain (bi-MRTD) analysis. A disadvantage of previous bi-MRTD analyses is an inability to handle abrupt changes in material properties, particularly for a perfect electric conductor (PEC). A multiregion method is proposed to address PEC targets. The proposed method is based on the fact that the CDF bi-MRTD may be viewed as a linear combination of several conventional finite-difference time-domain (FDTD) solutions. The implementation of the connecting surface is also simplified. Several numerical results are presented, with comparison to analytic and FDTD results.

Abstracts

A simple wide-band on-chip inductor model for silicon-based RF ICs

J. Gil and Hyungcheol Shin. "A simple wide-band on-chip inductor model for silicon-based RF ICs." 2003 Transactions on Microwave Theory and Techniques 51.9 (Sep. 2003 [T-MTT]): 2023-2028.

In this paper, we developed a simple wide-band inductor model that contains lateral substrate resistance and capacitance to model the decrease in the series resistance at high frequencies related to lateral coupling through the silicon substrate. The model accurately predicts the equivalent series resistance and inductance over a wide-frequency range. Since it has frequency-independent elements, the proposed model can be easily integrated in SPICE-compatible simulators. The proposed model has been verified with measured results of inductors fabricated in a 0.18-/spl mu/m six-metal CMOS process. We also demonstrate the validity of the proposed model for shielded inductors. The proposed model shows excellent agreement with measured data over the whole frequency range.

Abstracts

Efficient quasi-TEM frequency-dependent analysis of lossy multiconductor lines through a fast reduced-order FEM model

F. Bertazzi, G. Ghione and M. Goano. "Efficient quasi-TEM frequency-dependent analysis of lossy multiconductor lines through a fast reduced-order FEM model." 2003 Transactions on Microwave Theory and Techniques 51.9 (Sep. 2003 [T-MTT]): 2029-2035.

An efficient finite-element reduced-order quasi-TEM model for the frequency-dependent characteristics of lossy multiconductor transmission lines is presented. Conductor losses are evaluated as functions of frequency through a magneto-quasi-static model. Numerically generated problem-matched basis functions reduce the problem size and, therefore, the CPU time required by frequency sweeps without appreciable loss of accuracy. The proposed approach is applied to complex coplanar waveguides and to multiconductor interconnects; its results are compared with quasi-analytical techniques and with the full-wave finite-element method.

Abstracts

High-performance microwave coplanar bandpass and bandstop filters on Si substrates

K.T. Chan, A. Chin, Ming-Fu Li, Dim-Lee Kwong, S.P. McAlister, D.S. Duh, W.J. Lin and C.Y. Chang. "High-performance microwave coplanar bandpass and bandstop filters on Si substrates." 2003 Transactions on Microwave Theory and Techniques 51.9 (Sep. 2003 [T-MTT]): 2036-2040.

High-performance bandpass and bandstop microwave coplanar filters, which operate from 22 to 91 GHz, have been fabricated on Si substrates. This was achieved using an optimized proton implantation process that converts the standard low-resistivity (/spl sim/10 /spl Omega//spl middot/cm) Si to a semi-insulating state. The bandpass filters consist of coupled lines to form a series resonator, while the bandstop filter was designed in a double-folded short-end stub structure. For the bandpass filters at 40 and 91 GHz, low insertion loss was measured, close to electromagnetic simulation values. We also fabricated excellent bandstop filters with very low transmission loss of /spl sim/1 dB and deep band rejection at both 22 and 50 GHz. The good filter performance was confirmed by the higher substrate impedance to ground, which was extracted from the well-matched S-parameter equivalent-circuit data.

Abstracts

Information for Authors (Sep. 2003 [T-MTT])

"Information for Authors (Sep. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.9 (Sep. 2003 [T-MTT]): 0_4-0_4.

Abstracts

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"Table of Contents (Oct. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.10 (Oct. 2003 [T-MTT]): 0_1-0_2.

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"Inside Cover (Oct. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.10 (Oct. 2003 [T-MTT]): 0_3-0_4.

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Abstracts

Evolutionary generation of 3-D line-segment circuits with a broadside-coupled multiconductor transmission-line model

T. Nishino and Tatsuo Itoh. "Evolutionary generation of 3-D line-segment circuits with a broadside-coupled multiconductor transmission-line model." 2003 Transactions on Microwave Theory and Techniques 51.10 (Oct. 2003 [T-MTT]): 2045-2054.

Evolutionary generation of three-dimensional microwave line-segment circuits embedded in a multilayer structure is presented. Connections of the line segments and their lengths are expressed by sets of parameters, which are evolutionarily optimized by the genetic algorithms. Practical optimization time is achieved by introducing models of broadside-coupled multiconductor transmission lines instead of full-wave electromagnetic (EM) calculations. The scattering parameters of the models are connected with the scattering parameters of vias, and are synthesized into that of the whole circuit. Using line segments, we can obtain not only small components for limited-space applications, but also large components for wide-band frequency specifications without increasing computational complexity. Two bandpass filters and a bandstop filter were designed and tested by an EM simulator. The bandpass filters were also fabricated and measured. The results validated our proposing procedure.

Abstracts

A time-domain approach to simulation and characterization of RF HBT two-tone intermodulation distortion

Kuen Yu Huang, Yiming Li and Chien-Ping Lee. "A time-domain approach to simulation and characterization of RF HBT two-tone intermodulation distortion." 2003 Transactions on Microwave Theory and Techniques 51.10 (Oct. 2003 [T-MTT]): 2055-2062.

In this paper, we evaluate the two-tone intermodulation distortion for heterojunction bipolar transistors (HBTs) operated at RF. We directly solve the nonlinear differential equations of the HBT large-signal model in time domain by employing the waveform-relaxation and monotone-iterative methods. Based on time-domain results, sinusoidal waveform outputs are transformed into the frequency domain with the fast Fourier transform. Furthermore, the output third-order intercept-point values of the HBT are computed with the spectra. Results for a fabricated InGaP HBT under different testing conditions are reported and compared among the HSPICE results, the results with harmonic balance methodology, and the measured data. Comparisons among these results show that our method demonstrates its superiority over the conventional approaches. This characterization alternative has allowed us to study RF device properties, perform thermal consumption and sensitivity analysis, and extract model parameters.

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Photodetectors based on heterostructures for opto-electronic applications

B. Nabet, A. Cola, A. Cataldo, Xiying Chen and F. Quaranta. "Photodetectors based on heterostructures for opto-electronic applications." 2003 Transactions on Microwave Theory and Techniques 51.10 (Oct. 2003 [T-MTT]): 2063-2072.

In this paper, we present four photodetector devices that have the benefit of compatibility with established high electron-mobility transistor technology and are, thus, more conducive to monolithic integration with high-speed opto-electronic integrated circuitry. These AlGaAs-GaAs heterojunction-based planar devices all use the wide-gap material to enhance the Schottky barrier height between metal and semiconductor. We show that doping of this layer produces an internal electric field that aids in the transport and collection of photoelectrons. Addition of a resonant optical cavity by means of a distributed Bragg reflector reduces the required thickness of the absorption layer, thus achieving good responsivity and high speed, as well as wavelength selectivity. Current-voltage, current-temperature, photocurrent spectra, high-speed time response, and on-wafer frequency-domain measurements are presented, which point out that the often contradictory requirements of responsivity, noise, and speed may be addressed by proper engineering of the internal electric field and optical properties. Numerical simulations are performed to describe internal electric and optical behavior and a small-signal model based on frequency-domain data is extracted in order to facilitate photoreceiver design. The low dark current, in tens of femtoamps per square micrometer, full-width at half-maximum time responses below 10 ps, and high bandwidth in tens of gigahertz, make these devices of interest for applications ranging from optical communications to imaging systems.

Abstracts

Temperature compensation of total power radiometers

D.A. Thompson, R.L. Rogers and J.H. Davis. "Temperature compensation of total power radiometers." 2003 Transactions on Microwave Theory and Techniques 51.10 (Oct. 2003 [T-MTT]): 2073-2078.

This paper describes a new technique to compensate output variations of total power radiometers due to physical temperature changes of the instrument. This technique performs the correction without the addition of expensive microwave hardware required in Dicke switching or many other widely used methods. A characterization period, over which the input antenna temperature is known, indicates the appropriate output adjustment needed for a change in physical temperature of the radiometer. The method effectively corrects the output in an example radiometer system built with inexpensive commercially available parts. For a 30-K variation in physical temperature, the measured data shows an improvement from 60-K peak-to-peak error to 6.9 K with an average absolute error of 1.1 K.

Abstracts

A new method for pHEMT noise-parameter determination based on 50-/spl Omega/ noise measurement system

Jianjun Gao, Choi Look Law, Hong Wang, S. Aditya and G. Boeck. "A new method for pHEMT noise-parameter determination based on 50-/spl Omega/ noise measurement system." 2003 Transactions on Microwave Theory and Techniques 51.10 (Oct. 2003 [T-MTT]): 2079-2089.

A new method for determining the four noise parameters of pseudomorphic high electron-mobility transistors (pHEMTs) based on a 50-/spl Omega/ noise measurement system without a microwave tuner is presented. The noise parameters are determined based on the noise correlation matrix technique by fitting the measured noise figure of the active device. On-wafer experimental verification up to 26 GHz is presented and a comparison with a tuner-based method is given. The scaling rules for noise parameters have also been determined. Good agreement is obtained between simulated and measured results for 2/spl times/20 /spl mu/m, 2/spl times/40 /spl mu/m, and 2/spl times/60 /spl mu/m gatewidth (number of gate fingers /spl times/ unit gatewidth) 0.25-/spl mu/m double-heterojunction /spl delta/-doped pHEMTs.

Abstracts

Electrical tuning of dispersion characteristics of surface electromagnetic-spin waves propagating in ferrite-ferroelectric layered structures

V.E. Demidov, B.A. Kalinikos, S.F. Karmanenko, A.A. Semenov and P. Edenhofer. "Electrical tuning of dispersion characteristics of surface electromagnetic-spin waves propagating in ferrite-ferroelectric layered structures." 2003 Transactions on Microwave Theory and Techniques 51.10 (Oct. 2003 [T-MTT]): 2090-2096.

Electrical tuning of dispersion characteristics has been studied experimentally for hybrid surface electromagnetic-spin waves propagating perpendicularly to the direction of the static magnetization in tangentially magnetized layered structures containing ferrite and ferroelectric layers. The tuning is realized through the variation of the dielectric constant of the ferroelectric layer by changing the applied electric field. A comparison between experimentally measured and theoretically calculated dispersion characteristics is presented and shows a good agreement.

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The transfinite-element time-domain method

Din-Kow Sun, Jin-Fa Lee and Z. Cendes. "The transfinite-element time-domain method." 2003 Transactions on Microwave Theory and Techniques 51.10 (Oct. 2003 [T-MTT]): 2097-2105.

This paper presents an efficient time-domain method for computing the propagation of electromagnetic waves in microwave structures. The procedure uses high-order vector bases to achieve high-order accuracy in space, Newmark's method to provide unconditional stability in time, and the transfinite-element method to truncate the waveguide ports. The resulting system matrix is real, symmetric, positive-definite, and can be solved by using the highly efficient multilevel preconditioned conjugate gradient algorithm. Since the method allows large time steps and nonuniform grids, the computational complexity for problems with irregular geometries is superior to that of the finite-difference time-domain method.

Abstracts

Measurement/computation of effective permittivity of dilute solution in saponification reaction

Kama Huang, Xuejun Cao, Changjun Liu and Xiao-Bang Xu. "Measurement/computation of effective permittivity of dilute solution in saponification reaction." 2003 Transactions on Microwave Theory and Techniques 51.10 (Oct. 2003 [T-MTT]): 2106-2111.

For better application of microwaves in chemistry, the interaction between microwaves and the chemical reaction needs further study. Since the reactants form a complicated mixture, which changes with time, an effective permittivity can be used to describe the molecular polarization of the mixture in the reaction. The effective permittivity is expected to change with microwave frequency, temperature and reaction time. However, in many cases, the change of effective permittivity in a saponification reaction is too small to be detected using traditional methods. In this paper, we present a hybrid experimental/computational method for determining the effective permittivity in a saponification reaction. We use a resonant coaxial sensor to measure the reflection coefficients. To predict its performance, the electromagnetic-field distribution near the sensor and the reflection coefficient are calculated employing a frequency-dependent finite-difference time-domain method. Next, we develop a genetic-algorithm-based inverse-calculation technique and employ it to determine the complex permittivity of pure water from the measured reflection coefficient and compare the results with those obtained from Debye's equation. Finally, the hybrid experimental/computational method is employed to determine the effective permittivity of a dilute solution in a typical saponification reaction. Results are presented and discussed.

Abstracts

Realization of transmission zeros in combline filters using an auxiliary inductively coupled ground plane

Ching-Wen Tang, Yin-Ching Lin and Chi-Yang Chang. "Realization of transmission zeros in combline filters using an auxiliary inductively coupled ground plane." 2003 Transactions on Microwave Theory and Techniques 51.10 (Oct. 2003 [T-MTT]): 2112-2118.

The out-band transmission zeros of the multilayer low-temperature co-fired ceramic bandpass filter are studied. The design target of this filter, with passband between 2.3-2.65 GHz (the true application is 2.4-2.483 GHz), is to reject the local oscillator and image signals and, in the mean time, to suppress the harmonic frequency. This filter is a modified three-pole combline filter, which can easily achieve a high rejection rate and low insertion loss. The source-load coupling capacitor incorporation with cross-coupling grounding inductors can generate three transmission zeros. By properly adjusting the inductance values of the inductors between three resonators and ground the transmission zero can easily be manipulated at a high-side skirt to suppress the harmonic frequency. The measured results match well with the electromagnetic simulation that provides evidence for the feasibility of the proposed design.

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Compact planar microstripline branch-line and rat-race couplers

K.W. Eccleston and S.H.M. Ong. "Compact planar microstripline branch-line and rat-race couplers." 2003 Transactions on Microwave Theory and Techniques 51.10 (Oct. 2003 [T-MTT]): 2119-2125.

Both branch-line and rat-race couplers are easily realized using planar circuit technology as they employ only transmission lines without additional components. However, as the electrical lengths of the transmission line elements are either 90/spl deg/ or 270/spl deg/, such couplers consume a significant amount of circuit area. This paper shows the development of branch-line and rat-race couplers that use artificial transmission lines (ATLs) in place of conventional transmission lines resulting in significant size reduction. As the ATLs are constructed entirely from microstriplines, the couplers are easily fabricated using conventional printed-circuit processes. The design formulas developed for the ATLs are explicit. Full-wave simulation and experimental results were used to confirm the design approach for hybrids operating at 1.8 GHz. The frequency response of the proposed hybrids is similar to conventional hybrids.

Abstracts

Insertion loss of magnetostatic-surface wave transducers - transmission-line model and experiment

M.J. Freire, R. Marques and F. Medina. "Insertion loss of magnetostatic-surface wave transducers - transmission-line model and experiment." 2003 Transactions on Microwave Theory and Techniques 51.10 (Oct. 2003 [T-MTT]): 2126-2132.

In this paper, a transmission-line model is developed for the computation of the insertion loss of magnetostatic-surface wave transducers and measurements are carried out by the authors to check this model. In a first step of the analysis, closed-form expressions for the solution of the telegrapher's equations for the two microstrip transducers are obtained. The insertion loss is then derived from this solution as a function of three transmission-line parameters, i.e., the propagation constant and the characteristic impedance of the YIG-loaded microstrip line and the mutual inductance between the two microstrips, these quantities being, in general, complex. In a second step, these transmission-line parameters are numerically computed by applying a full-wave method-of-moments technique. Thus, the theoretical results obtained are found to be in good agreement with experimental results.

Abstracts

Guided-wave characteristics of periodic coplanar waveguides with inductive loading - unit-length transmission parameters

Lei Zhu. "Guided-wave characteristics of periodic coplanar waveguides with inductive loading - unit-length transmission parameters." 2003 Transactions on Microwave Theory and Techniques 51.10 (Oct. 2003 [T-MTT]): 2133-2138.

Periodic coplanar waveguides (CPWs) with inductive loading are thoroughly studied by resorting to unit-length transmission parameters, i.e., propagation constant and characteristic impedance, of an equivalent dispersive and/or lossy transmission line. The admittance-type method of moments (MoM) is at first formulated to full-wave modeling of a finite-cell periodic CPW with the two feeding lines and then the short-open-calibration procedure is carried out to deembed the two-port ABCD matrix of the core periodic CPW section. Thus, the above two parameters can be extracted from the MoM simulation to exhibit their guided-wave characteristics, i.e., slow-wave and bandstop behaviors. It is demonstrated for the first time that, within the bandstop or bandgap, the propagation constant must become complex with a nonzero attenuation constant, while the characteristic impedance appears purely imaginary. Three periodic CPW circuits with six finite cells are then characterized on a basis of the transmission-line theorem and the derived S-parameters are validated by Momentum simulation and RF measurement.

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Abstracts

Feed horn coupled bolometer arrays for SPIRE - design, simulations, and measurements

G. Chattopadhyay, J. Glenn, J.J. Bock, B.K. Rownd, M. Caldwell and M.J. Griffin. "Feed horn coupled bolometer arrays for SPIRE - design, simulations, and measurements." 2003 Transactions on Microwave Theory and Techniques 51.10 (Oct. 2003 [T-MTT]): 2139-2146.

In this paper, we present the design, modeling, and measurements of feed horn coupled large bolometer arrays being developed for the Herschel Space Observatory's Spectral and Photometric Imaging REceiver (SPIRE) instrument. SPIRE has five arrays of feed horn coupled silicon-nitride micromesh "spider-web" bolometers in two instruments, a three-band photometer, and a two-band Fourier transform spectrometer, each covering the 430-GHz-1.5-THz band. The optical coupling efficiency, bandwidth, and crosstalk between adjacent pixels of the arrays were investigated with numerical electromagnetic-field simulators, and prototype arrays were measured extensively in a test facility. The measured results were found to be in good agreement with simulation predictions, and the simulation results were used as a benchmark for the design goals of the instrument.

Abstracts

Cross-coupling in coaxial cavity filters-a tutorial overview (Comments)

T. Reeves and N. van Stigt. "Cross-coupling in coaxial cavity filters-a tutorial overview (Comments)." 2003 Transactions on Microwave Theory and Techniques 51.10 (Oct. 2003 [T-MTT]): 2147-2147.

Abstracts

Comparison of fully distributed and periodically loaded nonlinear transmission lines (Corrections)

J.-M. Duchamp, P. Ferrari, M. Fernandez, A. Jrad, X. Melique, J. Tao, S. Arscott, D. Lippens and R.G. Harrison. "Comparison of fully distributed and periodically loaded nonlinear transmission lines (Corrections)." 2003 Transactions on Microwave Theory and Techniques 51.10 (Oct. 2003 [T-MTT]): 2147-2148.

Abstracts

Complex Permittivity Measurements of Common Plastics Over Variable Temperatures (Corrections)

B. Riddle, J. Baker-Jarvis and J. Krupka. "Complex Permittivity Measurements of Common Plastics Over Variable Temperatures (Corrections)." 2003 Transactions on Microwave Theory and Techniques 51.10 (Oct. 2003 [T-MTT]).

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Abstracts

Information for Authors (Oct. 2003 [T-MTT])

"Information for Authors (Oct. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.10 (Oct. 2003 [T-MTT]): 0_5-0_5.

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Abstracts

Inside Cover (Nov. 2003 [T-MTT])

"Inside Cover (Nov. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.11 (Nov. 2003 [T-MTT] (Mini-Special Issue on the 2003 IEEE Radio Frequency Integrated Circuit (RFIC) Symposium)): 0_3-0_4.

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Abstracts

Guest Editorial (Nov. 2003 [T-MTT])

J. Staudinger. "Guest Editorial (Nov. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.11 (Nov. 2003 [T-MTT] (Mini-Special Issue on the 2003 IEEE Radio Frequency Integrated Circuit (RFIC) Symposium)): 2153-2153.

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A first multigigahertz digitally controlled oscillator for wireless applications

R.B. Staszewski, Chih-Ming Hung, D. Leipold and P.T. Balsara. "A first multigigahertz digitally controlled oscillator for wireless applications." 2003 Transactions on Microwave Theory and Techniques 51.11 (Nov. 2003 [T-MTT] (Mini-Special Issue on the 2003 IEEE Radio Frequency Integrated Circuit (RFIC) Symposium)): 2154-2164.

A novel digitally controlled oscillator (DCO) architecture for multigigahertz wireless RF applications, such as short-range wireless connectivity or cellular phones, is proposed and demonstrated. It deliberately avoids any use of an analog tuning voltage control line. Fine frequency resolution is achieved through high-speed dithering, yet the resulting spurious tones are very low. This enables to employ fully digital frequency synthesizers in the most advanced deep-submicrometer digital CMOS processes, which allow almost no analog extensions. It promotes cost-effective integration with the digital back-end onto a single silicon die. The demonstrator test chip has been fabricated in a digital 0.13 /spl mu/m CMOS process together with a digital signal processor to investigate noise coupling. The 2.4 GHz DCO core consumes 2.3 mA from a 1.5 V supply and has a very large tuning range of 500 MHz. The phase noise is -112 dBc/Hz at 500 kHz offset. The presented ideas have been incorporated in a commercial Bluetooth transceiver.

Abstracts

A simple four-port parasitic deembedding methodology for high-frequency scattering parameter and noise characterization of SiGe HBTs (Nov. 2003 [T-MTT])

Qingqing Liang, J.D. Cressler, Guofu Niu, Yuan Lu, G. Freeman, D.C. Ahlgren, R.M. Malladi, K. Newton and D.L. Harame. "A simple four-port parasitic deembedding methodology for high-frequency scattering parameter and noise characterization of SiGe HBTs (Nov. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.11 (Nov. 2003 [T-MTT] (Mini-Special Issue on the 2003 IEEE Radio Frequency Integrated Circuit (RFIC) Symposium)): 2165-2174.

A new four-port scattering parameter (S-parameter) and broad-band noise deembedding methodology is presented. This deembedding technique considers distributed on-wafer parasitics in the millimeter-wave band (f>30GHz). The procedure is based on simple analytical calculations and requires no equivalent circuit modeling or electromagnetic simulations. Detailed four-port system analysis and deembedding expressions are derived. Comparisons between this new method and the industry-standard "open-short" method were made using measured and simulated data on state-of-the-art SiGe HBTs with a maximum cutoff frequency of approximately 180 GHz. The comparison demonstrates that better accuracy is achieved using this new four-port method. Based on a combination of measurements and HP-ADS simulations, we also show that this new technique can be used to accurately extract the S-parameters and broad-band noise characteristics to frequencies above 100 GHz.

Abstracts

A novel bipolar-MOSFET low-noise amplifier (BiFET LNA), circuit configuration, design methodology, and chip implementation

Pingxi Ma, M. Racanelli, Jie Zheng and M. Knight. "A novel bipolar-MOSFET low-noise amplifier (BiFET LNA), circuit configuration, design methodology, and chip implementation." 2003 Transactions on Microwave Theory and Techniques 51.11 (Nov. 2003 [T-MTT] (Mini-Special Issue on the 2003 IEEE Radio Frequency Integrated Circuit (RFIC) Symposium)): 2175-2180.

This paper proposes a new RF circuit configuration: the Bipolar cascoded with a mosFET (BiFET). Applying the BiFET for low-noise amplifiers (LNAs), we have developed a new BiFET-based design methodology. By using this methodology, a BiFET LNA has been designed based on Jazz Semiconductor Inc.'s SiGe90 BiCMOS process. The packaged chip tested on board has demonstrated a 16-dB power-gain 1.6-dB noise-figure -6.5-dBm input third intercept point while consuming only 3 mW (2.2 V /spl times/ 1.4 mA) in the personal communication system (PCS) band. To our knowledge, this is the lowest current silicon-based LNA reported to date that maintains good PCS band performance.

Abstracts

4-bit multiplexer/demultiplexer chip set for 40-Gbit/s optical communication systems (Nov. 2003 [T-MTT])

K. Ishii, H. Nosaka, M. Ida, K. Kurishima, S. Yamahata, T. Enoki, T. Shibata and E. Sano. "4-bit multiplexer/demultiplexer chip set for 40-Gbit/s optical communication systems (Nov. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.11 (Nov. 2003 [T-MTT] (Mini-Special Issue on the 2003 IEEE Radio Frequency Integrated Circuit (RFIC) Symposium)): 2181-2187.

We have designed and fabricated a low-power 4:1 multiplexer (MUX), 1:4 demultiplexer (DEMUX) and full-clock-rate 1:4 DEMUX with a clock and data recovery (CDR) circuit using undoped-emitter InP-InGaAs HBTs. Our HBTs exhibit an f/sub T/ of approximately 150 GHz and an f/sub max/ of approximately 200 GHz at a collector current density of 50 kA/spl mu/m/sup 2/. In the circuit design, we utilize emitter-coupled logic and current-mode logic series gate flip-flops and optimized the collector current density of each transistor to achieve low-power operation at required high bit rates. Error-free operation at bit rates of up to 50 Gbit/s were confirmed for the 4:1 MUX and 1:4 DEMUX, which dissipates 2.3 and 2.5 W, respectively. In addition, the full-clock-rate 1:4 DEMUX with the CDR achieved 40-Gbit/s error-free operation.

Abstracts

Design and analysis of novel high-gain and broad-band GaAs pHEMT MMIC distributed amplifiers with traveling-wave gain stages

Kuo-Liang Deng, Tian-Wei Huang and Huei Wang. "Design and analysis of novel high-gain and broad-band GaAs pHEMT MMIC distributed amplifiers with traveling-wave gain stages." 2003 Transactions on Microwave Theory and Techniques 51.11 (Nov. 2003 [T-MTT] (Mini-Special Issue on the 2003 IEEE Radio Frequency Integrated Circuit (RFIC) Symposium)): 2188-2196.

Using the concept of traveling-wave gain stages, novel GaAs pseudomorphic high electron-mobility transistor monolithic-microwave integrated-circuit (MMIC) distributed amplifiers (DAs) are demonstrated to achieve high gain and over several octaves of bandwidth performance simultaneously for microwave and millimeter-wave frequency applications. The cascaded single-stage distributed amplifier (CSSDA) is used as traveling-wave gain stages to improve the gain performance of the conventional distributed amplifier (CDA). By adopting the low-pass filter topology between the CDA and CSSDA and tuning the gain shape of CDA and CSSDA separately, a broad-band and high-gain DA, called CDA-CSSDA-2, was accomplished. The detailed design equations are derived for the broad-band matching design of this CDA-CSSDA-2. Two other MMICs, namely, a two-stage CSSDA called 2-CSSDA, and another two-stage design called CDA-CSSDA-1, are also included in this paper. This CDA-CSSDA-2 achieves 22/spl plusmn/1.5-dB small-signal gain from 0.1 to 40 GHz with a chip size of 1.5/spl times/2 mm/sup 2/. It also produces a gain-bandwidth product of 503 GHz, which is the highest among all reported GaAs-based DAs. The flat group delay also demonstrates the feasibility of this design for future digital optical communications and broad-band pulse applications.

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S-parameter formulation of quality factor for a spiral inductor in generalized two-port configuration (Nov. 2003 [T-MTT])

Tzyy-Sheng Horng, Kang-Chun Peng, Je-Kuan Jau and Yu-Shun Tsai. "S-parameter formulation of quality factor for a spiral inductor in generalized two-port configuration (Nov. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.11 (Nov. 2003 [T-MTT] (Mini-Special Issue on the 2003 IEEE Radio Frequency Integrated Circuit (RFIC) Symposium)): 2197-2202.

This paper formulates various quality (Q) factors associated with the applications of on-chip spiral inductors to radio-frequency integrated circuits using S-parameters. The formulations start with the Q factor of a spiral inductor in a generalized two-port configuration based on a new complex-power approach and then extend to the Q factors of a tank and matching circuits that use the spiral inductors. In the demonstration, the two-port S-parameters for a series of CMOS spiral inductors have been measured to further generate such various Q factors for a many-sided evaluation of the inductor performance.

Abstracts

A novel power-amplifier module for quad-band wireless handset applications (Nov. 2003 [T-MTT])

Shuyun Zhang, J. Madic, P. Bretchko, J. Mokoro, R. Shumovich and R. McMorrow. "A novel power-amplifier module for quad-band wireless handset applications (Nov. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.11 (Nov. 2003 [T-MTT] (Mini-Special Issue on the 2003 IEEE Radio Frequency Integrated Circuit (RFIC) Symposium)): 2203-2210.

This paper presents a novel power-amplifier module (PAM) designed for GSM850-, GSM900 MHz, DCS1800- and PCS1900-MHz handset applications. The module combines an InGaP HBT power-amplifier integrated circuit, two integrated couplers, a dual-band logarithmic RF power detector/controller, and some additional passive components. The logarithmic RF power detector was implemented in the module to accomplish linear-in-decibel output power dependency. This allows the handset manufacturers to calibrate output power (Pout) at one or two points, with error as low as +/-0.3 dB, thus reducing test time in mass production. Due to higher accuracy, our novel design significantly reduces the power consumption during normal operation. Our design is the first to include two integrated directional couplers in a handset RF PAM. It significantly improves power control accuracy over load variations. In this paper, we show that the directivity of the integrated couplers is critical for establishing accurate power control over phase variations at high values of load mismatch. In addition, the presented module features fully integrated impedance matching at input and output ports with DC blocks. The entire module is plastic encapsulated on a 10 mm /spl times/ 10 mm laminate substrate. The module offers higher accuracy of Pout control, smaller size, lower bill-of-materials, and a shorter Pout calibration time to handset manufacturers. It is a very desirable RF PAM to handset designers because of its unique features. Under a low single supply voltage of 3.2 V, the PAM provides 35-dBm output power, 55% power-added efficiency (PAE) in the GSM900 band, and 33 dBm and 50% PAE in the DCS1800 band.

Abstracts

An Si-SiGe BiCMOS direct-conversion mixer with second-order and third-order nonlinearity cancellation for WCDMA applications

Liwei Sheng and L.E. Larson. "An Si-SiGe BiCMOS direct-conversion mixer with second-order and third-order nonlinearity cancellation for WCDMA applications." 2003 Transactions on Microwave Theory and Techniques 51.11 (Nov. 2003 [T-MTT] (Mini-Special Issue on the 2003 IEEE Radio Frequency Integrated Circuit (RFIC) Symposium)): 2211-2220.

This paper presents a general analysis of the third-order nonlinearity of a differential common-emitter RF amplifier and an improved technique to cancel the third-order nonlinearity. A thorough analysis of the mechanisms leading to the second-order nonlinearity of bipolar double-balanced active mixers is also presented. An SiGe BiCMOS WCDMA direct-conversion mixer is designed based on the third- and the second-order cancellation schemes. The mixer achieves +6-dBm third-order input intercept point, +49-dBm second-order input intercept point, 16-dB gain and 7.2-dB double-sideband noise figure with only 2.2-mA current at 2.1 GHz.

Abstracts

Finite-difference frequency-domain algorithm for modeling guided-wave properties of substrate integrated waveguide

Feng Xu, Yulin Zhang, Wei Hong, Ke Wu and Tie Jun Cui. "Finite-difference frequency-domain algorithm for modeling guided-wave properties of substrate integrated waveguide." 2003 Transactions on Microwave Theory and Techniques 51.11 (Nov. 2003 [T-MTT] (Mini-Special Issue on the 2003 IEEE Radio Frequency Integrated Circuit (RFIC) Symposium)): 2221-2227.

In multilayer microwave integrated circuits such as low-temperature co-fired ceramics or multilayered printed circuit boards, waveguide-like structures can be fabricated by using periodic metallic via-holes referred to as substrate integrated waveguide (SIW). Such SIW structures can largely preserve the advantages of conventional rectangular waveguides such as high-Q factor and high power capacity. However, they are subject to leakage due to periodic gaps, which potentially results in wave attenuation. Therefore, such a guided-wave modeling problem becomes a very complicated complex eigenvalue problem. Since the SIW are bilaterally unbounded, absorbing boundary conditions should be deployed in numerical algorithms. This often leads to a difficult complex root-extracting problem of a transcend equation. In this paper, we present a novel finite-difference frequency-domain algorithm with a perfectly matched layer and Floquet's theorem for the analysis of SIW guided-wave problems. In this scheme, the problem is converted into a generalized matrix eigenvalue problem and finally transformed to a standard matrix eigenvalue problem that can be solved with efficient subroutines available. This approach has been validated by experiment.

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Measurement of electric-field intensities using scanning near-field microwave microscopy

R. Kantor and I.V. Shvets. "Measurement of electric-field intensities using scanning near-field microwave microscopy." 2003 Transactions on Microwave Theory and Techniques 51.11 (Nov. 2003 [T-MTT] (Mini-Special Issue on the 2003 IEEE Radio Frequency Integrated Circuit (RFIC) Symposium)): 2228-2234.

In this paper, we propose methods for the measurement of electric intensities of a microwave field above the surface of microwave circuits. Using miniaturized coaxial antennas, we measure all spatial components of the induced field above device-under-test. A special position/signal difference method is used to better localize the measured field and increase the spatial resolution of the field mapping. During the scanning process, the antenna is driven at the defined distance above the sample surface according to previously acquired topographic data. For measurement of the tangential-field components parallel to the sample surface, the antenna is tilted by approximately 45/spl deg/ relative to the sample surface. By its rotation about the vertical axis, various components of the field are measured, and vertical and horizontal electric-field intensities are recalculated. The probes are calibrated in a well-defined field standard and allow good quantitative characterization of the measured field.

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100-GHz cooled amplifier residual PM and AM noise measurements, noise figure, and jitter calculations

D.A. Howe and J.R. Ostrick. "100-GHz cooled amplifier residual PM and AM noise measurements, noise figure, and jitter calculations." 2003 Transactions on Microwave Theory and Techniques 51.11 (Nov. 2003 [T-MTT] (Mini-Special Issue on the 2003 IEEE Radio Frequency Integrated Circuit (RFIC) Symposium)): 2235-2242.

We report the first definitive PM and AM noise measurements at 100 GHz of indium phosphide (InP) amplifiers operating at 5 K, 77 K, and room temperature. Amplifier gain ranged from +7 to +30 dB, depending on input RF power levels and operating bias current and gate voltages. The measurement system, calibration procedure, and amplifier configuration are described along with strategies for reducing the measurement system noise floor in order to accurately make these measurements. We compute amplifier noise figure with an ideal oscillator signal applied and, based on the PM noise measurements, obtain NF=0.8 dB, or a noise temperature of 59 K. Measurement uncertainty is estimated at /spl plusmn/0.3 dB. Results show that the use of the amplifier with an ideal 100-GHz reference oscillator would set a lower limit on rms clock jitter of 44.2 fs in a 20-ps sampling interval if the power into the amplifier were -31.6 dBm. For comparison, clock jitter is 16 fs with a commercial room-temperature amplifier operating in saturation with an input power of -6.4 dBm.

Abstracts

A gallium-nitride push-pull microwave power amplifier

Jong-Wook Lee, L.F. Eastman and K.J. Webb. "A gallium-nitride push-pull microwave power amplifier." 2003 Transactions on Microwave Theory and Techniques 51.11 (Nov. 2003 [T-MTT] (Mini-Special Issue on the 2003 IEEE Radio Frequency Integrated Circuit (RFIC) Symposium)): 2243-2249.

A highly efficient linear, broad-band AlGaN-GaN high electron-mobility transistor (HEMT) push-pull microwave power amplifier has been achieved using discrete devices. Instrumental was a low-loss planar three-coupled-line balun with integrated biasing. Using two 1.5-mm GaN HEMTs, a push-pull amplifier yielded 42% power-added efficiency with 28.5-dBm input power at 5.2 GHz, and a 3-dB bandwidth of 4-8.5 GHz was achieved with class-B bias. The output power at 3-dB gain compression was 36 dBm under continuous-wave operation. Along with the high efficiency, good linearity was obtained compared to single-ended operation. The second harmonic content of the amplifier was more than 30 dB down over the 4-8.5-GHz band, and a two-tone excitation measurement gave an input third-order intercept point of 31.5 dBm at 8 GHz. These experimental results and an analysis of the periodic load presented by the output balun suggest the plausibility of broad-band push-pull operation for microwave systems with frequency diversity.

Abstracts

V-band HJFET MMIC DROs with low phase noise, high power, and excellent temperature stability

K. Hosoya, K. Ohata, M. Funabashi, T. Inoue and M. Kuzuhara. "V-band HJFET MMIC DROs with low phase noise, high power, and excellent temperature stability." 2003 Transactions on Microwave Theory and Techniques 51.11 (Nov. 2003 [T-MTT] (Mini-Special Issue on the 2003 IEEE Radio Frequency Integrated Circuit (RFIC) Symposium)): 2250-2258.

This paper describes the development, along with detailed phase-noise analysis, of V-band monolithic-microwave integrated-circuit (MMIC) dielectric-resonator oscillators (DROs) achieving state-of-the-art performances. A TE/sub 01/spl delta//-mode Ba(Mg,Ta)O/sub 3/ cylindrical dielectric resonator (DR) is directly placed on a MMIC GaAs substrate to avoid the loss and uncertainty of bonding wires. A 0.15-/spl mu/m AlGaAs-InGaAs heterojunction field-effect transistor with optimized structure is developed as an active device. A design procedure proposed by the authors is employed, which allows us to analyze and optimize circuits in consideration for the output power, phase noise, and temperature stability. A developed DRO co-integrated with a buffer amplifier exhibits a low phase noise of -90 dBc/Hz at 100-kHz offset, a high output power of 10.0 dBm, and an excellent frequency stability of 1.6 ppm//spl deg/C at an oscillation frequency of 59.6 GHz, all of which are state-of-the-art performances reported for MMIC DROs above V-band. An experimental and theoretical analysis for the phase-noise-reduction effect of a DR is also addressed.

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Guest Editorial (Dec. 2003 [T-MTT])

"Guest Editorial (Dec. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2263-2268.

Abstracts

Electromagnetic-field theory and numerically generated results for propagation in left-handed guided-wave single-microstrip structures

C.M. Krowne. "Electromagnetic-field theory and numerically generated results for propagation in left-handed guided-wave single-microstrip structures." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2269-2283.

Dispersion diagrams and magnetic- and electric-field distributions are found for a microstrip structure containing a simple left-handed medium (LHM). The LHM material constituting the substrate has characteristics chosen to overlap with potentially realizable substances. Calculations are done using a fast solver anisotropic Green's function spectral-domain computer code. The theoretical-field method, valid for complex layered structures and anisotropies in the LHM, underlying the computational procedure, which is critical for finding the dispersion diagrams and field distributions, is presented. It is found that the dispersion diagrams and field distributions are very unusual and admit the possibility of completely new device realizations based on combining LHM with conventional materials in a multilayered configuration.

Abstracts

Design and testing of SMA temperature-compensated cavity resonators

B.F. Keats, R.B. Gorbet and R.R. Mansour. "Design and testing of SMA temperature-compensated cavity resonators." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2284-2289.

In this paper, we present a method for designing temperature-compensated cavity resonators using shape memory alloys (SMAs). This paper gives an expression for the temperature drift of resonant frequency, which is valid for any conductor-loaded cavity regardless of its shape. This formula, combined with a field perturbation model, is used to derive the resonant frequency of an SMA-compensated resonator subject to temperature fluctuation. Experimental results are given that confirm the feasibility of the proposed design approach. A design method is proposed for specifying SMA alloys to build the actuator. An expression is derived to accurately predict the performance of an actuator design.

Abstracts

A novel ultra-compact resonator for Superconducting thin-film filters

H.R. Yi, S.K. Remillard and A. Abdelmonem. "A novel ultra-compact resonator for Superconducting thin-film filters." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2290-2296.

This paper proposes a novel thin-film resonator structure, which combines the microstrip resonator and the coplanar resonator to form an integrated resonator. This resonator structure has an extremely compact size, as compared to the thin-film resonator structures from the literature, and its resonant frequency was shown theoretically to be less sensitive to, or even insensitive to, the thickness of the substrate. An eight-pole quasi-elliptic filter based on this novel resonator was designed. The exact filter layout was simulated and optimized by full-wave electromagnetic simulation using IE3D software. The full-wave simulated filter response was in good agreement with the theoretical filter response. A filter was fabricated on a double-sided YBa/sub 2/Cu/sub 3/O/sub 7/ thin film epitaxially grown on a 2-in-diameter MgO wafer. The measured filter response showed a bandwidth of 1.5 MHz and a center frequency of 850.3 MHz at 78 K. The insertion loss at the passband center was 1 dB, corresponding to a filter Q of 28 000. Steep rejection slopes were obtained at the band edges and rejections reached over 70 dB in approximately 300 kHz from the passband edges. No pronounced changes were observed for input power levels between -20-0 dBm, indicating a relatively high power-handling capability of the filter.

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Negative refraction, growing evanescent waves, and sub-diffraction imaging in loaded transmission-line metamaterials

A. Grbic and G.V. Eleftheriades. "Negative refraction, growing evanescent waves, and sub-diffraction imaging in loaded transmission-line metamaterials." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2297-2305.

We present an analytical formulation that shows the negative refraction of propagating waves and the growth of evanescent waves within a negative refractive index (NRI) lens made of a periodically L, C loaded transmission-line (TL) network, referred to as the dual-TL structure. A transformation known as the "array scanning method" is then employed to analytically demonstrate the sub-diffraction imaging capability of a dual-TL lens. In essence, the two-dimensional (2-D) periodic Green's functions corresponding to the voltages and currents excited by a vertical elementary current source are derived. The developed theory is utilized to plot the 2-D voltage magnitude distribution for the case of focusing an elementary current source. The analysis reveals that a resolution limit is imposed by the periodicity of the NRI medium used. Moreover, the periodicity of the NRI medium bounds the amplitude of the growing evanescent waves in a realizable NRI lens and prevents them from growing to unphysically large values.

Abstracts

Tailoring double-negative metamaterial responses to achieve anomalous propagation effects along microstrip transmission lines (Dec. 2003 [T-MTT])

Ching-Ying Cheng and R.W. Ziolkowski. "Tailoring double-negative metamaterial responses to achieve anomalous propagation effects along microstrip transmission lines (Dec. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2306-2314.

The design of a double-negative metamaterial loaded microstrip transmission line (DNG MTM-TL) to tailor the propagation characteristics at S- and C-band frequencies is presented. Guided-wave propagation along this DNG MTM-TL was studied numerically. The scattering parameters of the DNG MTM-TL were obtained with Ansoft's High Frequency Structure Simulator. A two-port network realization of the DNG MTM-TL is established. The effective permittivity and permeability for the DNG MTM-TL is extracted using this two-port network representation. It is shown that both a negative permittivity and a negative permeability and, hence, a negative index of refraction exist in the design frequency range. These material parameters are dispersive and conform to a two-time derivative Lorentz material model type of resonance behavior. This form of the index of refraction may be very suitable for applications dealing with phase and dispersion compensation along a microstrip transmission line.

Abstracts

State-space Integral-equation method for the S-domain modeling of planar circuits on semiconducting substrates

G. Conciauro, P. Arcioni and M. Bressan. "State-space Integral-equation method for the S-domain modeling of planar circuits on semiconducting substrates." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2315-2326.

This paper presents a new and very efficient integral method for the electromagnetic modeling of planar circuits on multilayered semiconducting substrates. Differently from standard integral approaches, the method leads to a state-space model of the circuit. This model directly permits to find the admittance matrix in the form of a reduced-order pole expansion in the S-domain through standard Krylov sub-space techniques. Three examples demonstrate the really good performances of the method in terms of accuracy and rapidity.

Abstracts

A novel modified-T equivalent circuit for modeling LTCC embedded inductors with a large bandwidth (Dec. 2003 [T-MTT])

Tzyy-Sheng Horng, Jian-Ming Wu, Li-Qun Yang and Shyh-Tirng Fang. "A novel modified-T equivalent circuit for modeling LTCC embedded inductors with a large bandwidth (Dec. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2327-2333.

This paper presents a new modified-T model for three-dimensional inductors embedded in the multilayer low-temperature cofired-ceramic substrate with a remarkably large bandwidth. This model combines a core circuit, a five-element modified-T model, to include the effects of a transmission line with an electrical length up to /spl pi/, and several resonators to consider the effects due to coil coupling and the finite ground plane. It is emphasized that most of the elements in this equivalent-circuit model can be extracted directly from the measured S-parameters. Compared to the conventional PI-section model that is valid only up to the fundamental self resonant frequency (SRF), this model can include more higher-order SRFs and ground resonant frequencies effectively, which results in several times larger bandwidth.

Abstracts

An efficient electromagnetic-physics-based numerical technique for modeling and optimization of high-frequency multifinger transistors

Y.A. Hussein, S.M. El-Ghazaly and S.M. Goodnick. "An efficient electromagnetic-physics-based numerical technique for modeling and optimization of high-frequency multifinger transistors." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2334-2346.

We present a fast wavelet-based time-domain modeling technique to study the effect of electromagnetic (EM)-wave propagation on the performance of high-power and high-frequency multifinger transistors. The proposed approach solves the active device model that combines the transport physics, and Maxwell's equations on nonuniform self-adaptive grids, obtained by applying wavelet transforms followed by hard thresholding. This allows forming fine and coarse grids in the locations where variable solutions change rapidly and slowly, respectively. A CPU time reduction of 75% is achieved compared to a uniform-grid case, while maintaining the same degree of accuracy. After validation, the potential of the developed technique is demonstrated by EM-physical modeling of multifinger transistors. Different numerical examples are presented, showing that accurate modeling of high-frequency devices should incorporate the effect of EM-wave propagation and electron-wave interactions within and around the device. Moreover, high-frequency advantages of multifinger transistors over single-finger transistors are underlined through numerical examples. To our knowledge, this is the first time in the literature a fully numerical EM-physics-based simulator for accurate modeling of high-frequency multifinger transistors is introduced and implemented.

Abstracts

Passive parameterized time-domain macromodels for high-speed transmission-line networks

P.K. Gunupudi, R. Khazaka, M.S. Nakhla, T. Smy and D. Celo. "Passive parameterized time-domain macromodels for high-speed transmission-line networks." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2347-2354.

There is a significant need for efficient and accurate macromodels of components during the design of microwave circuits. Increased integration levels in microwave devices and higher signal speeds have produced the need to include effects previously neglected during circuit simulations. Accurate prediction of these effects involve solution of large systems of equations, the direct simulation of which is prohibitively CPU expensive. In this paper, an algorithm is proposed to form passive parametrized macromodels of large linear networks that match the characteristics of the original network in time, as well as other design parameters of the circuit. A novel feature of the algorithm is the ability to incorporate a set of design parameters within the reduced model. The size of the reduced models obtained using the proposed algorithm were less than 5% when compared to the original circuit. A speedup of an order of magnitude was observed for typical high-speed transmission-line networks. The algorithm is general and can be applied to other disciplines such as thermal analysis.

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On deembedding of port discontinuities in full-wave CAD models of multiport circuits

V.I. Okhmatovski, J. Morsey and A.C. Cangellaris. "On deembedding of port discontinuities in full-wave CAD models of multiport circuits." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2355-2365.

A systematic numerical methodology is proposed for the accurate deembedding of multiport discontinuities in full-wave numerical models of multiconductor microwave and millimeter-wave passive structures and high-speed digital interconnects. The discussed methodology is based on the earlier-proposed short-open calibration (SOC) procedure. The latter being a numerical analog of the experimental transmission-thru-reflection technique provides a consistent removal of the feed networks of the device-under-test over a wide range of frequencies. The treatment of multiport topologies is achieved through the continuation of the original scalar SOC method into the vector space. The new vector SOC method is easily combined with integral-equation-based method-of-moments electromagnetic-field solvers and allows for substantial flexibility in the choice of excitation mechanisms. Such commonly used method-of-moments driving schemes as ports locally backed up by a vertical conducting wall, ungrounded-internal differential ports, and via-mounted ports can be accurately deembedded within the framework of the vector SOC. Several numerical experiments are provided to validate the proposed multiport deembedding methodology and demonstrate its application.

Abstracts

Fundamental properties of radiation from a leaky mode excited on a planar transmission line (Dec. 2003 [T-MTT])

W.L. Langston, J.T. Williams, D.R. Jackson and F. Mesa. "Fundamental properties of radiation from a leaky mode excited on a planar transmission line (Dec. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2366-2377.

By using a specific normalization, it is shown that the TM/sub 0/ radiation field from a leaky mode that is excited by a source on any printed-circuit structure can be represented in a unified manner. The general properties of the normalized leaky-mode radiation field are examined in detail for a variety of phase and attenuation constants, as well as distances from the source, and for different types of source excitations. The normalized leaky-mode radiation field is compared to similarly normalized geometrical-optics and far-field radiation expressions to provide further insight into the nature of the radiation fields in the near- and far-field regions. The results provide a general view of leaky-mode radiation properties independent of the type of planar transmission line or background structure.

Abstracts

Efficient modal analysis of arbitrarily shaped waveguides composed of linear, circular, and elliptical arcs using the BI-RME method

S. Cogollos, S. Marini, V.E. Boria, P. Soto, A. Vidal, H. Esteban, J.V. Morro and B. Gimeno. "Efficient modal analysis of arbitrarily shaped waveguides composed of linear, circular, and elliptical arcs using the BI-RME method." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2378-2390.

This paper deals with the accurate and efficient modal analysis of arbitrarily shaped waveguides whose cross section is defined by a combination of straight, circular, and/or elliptical arcs. A novel technique for considering the presence of circular and/or elliptical segments within the frame of the well-known boundary integral-resonant mode expansion (BI-RME) method is proposed. This new extended BI-RME method will allow a more accurate solution of a wider number of hollow conducting waveguides with arbitrary profiles, which are usually present in most modern passive waveguide components. To show the advantages of this new extended technique, the modal chart of canonical (circular and elliptical) waveguides, as well as of irises with great practical interest (i.e., cross-shaped irises with rounded corners) has been first successfully solved. Next, a computer-aided-design software package based on such a novel modal analysis tool has first been validated with the accurate analysis of a referenced complex dual-mode filter, and then applied to the complete design of a novel twist component for K-band application based on circular and elliptical waveguides. A prototype of this novel device has been manufactured and measured for verification purposes.

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Abstracts

An optimal vector-network-analyzer calibration algorithm

D.F. Williams, J.C.M. Wang and U. Arz. "An optimal vector-network-analyzer calibration algorithm." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2391-2401.

We present an iterative algorithm for calibrating vector network analyzers based on orthogonal distance regression. The algorithm features a robust, yet efficient, search algorithm, an error analysis that includes both random and systematic errors, a full covariance matrix relating calibration and measurement errors, 95% coverage factors, and an easy-to-use user interface that supports a wide variety of calibration standards. We also discuss evidence that the algorithm outperforms the MultiCal software package in the presence of measurement errors and accurately estimates the uncertainty of its results.

Abstracts

A novel mode content analysis technique for antennas in multimode waveguides

P.V. Nikitin, D.D. Stancil, A.G. Cepni, A.E. Xhafa, O.K. Tonguz and D. Brodtkorb. "A novel mode content analysis technique for antennas in multimode waveguides." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2402-2408.

This paper presents a novel technique for analyzing the mode content excited by antennas placed in multimode waveguides. The technique is based on measuring the frequency response between the two antennas coupled into a waveguide and using that information to extract the mode content generated by the transmitting antenna. The technique is applicable to cases in which the mode amplitudes are approximately constant over the frequency range of interest. This method is valuable for determining the mode mix generated by arbitrary transmitting antennas in a multimode waveguide propagation environment. An example of such an environment is heating, ventilation, and air-conditioning (HVAC) ducts used for indoor communications, where an important antenna characteristic is the mode sensitivity (analogous to the antenna directive gain in free space). We validate our technique with the example of a monopole probe antenna coupled into a multimode cylindrical HVAC duct.

Abstracts

A UTD/FDTD investigation on procedures to assess compliance of cellular base-station antennas with human-exposure limits in a realistic urban environment

P. Bernardi, M. Cavagnaro, R. Cicchetti, S. Pisa, E. Piuzzi and O. Testa. "A UTD/FDTD investigation on procedures to assess compliance of cellular base-station antennas with human-exposure limits in a realistic urban environment." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2409-2417.

In this paper, different exposure situations for a subject standing inside a room of a building with a window facing a rooftop-mounted base-station antenna are analyzed. The study is accomplished by using a technique combining the uniform asymptotic theory of diffraction and the finite-difference time-domain method, suitable to characterize human exposure in realistic urban environments at a reasonable computational cost. The different exposure conditions examined are analyzed to highlight the problems related to compliance assessment procedures in complex exposure scenarios and to suggest some possible solutions. A comparison of the results obtained in these scenarios with those computed neglecting the presence of the room walls (free-space situations) evidences that, under certain conditions, average exposure field levels and specific absorption rates (SARs) in the realistic environments can be higher than in free space, thus demonstrating that compliance assessment carried out in free space can yield nonconservative results. As concerns implications of field nonuniformities, typical of realistic urban environments, on SAR values, the results show that the whole-body averaged SAR is related to the average field value, provided the averaging procedure is appropriately chosen to cover all the volume occupied by the subject (V/sub S/) and not only a vertical surface. Local SAR values, instead, show a more complex relation with the exposure field, such that considering only the V/sub S/-averaged field value for compliance assessment might lead to an underestimation of the real exposure level, while using the peak of the field in V/sub S/ leads to a remarkable overestimation.

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Power density and temperature distributions produced by interstitial arrays of sleeved-slot antennas for hyperthermic cancer therapy

S. Pisa, M. Cavagnaro, E. Piuzzi, P. Bernardi and J.C. Lin. "Power density and temperature distributions produced by interstitial arrays of sleeved-slot antennas for hyperthermic cancer therapy." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2418-2426.

A graded-mesh finite-difference time-domain (FDTD) code, together with an alternate-direction-implicit finite-difference (ADI-FD) solution of the bioheat equation, are used for studying arrays of sleeved-slot antennas imbedded in a brain-equivalent phantom. The FDTD code allows efficient and accurate modeling of the fine structure of each antenna and of a sufficiently wide surrounding region. The ADI-FD solution of the bioheat equation allows evaluation of transient and steady-state temperature distributions in the brain-equivalent phantom with acceptable computational costs. The solution of the dosimetric-thermal problem in the volume irradiated by the antenna array permits the assessment of dimensions of the region where the temperature increase is above 43/spl deg/C (the threshold for an effective hyperthermia treatment) as a function of the array input power. Arrays made of three identical antennas placed at the vertices of equilateral triangles of 10-, 15-, and 20-mm sides have been studied. The temperature of 43/spl deg/C is reached in approximately 3 min in a deep-seated tumor region, from 10 to 40 mm in diameter, by applying input power levels between 2-32 W.

Abstracts

Thermal memory effects modeling and compensation in RF power amplifiers and predistortion linearizers

S. Boumaiza and F.M. Ghannouchi. "Thermal memory effects modeling and compensation in RF power amplifiers and predistortion linearizers." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2427-2433.

Memory effects, which influence the performance of RF power amplifiers (PAs) and predistortion-based linearizers, become more significant and critical in designing these circuits as the modulation signal bandwidth and operation power increase. This paper reports on an attempt to investigate, model, and quantify the contributions of the electrical nonlinearity effects and the thermal memory effects to a PA's distortion generation, as well as how to compensate for these effects in designing baseband predistortion schemes. The first part of this paper reports on the development of an accurate dynamic expression of the instantaneous junction temperature as a function of the instantaneous dissipated power. This expression has been used in the construction of an electrothermal model for the PA. Parameters for the new proposed behavior model were determined from the PA measurements obtained under different excitation conditions (e.g., small-signal and pulsed RF tests). This study led us to conclude that the effects of the transistor self-heating phenomenon are more important under narrow-band signal (e.g., enhanced data for global evolution of global system for mobile communications) than for signals with wide modulation bandwidth (CDMA2000, Universal Mobile Telecommunications System). In the second part of this paper, the newly developed model has also been used to design a temperature-compensated predistortion function to compensate for these effects. The linearized PA output spectrum and error vector magnitude show a significant performance improvement in the temperature-compensated predistortion function over a memoryless predistortion. The results of these measurements that have been conducted on a 90-W peak lateral double-diffused metal-oxide-semiconductor PA are in agreement with those obtained from simulations using the developed PA and the predistorter models implemented in an ADS environment.

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Characterization of cross modulation in multichannel amplifiers using a statistically based behavioral modeling technique

K.M. Gharaibeh and M.B. Steer. "Characterization of cross modulation in multichannel amplifiers using a statistically based behavioral modeling technique." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2434-2444.

A statistically based modeling technique is developed for characterizing in-band and out-of-band intermodulation and cross-modulation distortions in multichannel amplifier environments. The model is based on a new multiple envelope memoryless behavioral model that captures the black-box characteristics of multichannel amplifiers. A power amplifier with a two code-division multiple-access channel signal is characterized experimentally and verifies the approach.

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Thermal analysis of AlGaN-GaN power HFETs

S. Nuttinck, B.K. Wagner, B. Banerjee, S. Venkataraman, E. Gebara, J. Laskar and H.M. Harris. "Thermal analysis of AlGaN-GaN power HFETs." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2445-2452.

In this paper, we present a thermal analysis of AlGaN-GaN power heterojunction field-effect transistors (HFETs). We report the dc, small-signal, large-signal, and noise performances of AlGaN-GaN HFETs at high temperatures. The temperature coefficients measured for GaN HFETs are lower than that of GaAs pseudomorphic high electron-mobility transistors, confirming the potential of GaN for high-temperature applications. In addition, the impact of thermal effects on the device dc, small-signal, and large-signal characteristics is quantified using a set of pulsed and continuous wave measurement setups. Finally, a thermal model of a GaN field-effect transistor is implemented to determine design rules to optimize the heat flow and overcome self-heating. Arguments from a device, circuit, and packaging perspective are presented.

Abstracts

Nonreciprocal wave propagation in multilayer semiconductor films at frequencies up to 200 GHz

V.H. Mok and L.E. Davis. "Nonreciprocal wave propagation in multilayer semiconductor films at frequencies up to 200 GHz." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2453-2460.

Three multilayer gyrotropic thin-film semiconductor waveguides comprising S-I GaAs/AlAs/n-GaAs/AlGaAs in a static magnetic field of 0.15 T have been analyzed over the frequency range of 0-200 GHz. The dispersion diagrams and field distributions show nonreciprocal propagation, and forward waves and backward waves depending on the order in which the films are stacked. Potential applications such as miniature phase shifters and isolators in the frequency range of 50-100 GHz with lengths of the order of micrometers are briefly discussed.

Abstracts

A V-band quasi-optical GaAs HEMT monolithic integrated antenna and receiver front end

I-Jen Chen, Huei Wang and Powen Hsu. "A V-band quasi-optical GaAs HEMT monolithic integrated antenna and receiver front end." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2461-2468.

A single-chip monolithic integrated V-band folded-slot antenna with two Schottky-barrier diodes and a local oscillator source is developed as a quasi-optical receiver for the first time. The monolithic microwave integrated circuit consists of a voltage-controlled oscillator (VCO), a coplanar waveguide (CPW)-to-slotline transition, a low-pass filter, a folded-slot antenna, and a 180/spl deg/ single balanced mixer. The chip is fabricated based on the 0.15-/spl mu/m GaAs high electron-mobility transistor technology and the overall chip size is 3/spl times/1.5 mm/sup 2/. A finite-difference time-domain method solver is also developed for analyzing the embedded impedance characteristics of the folded-slot antenna to design the mixer. The chip is placed on an extended hemispherical silicon substrate lens to be a quasi-optical receiver. The performance of the receiver is verified by experimental measurements. The VCO has achieved a tuning range from 61.9 to 62.5 GHz and approximately 9.3-dBm output power. The CPW-to-slotline transition has bandwidth from 50 to 70 GHz. The mixer results in 15-dB single-sideband conversion loss and the receiving patterns of the IF power are also measured.

Abstracts

Broad-band high-power amplifier using spatial power-combining technique (Dec. 2003 [T-MTT])

Pengcheng Jia, Lee-Yin Chen, A. Alexanian and R.A. York. "Broad-band high-power amplifier using spatial power-combining technique (Dec. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2469-2475.

High power, broad bandwidth, high linearity, and low noise are among the most important features in amplifier design. The broad-band spatial power-combining technique addresses all these issues by combining the output power of a large quantity of microwave monolithic integrated circuit (MMIC) amplifiers in a broad-band coaxial waveguide environment, while maintaining good linearity and improving phase noise of the MMIC amplifiers. A coaxial waveguide was used as the host of the combining circuits for broader bandwidth and better uniformity by equally distributing the input power to each element. A new compact coaxial combiner with much smaller size is investigated. Broad-band slotline to microstrip-line transition is integrated for better compatibility with commercial MMIC amplifiers. Thermal simulations are performed and an improved thermal management scheme over previous designs is employed to improve the heat sinking in high-power application. A high-power amplifier using the compact combiner design is built and demonstrated to have a bandwidth from 6 to 17 GHz with 44-W maximum output power. Linearity measurement has shown a high third-order intercept point of 52 dBm. Analysis shows the amplifier has the ability to extend spurious-free dynamic range by N/sup 2/3/ times. The amplifier also has shown a residual phase floor close to -140 dBc at 10-kHz offset from the carrier with 5-6-dB reductions compared to a single MMIC amplifier it integrates.

Abstracts

A 16-element two-dimensional active self-steering array using self-oscillating mixers

G.S. Shiroma, R.Y. Miyamoto and W.A. Shiroma. "A 16-element two-dimensional active self-steering array using self-oscillating mixers." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2476-2482.

A 16-element two-dimensional (2-D) retrodirective array using self-oscillating mixers (SOMs) is presented. SOMs allow for easier implementation of larger 2-D arrays by eliminating the complex local-oscillator (LO) feed structure. A 4 /spl times/ 4 element retrodirective array using SOMs is demonstrated at an LO frequency of 7.68 GHz. Each element is phased locked at the LO frequency with an accompanying RF frequency isolation of 17.9 dB between adjacent horizontal elements and 22.2 dB between adjacent vertical elements. A -10-dBm external injection-locking signal is applied to reduce the phase noise of the 16-element array to -68.2 dBc/Hz at 10-kHz offset. Retrodirectivity is observed in the /spl phi/=0/spl deg/, /spl phi/=-45/spl deg/, and /spl phi/=-90 plane for scattering angles of /spl theta/=-15/spl deg/, /spl theta/=0/spl deg/, and /spl theta/=+30/spl deg/.

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A high-speed adaptive antenna array with simultaneous multibeam-forming capability (Dec. 2003 [T-MTT])

T. Nishio, Hsiao-Ping Tsai, Yuanxun Wang and T. Itoh. "A high-speed adaptive antenna array with simultaneous multibeam-forming capability (Dec. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2483-2494.

A new type of adaptive beamforming antenna system architecture is proposed for multichannel wireless communications. Multibeam communication with high data throughput is accomplished using the proposed beamformer architecture. The system consists of analog mixers, a multitone direct digital synthesizer (DDS), and a digital signal processor (DSP) controller. The essential idea of multibeam forming is based on a multitone weighting scheme combined with analog-digital hybrid signal processing. While the real-time multibeam construction is realized by the analog mixer circuits and a DDS, the complicated adaptive beamforming and direction-of-arrival estimation algorithms are carried out by the DSP. In this architecture, only one beamformer circuit is required to handle multiple beams, leading to significant reduction in hardware counts. A 5.8-GHz eight-element adaptive beamforming array successfully demonstrates two-beam simultaneous beamforming with less than three degrees of peak and null steering errors and more than 20-dB interference suppression. The test-bed exhibits successful two-channel data recovery at 25-Mb/s data throughput in each channel with binary phase-shift keying modulation, for simultaneous dual-beam reception. The bit-error-rate measurement validates the robustness of the communication quality under strong interferences.

Abstracts

Behavioral modeling of nonlinear RF power amplifiers considering memory effects

Hyunchul Ku and J.S. Kenney. "Behavioral modeling of nonlinear RF power amplifiers considering memory effects." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2495-2504.

This paper proposes a new behavioral model to treat memory effects in nonlinear power amplifiers (PAs). Phenomena such as asymmetries in lower and upper intermodulation terms, and variation of AM/AM and AM/PM, depending on signal history, are often observed in high-power PAs. To treat these phenomena, this paper presents a model based on the previously developed memory polynomial model. The contribution made in this paper is to augment the memory polynomial model to include a sparse delay tap structure that reduces the parameter space required for accurate model identification. A figure-of-merit, called the memory effect ratio, is defined to quantify the relative level of distortion due to memory effects, as compared to the memoryless portion. Another figure-of-merit is defined as the memory effect modeling ratio, which quantifies the degree to which the PA memory effects have been accounted for in the model. This new technique is validated using a variety of RF PAs, including an 880-MHz and a 2.1-GHz high-power laterally diffused metal-oxide semiconductor PA and various signals such as two-tone, eight-tone, and IS-95B signals.

Abstracts

Predistortion technique for cross-coupled filters and its application to satellite communication systems

Ming Yu, Wai-Cheung Tang, A. Malarky, V. Dokas, R. Cameron and Ying Wang. "Predistortion technique for cross-coupled filters and its application to satellite communication systems." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2505-2515.

This paper presents a novel adaptive predistortion technique for general cross-coupled microwave/RF filters with improved insertion loss and group-delay equalization. The method enables many potential applications of an almost abandoned technique, and permits a lower Q implementation technology to emulate the performance of a higher Q filter. 10-4-4 filters were built and tested at C- and Ku-band to verify the validity of the new method. The impact to satellite communication channels was also analyzed. Another novel concept of over-predistortion was proposed and evaluated and should lead to significant improvement for applications such as satellite transponder input multiplexers, where insertion loss can be traded off for in-band flatness, mass, volume, and even overall system performance.

Abstracts

Adaptive digital predistortion linearization of frequency multipliers

Youngcheol Park and J.S. Kenney. "Adaptive digital predistortion linearization of frequency multipliers." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2516-2522.

A novel technique to linearize frequency multipliers for use in high-frequency transmission of digitally modulated signals is presented. Using this technique, a bandpass signal containing both amplitude and phase modulation can be translated without distortion to a higher frequency via nonlinear frequency multiplication. A theoretical analysis is performed to identify the bandpass transformation of the signal envelope in highly nonlinear devices in a manner such that its inverse transformation may be estimated. The theory was validated on a 2.46-GHz Schottky-diode frequency tripler constructed by the authors and on an 820-MHz commercially available frequency doubler. As predicted by the theory, the devices showed highly nonlinear characteristics in terms of their AM/AM, AM/PM, and PM/PM distortions. Adaptive lookup-table- and polynomial-based predistortion systems were designed and constructed to linearize the frequency multipliers. The predistortion results show a fair amount of improvements in adjacent-channel power ratio and error vector magnitude.

Abstracts

Baseband impedance and linearization of FET circuits

J. Brinkhoff, A.E. Parker and M. Leung. "Baseband impedance and linearization of FET circuits." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2523-2530.

Baseband impedance has been identified as having a positive or negative effect on the intermodulation distortion of microwave circuits. The effect can be assessed or utilized with the aid of previously proposed figures-of-merit. Under certain situations, intermodulation cancellation can be achieved simply by adding resistance to the bias network. The impact of baseband impedance on the performance of derivative superposition amplifiers is analyzed. A bias region was studied that exhibits a good second- and third-order intermodulation null with minimal intermodulation dependence on baseband impedance. This allows the effective use of the derivative superposition technique in baseband amplifiers, as well as giving wide-band linearization performance in RF amplifiers.

Abstracts

Implementation of nonquasi-static effects in compact bipolar transistor models

S.V. Cherepko and J.C.M. Hwang. "Implementation of nonquasi-static effects in compact bipolar transistor models." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2531-2537.

Large-signal implementation of nonquasi-static (NQS) effects in bipolar transistors is reviewed. An approach is proposed to introduce first-order NQS correction to typical quasi-static phenomenological models. Both charge- and noncharge-conserving implementations are considered. The resulted large-signal equivalent-circuit model compares well with the two-dimensional physical model in simulating HBT transient response under high-current operations. The present approach advances the state-of-the-art by allowing arbitrary bias dependence of transit times in large-signal NQS models.

Abstracts

Novel subharmonically pumped mixer incorporating dual-band stub and in-line SCMRC (Dec. 2003 [T-MTT])

Tsz Yin Yum, Quan Xue and Chi Hou Chan. "Novel subharmonically pumped mixer incorporating dual-band stub and in-line SCMRC (Dec. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2538-2547.

A subharmonically pumped (SHP) mixer with very low conversion loss is proposed. The mixer employed the newly developed spiral compact microstrip resonant cell (SCMRC) and compact dual-band stub (DBS). Incorporating the in-line SCMRC and DBS into a second SHP mixer, we can provide proper terminations for the IF, RF, and local-oscillator (LO) signal simultaneously in addition to all major unwanted mixing products, leading to a unique low conversion-loss design. Our SHP mixer with a measured 3.9-dB single-sideband (SSB) down-conversion loss at 11.6-GHz RF signal outperforms typical designs of 8-12 dB, and represents a state-of-the-art performance for a planar X-band harmonic mixer. With a broad-band operation, our mixer shows an SSB down-conversion loss of less than 8.2 dB from 9 to 12.8 GHz. Moreover, the measured LO-RF isolation is better than 45 dB for LO frequency ranges of 4-5.8 GHz. Large-signal two-tone measurements reveal an excellent linear response of the working prototype, showing 7.5 dBm and 52 dB for the 1- dB power compression point and spurious-free dynamic range, respectively.

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50-gbit/s InP HEMT 4 : 1 multiplexer/1 : 4 demultiplexer chip set with a multiphase clock architecture

K. Sano, K. Murata, H. Kitabayashi, S. Sugitani, H. Sugahara and T. Enoki. "50-gbit/s InP HEMT 4 : 1 multiplexer/1 : 4 demultiplexer chip set with a multiphase clock architecture." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2548-2554.

A 50-Gbit/s InP high electron-mobility transistor (HEMT) chip set of 4 : 1 multiplexer (MUX) and 1 : 4 demultiplexer (DMUX) integrated circuits (ICs) with a multiphase clock (MPC) architecture is described. The MPC architecture employs a quarter-rate four-phase clock generated by a toggle flip-flop inside the ICs, which reduces the number of circuit elements and lowers the power consumption. The fabricated 4 : 1 MUX and 1 : 4 DMUX ICs exhibited 50-Gbit/s error-free operations for 2/sup 31/-1 pseudorandom bit sequences with 1.71- and 1.42-W power consumption, respectively. Compared to conventional tree-type 4 : 1 MUX and 1 : 4 DMUX ICs using InP HEMTs, the MPC 4 : 1 MUX and 1 : 4 DMUX ICs operate at the same operating speed with less than one-third power consumption.

Abstracts

An 8-GHz continuous-time /spl Sigma/-/spl Delta/ analog-digital converter in an InP-based HBT technology (Dec. 2003 [T-MTT])

S. Krishnan, D. Scott, Z. Griffith, M. Urteaga, Yun Wei, N. Parthasarathy and M. Rodwell. "An 8-GHz continuous-time /spl Sigma/-/spl Delta/ analog-digital converter in an InP-based HBT technology (Dec. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2555-2561.

We report an 8-GHz clock-rate, second-order continuous-time /spl Sigma/-/spl Delta/ analog-digital converter (ADC) that achieves 57.4-, 51.7-, and 40.2-dB SNR at signal sampling rates of 125, 250, and 500 Ms/s, respectively. The integrated circuit occupied 1.45-mm/sup 2/ die area, contains 76 transistors, is fabricated in an InP-based HBT technology, and dissipates /spl sim/1.8 W. We also study the effect of excess delay on modulator performance, and show that excess delay does not affect performance as long as the centroid-in-time of the digital-analog converter pulse remains stationary.

Abstracts

Flip-chip assembly and liquid crystal polymer encapsulation for variable MEMS capacitors

F.F. Faheem, K.C. Gupta and Yung-Cheng Lee. "Flip-chip assembly and liquid crystal polymer encapsulation for variable MEMS capacitors." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2562-2567.

Packaging is a well-known barrier to the advancement of microelectromechanical systems (MEMS) for RF applications. To pave the way for the removal of this barrier, we have developed a flip-chip assembly technology to transfer foundry-fabricated MEMS devices from the host silicon substrate to a ceramic substrate. Specifically, posts have been designed and fabricated to assure excellent RF performance by achieving a precise gap between the device and ceramic substrate. In addition, a novel liquid crystal polymer (LCP) encapsulation technology has been developed to protect the RF MEMS device. LCP is a good encapsulation material for nonhermetic packaging because it significantly reduces the packaging cost. We have demonstrated excellent RF performance of variable MEMS capacitors that have been flip-chip assembled and LCP encapsulated. The quality (Q) factors of such capacitors were measured to be higher than 300 at 1.0 GHz.

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A reduced intermodulation distortion tunable ferroelectric capacitor-architecture and demonstration (Dec. 2003 [T-MTT])

Yong-Kyu Yoon, Dongsu Kim, M.G. Allen, J.S. Kenney and A.T. Hunt. "A reduced intermodulation distortion tunable ferroelectric capacitor-architecture and demonstration (Dec. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2568-2576.

A ferroelectric tunable capacitor device architecture is presented that allows for a reduction of intermodulation distortion (IMD), while maintaining high tunability at low bias voltages. The tunable capacitor is fabricated from epitaxial thin-film barium-strontium-titanate deposited on a sapphire substrate. The RF portion of the capacitor is a conventional planar gap capacitor with a 12-14-/spl mu/m gap. However, rather than superimposing the dc bias on the RF pads, a separate bias structure is fabricated within the RF gap. The interdigital bias structure has narrowly spaced high resistance (2-3/spl times/10/sup 4/ /spl Omega//sq) oxide conductor electrodes, such as indium-tin-oxide electrodes or lanthanum-strontium-cobalt-oxide electrodes spaced 1-2 /spl mu/m apart. The high resistivity of the bias electrodes decouples the dc bias from the RF signal path. This bias structure allows high dc fields to be developed with less than 30 V applied to tune the material permittivity (1 : 1.4), but is sufficiently resistive to avoid affecting the Q factor of the RF capacitor. Since the RF gap is wide, the IMD performance remains good, even at modest tuning voltages. The following three classes of gap capacitor have been fabricated for concept verification: 1) a conventional gap structure (without additional bias structure); 2) the proposed RF gap capacitor with the dc-bias structure; and 3) a narrower conventional RF gap-capacitor structure used as an IMD reference. The proposed RF gap capacitor with dc-bias structure has been fabricated in two versions: one in which the highly resistive bias electrodes are electrically connected to the RF electrodes (the attached-bias-electrode (ABE) scheme) and one in which the highly resistive electrodes are provided with a separate port for further control (the isolated-bias-electrode (IBE) scheme). In addition, parallel and perpendicular orientation of the bias electrodes relative to the RF field is investigated. The frequency response of the proposed gap capacitor with the dc-bias structure is characterized

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and its analysis shows that the highly resistive bias lines are serving as a dc-bias path for high tunability, but are not attenuating the RF signal. While the IBE structure has more degrees of freedom for biasing as compared to the ABE structure, the overall tunability at 30 V and IMD performance of both the ABE and IBE structures are similar. Two-tone IMD tests show that the IMD performance for the gap capacitor with the bias structure is improved by 6 dB over the conventional reference structure at the same tunability.

Abstracts

Novel thyristor-based microwave cross-point switch MMIC

R.A. La Rue, Thien Phuoc Ngo, Elim Chan, J.D. Levine, N. Kinayman, D. Hoag, J. Goodrich, R. Anderson, T. Buber, A. Khalil, T. Boles and J.-P. Lanteri. "Novel thyristor-based microwave cross-point switch MMIC." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2577-2588.

A novel GaAs 16 /spl times/ 16 cross-point switch monolithic microwave integrated circuit (MMIC) is presented. The switch MMIC incorporates 256 GaAs microwave thyristor devices as switching elements. The thyristors are two-terminal devices with anodes connected to a common horizontal electrode and cathodes connected to a common vertical electrode. Bistable operation of the thyristors permits x-y addressing at the edge of the chip to turn on and off each thyristor. Applications include low-cost low-power high-bandwidth switching of signals for broad-band services. A detailed description of the thyristor device, MMIC structure and design, and simulation and experimental results are presented. Multilayer laminate ball-grid-array package design for the switch matrix will also be explained in detail.

Abstracts

Novel LTCC/BGA modules for highly integrated millimeter-wave transceivers (Dec. 2003 [T-MTT])

J. Heyen, T. von Kerssenbrock, A. Chernyakov, P. Heide and A.F. Jacob. "Novel LTCC/BGA modules for highly integrated millimeter-wave transceivers (Dec. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2589-2596.

Advanced packaging concepts for highly integrated encapsulated millimeter-wave modules are demonstrated. Millimeter-wave monolithic integrated circuits (MMICs) are flip-chip mounted on top of a low-temperature co-fired ceramic (LTCC) package. This type of "smart package" can integrate various passive functions as well as compact interconnections between MMIC and vertical feedthroughs. The bottom side of this package is connected via a standard ball grid array (BGA) to a low-cost laminate printed circuit board serving as a motherboard for multiple LTCC modules. Fabricated passive LTCC test structures fully validate the approach for millimeter-wave applications. LTCC-/BGA-based packages feature good performance up to approximately 30 GHz. Alternatively to BGA technology, anisotropic conductive pastes are applied as well. They have proven to be suitable at least up to 40 GHz.

Abstracts

An alignment insensitive separable electromagnetic coupler for high-speed digital multidrop bus applications (Dec. 2003 [T-MTT])

J.R. Benham, R. Amirtharajah, J.L. Critchlow, T. Simon and T.F. Knight, Jr.. "An alignment insensitive separable electromagnetic coupler for high-speed digital multidrop bus applications (Dec. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2597-2603.

A separable electromagnetic coupler was designed, simulated, fabricated, and tested as part of a prototype eight-module multidrop memory bus. The coupler consists of broadside coupled traces, one on a rigid motherboard and the other on a flex circuit soldered to a daughter card. The zig-zag geometry of the traces reduces variation in the coupling coefficient due to horizontal and vertical misalignment of the coupler halves. Simulation and testing indicates that a target capacitive coupling coefficient of 0.34, which has been selected to balance signal-transmission-level requirements against motherboard impedance discontinuity effects, can be achieved with little variation over +/-12-mil alignment tolerance. In addition, custom interface circuitry was designed in conjunction with the coupler to enable 1.6-Gb/s data rate per differential pair. The prototype system was tested for an extended period executing read and write memory transactions for an estimated bit error rate less than 2.0e-17.

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Information for Authors (Dec. 2003 [T-MTT])

"Information for Authors (Dec. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 0_6-0_6.

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"Index of Authors (Dec. 2003 [T-MTT])." 2003 Transactions on Microwave Theory and Techniques 51.12 (Dec. 2003 [T-MTT] (Special Issue on 2003 International Microwave Symposium)): 2604-2651.

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"Inside Cover (Jan. 2003 [MWCL])." 2003 Microwave and Wireless Components Letters 13.1 (Jan. 2003 [MWCL]): 0_2-0_2.

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Information for Authors (Jan. 2003 [MWCL])

"Information for Authors (Jan. 2003 [MWCL])." 2003 Microwave and Wireless Components Letters 13.1 (Jan. 2003 [MWCL]): 0_3-0_4.

Abstracts

5.8-GHz CMOS T/R switches with high and low substrate resistances in a 0.18-/spl mu/m CMOS process

Zhenbiao Li, Hyun Yoon, Feng-Jung Huang and K.K. O. "5.8-GHz CMOS T/R switches with high and low substrate resistances in a 0.18-/spl mu/m CMOS process." 2003 Microwave and Wireless Components Letters 13.1 (Jan. 2003 [MWCL]): 1-3.

Two single-pole, double-throw transmit/receive switches were designed and fabricated with different substrate resistances using a 0.18-/spl mu/m p/sup $/substrate CMOS process. The switch with low substrate resistances exhibits 0.8-dB insertion loss and 17-dBm P/sub 1dB/ at 5.825 GHz, whereas the switch with high substrate resistances has 1-dB insertion loss and 18-dBm P/sub 1dB/. These results suggest that the optimal insertion loss can be achieved with low substrate resistances and 5.8-GHz T/R switches with excellent insertion loss and reasonable power handling capability can be implemented in a 0.18-/spl mu/m CMOS process.

Abstracts

A low phase noise silicon 18-GHz push-push VCO

L. Dussopt and G.M. Rebeiz. "A low phase noise silicon 18-GHz push-push VCO." 2003 Microwave and Wireless Components Letters 13.1 (Jan. 2003 [MWCL]): 4-6.

The design and measurement of a push-push voltage controlled oscillator (VCO) at 18.66-18.3 GHz are presented in this paper. The circuit includes two packaged silicon transistors (Siemens BFP 540F) and a microstrip resonator tuned by two GaAs varactor diodes (M/A-COM ML46580). A 360-MHz tuning range is obtained with an output power of 0-3.1 dBm. The fundamental rejection is around 17 dB for a wide range of collector bias current. The phase noise is below -103 dBc/Hz at 100-kHz offset and below -122 dBc/Hz at 1 MHz for the entire tuning bandwidth.

Abstracts

Voltage-controlled PIN diode attenuator with a temperature-compensation circuit

Byung-Jun Jang. "Voltage-controlled PIN diode attenuator with a temperature-compensation circuit." 2003 Microwave and Wireless Components Letters 13.1 (Jan. 2003 [MWCL]): 7-9.

This paper presents a voltage-controlled PIN diode attenuator and its temperature-compensation circuit composed of a thermistor and simple operational amplifier circuits. After carefully investigating the temperature characteristics of PIN diode attenuators, we designed voltage-controlled PIN diode attenuators showing the linear attenuation characteristics of 16 dB with input voltage within the operating temperature range. The fabricated attenuator has demonstrated the improvement of attenuation variation from 15 to 0.5 dB in the temperature range from -15 to 65/spl deg/C.

Abstracts

Planar realization of low phase noise 15/30 GHz oscillator/doubler using surface mount transistors

Wen-Chang Lee, Shao-Cheng Lin and C.-K.C. Tzuang. "Planar realization of low phase noise 15/30 GHz oscillator/doubler using surface mount transistors." 2003 Microwave and Wireless Components Letters 13.1 (Jan. 2003 [MWCL]): 10-12.

This paper presents the application of a novel high-Q planar waveguide resonator for microwave oscillator design. The waveguide cavity is made in printed-circuit-board process, first using a routed cut followed by a plated via-through-hole. Measurements show that the oscillator stabilized by the resonator delivers an output power of 14 dBm at 15 GHz and a phase noise of -98 dBc/Hz at 100 kHz offset from the carrier, under 5-V single bias. Experiments indicate the predominance of the waveguide resonator by a 13-dB phase noise improvement at 100 kHz offset against the microstrip oscillator.

Abstracts

Shorting strap tunable single feed dual-band PIFA

N.C. Karmakar, P. Hendro and L.S. Firmansyah. "Shorting strap tunable single feed dual-band PIFA." 2003 Microwave and Wireless Components Letters 13.1 (Jan. 2003 [MWCL]): 13-15.

RF switches are integrated to the shorting straps of a single feed dual-band planar inverted-F antenna (PIFA) to make a tunable PIFA. The L-band switch yields 0.45-dB insertion loss (IL) and 10-dB isolation bandwidth (BW) of 40% at 1.5 GHz. The tunable PIFA yields 39% impedance BW at 900-MHz band and 7.8% BW at 2000-MHz band. The measured radiation patterns are nearly omni-directional and yield a gain of -7.8 dBi at 652 MHz and 4.3 dBi at 2104 MHz.

Abstracts

Compact microstrip bandpass filter with two transmission zeros using a stub-tapped half-wavelength line resonator

Lei Zhu and W. Menzel. "Compact microstrip bandpass filter with two transmission zeros using a stub-tapped half-wavelength line resonator." 2003 Microwave and Wireless Components Letters 13.1 (Jan. 2003 [MWCL]): 16-18.

A compact microstrip bandpass filter is developed using a half-wavelength (/spl lambda//2) transmission line resonator with a pair of tap-connected open-ended stubs. Such paired stubs with total length of about /spl lambda//2 constructs an equivalent line resonator. Together with two separated /spl lambda//4 line resonators, the three transmission poles can be achieved inside the passband. Meanwhile, two stub lengths are adjusted slightly longer and shorter than /spl lambda//4 to realize the two transmission zeros at both low and high rejection bands. Further, the long tapped-stub is kept wider than its short counterpart to improve the low rejection behavior. A filter sample is designed and fabricated to provide an experimental verification on the proposed filter.

Abstracts

Time-delay phase shifter controlled by piezoelectric transducer on coplanar waveguide

Sang-Gyu Kim, Tae-Yeoul Yun and Kai Chang. "Time-delay phase shifter controlled by piezoelectric transducer on coplanar waveguide." 2003 Microwave and Wireless Components Letters 13.1 (Jan. 2003 [MWCL]): 19-20.

A time-delay phase shifter controlled by piezoelectric transducer (PET) is realized on a coplanar waveguide (CPW). The effective dielectric constant, propagation constant, etc., of the CPW are varied by the perturbation controlled by a PET. Compared to the perturbation on a microstrip line, published previously, the new CPW device provides 50% more phase shift.

Abstracts

A novel power plane with integrated simultaneous switching noise mitigation capability using high impedance surface

T. Kamgaing and O.M. Ramahi. "A novel power plane with integrated simultaneous switching noise mitigation capability using high impedance surface." 2003 Microwave and Wireless Components Letters 13.1 (Jan. 2003 [MWCL]): 21-23.

A novel technique for suppressing power plane resonance at microwave and radio frequencies is presented. The new concept consists of replacing one of the plates of a parallel power plane pair with a high impedance surface or electromagnetic band gap structure. The combination of this technique with a wall of RC pairs extends the lower edge of the effective bandwidth to dc, and allows resonant mode suppression up to the upper edge of the band-gap. The frequency range for noise mitigation is controlled by the geometry of the HIGP structure.

Abstracts

Smith chart approach to the design of multilayer resistive sheet

C.P. Neo, Y.J. Zhang, W.J. Koh, L.F. Chen, C.K. Ong and J. Ding. "Smith chart approach to the design of multilayer resistive sheet." 2003 Microwave and Wireless Components Letters 13.1 (Jan. 2003 [MWCL]): 24-26.

The design of the multilayer resistive sheet is often given in some formulae or in some tabulated forms. The electrical engineer or material scientist often cannot visualize how the design really works or the achievable bandwidth. In this paper, we attempt to give a good understanding of the design of the multilayer resistive sheet by using the Smith Chart approach. The Smith Chart approach offers more flexibility to the design of the multilayer resistive sheet, as compared to published formulae or tables.

Abstracts

An equivalent electric field source for wideband FDTD simulations of waveguide discontinuities

Shumin Wang and F.L. Teixeira. "An equivalent electric field source for wideband FDTD simulations of waveguide discontinuities." 2003 Microwave and Wireless Components Letters 13.1 (Jan. 2003 [MWCL]): 27-29.

Transparent sources are often used in wideband finite-difference time-domain (FDTD) simulations of waveguide discontinuity problems. Direct implementations of transparent sources may not correspond to the original hard source spectrum, or else require auxiliary simulation steps for correction purposes. In this letter, we propose a more direct approach to construct FDTD transparent electric field source-models for waveguides. We also provide an explanation for a "spectrum distortion" phenomenon recently reported for FDTD sources in waveguide problems . The main findings are illustrated by means of FDTD simulations of waveguides operating at Ku-band.

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Patent abstracts (Jan. 2003 [MWCL])

"Patent abstracts (Jan. 2003 [MWCL])." 2003 Microwave and Wireless Components Letters 13.1 (Jan. 2003 [MWCL]): 30-40.

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Abstracts

A 0.25-/spl mu/m 20-dBm 2.4-GHz CMOS power amplifier with an integrated diode linearizer

Cheng-Chi Yen and Huey-Ru Chuang. "A 0.25-/spl mu/m 20-dBm 2.4-GHz CMOS power amplifier with an integrated diode linearizer." 2003 Microwave and Wireless Components Letters 13.2 (Feb. 2003 [MWCL]): 45-47.

A 2.4-GHz CMOS power amplifier (PA) with an output power 20 dBm using 0.25-/spl mu/m 1P5M standard CMOS process is presented. The PA uses an integrated diode connected NMOS transistor as a diode linearizer. It is believed that this is the first reported use of the diode linearization technique in CMOS PA design. It shows effective improvement in linearity from gain compression and ACPR measured results. Measurements are performed by using an FR-4 PCB test fixture. The fabricated power amplifier exhibits an output power of 20 dBm and a power-added efficiency as high as 28%. The obtained PA performances demonstrate the standard CMOS process potential for medium power RF amplification at 2.4 GHz wireless communication band.

Abstracts

Low cost microwave oscillator using substrate integrated waveguide cavity

Y. Cassivi and K. Wu. "Low cost microwave oscillator using substrate integrated waveguide cavity." 2003 Microwave and Wireless Components Letters 13.2 (Feb. 2003 [MWCL]): 48-50.

A topology is proposed for designing a low-cost microwave oscillator. This new feedback oscillator makes use of a substrate integrated waveguide (SIW) cavity that acts as a frequency selector as well as a feedback-coupling device. The oscillator is stabilized by using an injection-locking scheme. A 12.02-GHz oscillator prototype was designed. Experimental results for phase noise, locking range, and quality factor of the new circuit are presented. An external Q of 178 was measured.

Abstracts

Transmission line models for negative refractive index media and associated implementations without excess resonators

G.V. Eleftheriades, O. Siddiqui and A.K. Iyer. "Transmission line models for negative refractive index media and associated implementations without excess resonators." 2003 Microwave and Wireless Components Letters 13.2 (Feb. 2003 [MWCL]): 51-53.

Recently, three-dimensional composite periodic media comprising split-ring resonators (SRR) and thin wires have been shown to exhibit a negative refractive index in the frequency range around the SRR resonance. In this letter, we propose transmission line models for studying and interpreting the electromagnetic propagation behavior of such materials. Based on these equivalent transmission line models, we show that by periodically loading a network of transmission lines with series capacitors and shunt inductors, a negative refractive index medium can be synthesized without excess resonators, thus leading to wideband behavior. These proposed media have tailorable properties over a broad frequency range. Moreover, they are completely planar, frequency scalable, more compact, and easier to implement for RF/microwave circuit applications than their SRR/wire counterparts.

Abstracts

A harmonic suppression antenna for an active integrated antenna

Sewoong Kwon, Byoung Moo Lee, Young Joong Yoon, Woo Young Song and Jong-Gwan Yook. "A harmonic suppression antenna for an active integrated antenna." 2003 Microwave and Wireless Components Letters 13.2 (Feb. 2003 [MWCL]): 54-56.

An inset-fed antenna with a shorting pin and slots is presented for harmonic suppression of an active integrated antenna. Its fundamental resonant frequency is 5.8 GHz. At fundamental and harmonic frequencies, return loss and radiation characteristics are measured and compared with those of the conventional microstrip patch antenna. The second and third harmonic return losses of the proposed antenna are suppressed to 6.7 dB and 17.7 dB with respect to the conventional patch antenna, respectively.

Abstracts

A novel radiation pattern and frequency reconfigurable single turn square spiral microstrip antenna

G.H. Huff, J. Feng, S. Zhang and J.T. Bernhard. "A novel radiation pattern and frequency reconfigurable single turn square spiral microstrip antenna." 2003 Microwave and Wireless Components Letters 13.2 (Feb. 2003 [MWCL]): 57-59.

This paper presents a novel pattern and frequency reconfigurable microstrip antenna that uses switched connections. The basic antenna operates with linear polarization around 3.7 GHz. One set of connections provides a re-directed radiation pattern while maintaining a common operating impedance bandwidth with the baseline configuration. The second set of connections results in operation at a higher frequency band at 6 GHz with broadside patterns. Measured results of the three antenna configurations are provided. Potential applications of this reconfigurability and directions for future work are discussed.

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A method for microwave characterization of LiNbO/sub 3/ modulators

A. Cossu, G. Gilardi, P. Tommasino, A. Trifiletti and A. Vannucci. "A method for microwave characterization of LiNbO/sub 3/ modulators." 2003 Microwave and Wireless Components Letters 13.2 (Feb. 2003 [MWCL]): 60-62.

A procedure to extract the S-parameters of both the active section and the input and output coplanar tapers of Mach-Zehnder modulators is proposed. The S-parameters of the three sections of the modulator have been successfully extracted up to 30 GHz from measurements and EM simulations performed on proper test structures.

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Analysis of shielded membrane microstrip line using the finite-difference time-domain method

Yun Kwon Nam and Dong Chul Park. "Analysis of shielded membrane microstrip line using the finite-difference time-domain method." 2003 Microwave and Wireless Components Letters 13.2 (Feb. 2003 [MWCL]): 63-65.

A simple and efficient analysis method of the shielded membrane microstrip (SMM) line using the finite-difference time-domain (FDTD) method is presented. New FDTD equations are derived using the contour path FDTD concept for the Yee cell which contains three thin dielectric sheets of membrane. The characteristic impedance and the effective dielectric constant of the SMM line are calculated using our proposed method. The method is validated by comparison with the results shown by Robertson et al. [1996].

Abstracts

A broadband transition between microstrip and coplanar stripline

Tsenchieh Chiu and Yu-Shing Shen. "A broadband transition between microstrip and coplanar stripline." 2003 Microwave and Wireless Components Letters 13.2 (Feb. 2003 [MWCL]): 66-68.

A design for a broadband microstrip-to-coplanar-stripline transition using broadside-coupled strips is proposed in this letter. Two transitions are designed in back-to-back configuration and the insertion loss is optimized in X-band (8.2 GHz/spl sim/12.4 GHz). Both simulation and measurement are in good agreement. The measured bandwidth for 1 dB insertion loss and 20 dB return loss is from 6.9 GHz to 12.4 GHz.

Abstracts

Auxiliary differential equation formulation: an efficient implementation of the perfectly matched layer

O. Ramadan. "Auxiliary differential equation formulation: an efficient implementation of the perfectly matched layer." 2003 Microwave and Wireless Components Letters 13.2 (Feb. 2003 [MWCL]): 69-71.

An efficient algorithm for implementing the perfectly matched layer (PML) is presented for truncating finite-difference time-domain domains. The algorithm is based on incorporating the auxiliary differential equation method into the PML formulations. Simple, unsplit-field and material independent PML formulations are obtained. Two dimensional numerical examples are included to validate the proposed formulations.

Abstracts

An efficient PML implementation for the ADI-FDTD method

Shumin Wang and F.L. Teixeira. "An efficient PML implementation for the ADI-FDTD method." 2003 Microwave and Wireless Components Letters 13.2 (Feb. 2003 [MWCL]): 72-74.

A novel implementation of the perfectly matched layer (PML) absorber for the alternating-direction implicit finite-difference time-domain method is proposed and implemented. It is shown that, compared to the traditional PML implementation, the performance of the proposed PML is more efficient for large Courant numbers.

Abstracts

Significantly enhanced isolation of SPDT switch using punched hole structure

Sang-Hyun Park and Young-Wan Choi. "Significantly enhanced isolation of SPDT switch using punched hole structure." 2003 Microwave and Wireless Components Letters 13.2 (Feb. 2003 [MWCL]): 75-77.

Experimental results of a series-connected single pole double throw (SPDT) switch in a novel punched-hole-structure (PHS) are presented. In the PHS, the dielectric and ground layers are punched out in a specific size from the microstrip line, and diodes are placed over the punched holes to connect the microstrip lines. Radio performance of the novel SPDT switch can be improved due to additional L-C parameters introduced by the punched holes. When the radius of punched hole is the same as the width of microstrip line, 0.03 /spl lambda//sub c/ (/spl lambda//sub c/: wavelength of 2.7 GHz), the implemented SPDT switch shows an increase of about 20-dB isolation between two output ports, compared to a conventional SPDT switch without holes. Furthermore, by tuning capacitors around the punched holes, the operating frequency band can be widened by approximately 250% in the SPDT.

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"Patent abstracts (Feb. 2003 [MWCL])." 2003 Microwave and Wireless Components Letters 13.2 (Feb. 2003 [MWCL]): 78-88.

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Millimeter-wave high-power 0.25-/spl mu/m gate-length AlGaN/GaN HEMTs on SiC substrates

R.S. Schwindt, V. Kumar, A. Kuliev, G. Simin, J.W. Yang, M.A. Khan, M.E. Muir and I. Adesida. "Millimeter-wave high-power 0.25-/spl mu/m gate-length AlGaN/GaN HEMTs on SiC substrates." 2003 Microwave and Wireless Components Letters 13.3 (Mar. 2003 [MWCL]): 93-95.

Reports on the CW power performance at 20 and 30 GHz of 0.25 /spl mu/m /spl times/ 100 /spl mu/m AlGaN/GaN high electron mobility transistors (HEMTs) grown by MOCVD on semi-insulating SiC substrates. The devices exhibited current density of 1300 mA/mm, peak dc extrinsic transconductance of 275 mS/mm, unity current gain cutoff (f/sub T/) of 65 GHz, and maximum frequency of oscillation (f/sub max/) of 110 GHz. Saturated output power at 20 GHz was 6.4 W/mm with 16% power added efficiency (PAE), and output power at 1-dB compression at 30 GHz was 4.0 W/mm with 20% PAE. This is the highest power reported for 0.25-/spl mu/m gate-length devices at 20 GHz, and the 30 GHz results represent the highest frequency power data published to date on GaN-based devices.

Abstracts

GaAs HEMT low-noise cryogenic amplifiers from C-band to X-band with 0.7-K/GHz noise temperature

C. Risacher and V. Belitsky. "GaAs HEMT low-noise cryogenic amplifiers from C-band to X-band with 0.7-K/GHz noise temperature." 2003 Microwave and Wireless Components Letters 13.3 (Mar. 2003 [MWCL]): 96-98.

Cryogenic low-noise two-stage amplifiers were developed for frequency bands of 3.4-4.6 GHz, 4-8 GHz, and 8-9 GHz using commercial GaAs high electron mobility transistor. The performances are in very good agreement with simulations, and at a cryogenic temperature of 12 K, input noise temperatures get as low as 0.6 K/GHz (2.8 K for the 3.4-4.6 GHz LNA and 5 K for the 4-8 GHz and 8-9 GHz LNAs). Gain ranges from 25 to 28 dB. Ultralow noise temperature, low-power consumption, high reliability, and reproducibility make these devices adequate for series production and receiver arrays in, e.g., telescopes.

Abstracts

Power results at 4 GHz of AlGaN/GaN HEMTs on high resistive silicon [111] substrate

N. Vellas, C. Gaquiere, A. Minko, V. Hoel, J.C. De Jaeger, Y. Cordier and F. Semond. "Power results at 4 GHz of AlGaN/GaN HEMTs on high resistive silicon [111] substrate." 2003 Microwave and Wireless Components Letters 13.3 (Mar. 2003 [MWCL]): 99-101.

The high potential at microwave frequencies of AlGaN/GaN high electron mobility transistors (HEMTs) on high resistive silicon [111] substrate for power applications has been demonstrated in this letter. For the first time, an output power density close to 1.8 W/mm and an associated power added efficiency of 32% have been measured on a 2 /spl times/ 50 /spl times/ 0.5 /spl mu/m/sup 2/ HEMT with a linear power gain of 16 dB. These results constitute the state of the art.

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Improved HBT linearity with a "post-distortion"-type collector linearizer

Yong-Joon Jeon, Hyung-Wook Kim, Min-Seok Kim, Young-Sik Ahn, Jong-Won Kim, Ji-Youn Choi, Doo-Chan Jung and Jin-Ho Shin. "Improved HBT linearity with a "post-distortion"-type collector linearizer." 2003 Microwave and Wireless Components Letters 13.3 (Mar. 2003 [MWCL]): 102-104.

An HBT amplifier with a "post-distortion"-type linearizer utilizing a base-collector junction diode shows more than 8-dB improvement of adjacent channel power ratio, and the collector linearizer comprising a reverse biased base-collector junction diode requires no additional dc power consumption and has no deterioration of RF performance. The linearization technique of post-distortion compensates the nonlinearity of HBTs, which arises from the C/sub bc/ variation due to a large-signal swing.

Abstracts

Exact analysis of maximum available gain and unilateral gain including phase angle of S21

Yu-Hsun Huang, Chi-Chung Chien and G.D. Vendelin. "Exact analysis of maximum available gain and unilateral gain including phase angle of S21." 2003 Microwave and Wireless Components Letters 13.3 (Mar. 2003 [MWCL]): 105-107.

Exact formulae are presented for both maximum available gain (G/sub ma/) and unilateral gain (U), which include both the magnitude and phase angle of the S/sub 21/ parameter. The result for G/sub ma/ is not unique since there are many possible solutions to simultaneously match S/sub 11/ and S/sub 22/ when k>1. For the phase angle of U, the result tends to become 180/spl deg/ when using the topology of a variable coupler, a line stretcher, and a feedback amplifier. From the verifications, an amplifier using the unilateralizing technique will achieve 4-6 dB higher gain than that of the G/sub ma/ amplifier.

Abstracts

Electromagnetic crystal (EMXT) waveguide band-stop filter

Hao Xin, A. Higgins, J. Hacker, Moonil Kim and M. Rosker. "Electromagnetic crystal (EMXT) waveguide band-stop filter." 2003 Microwave and Wireless Components Letters 13.3 (Mar. 2003 [MWCL]): 108-110.

An electromagnetic crystal (EMXT) with a bandgap around 35 GHz is used as the top and/or bottom walls of a rectangular waveguide. Because of its bandgap, such an EMXT waveguide is a very effective band-stop filter with the rejection band centered at 35 GHz. More than 70 dB of isolation for the rejection band and less than 2 dB of insertion loss for the pass band are measured. Finite element simulation of the EMXT band-stop filter agrees very well with measurements. Using tunable EMXT walls, a band-stop filter with adjustable center frequency and bandwidth can also be realized.

Abstracts

All-planar dual-mode asymmetric filters at Ka-band

Ho-Chung Chen and C.-K.C. Tzuang. "All-planar dual-mode asymmetric filters at Ka-band." 2003 Microwave and Wireless Components Letters 13.3 (Mar. 2003 [MWCL]): 111-113.

All-planar dual-mode inductive asymmetric filters utilizing new planar microstrip to dielectric-loaded rectangular waveguide transitions at Ka-band were presented and built in this work. The conventional, three-dimensional metallic rectangular waveguide dual-mode filters can be implemented into mature PCB technology with a much easier and lower-cost fabrication process on the basis of the all-planar feature of the transition. This work demonstrates two Ka-band filter examples with center frequency at 31 GHz and bandwidth at 1 GHz and 2 GHz. The measured minimum insertion loss of each case was, respectively, 2.68 and 1.12 dB, with greater than 10 dB return loss in the passband. Moreover, the measured side-band attenuation (near passband) is larger than 30 dB due to the transmission zeros at each side of the passband.

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Uniplanar compact wideband bandstop filter

A. Gorur and C. Karpuz. "Uniplanar compact wideband bandstop filter." 2003 Microwave and Wireless Components Letters 13.3 (Mar. 2003 [MWCL]): 114-116.

A uniplanar wideband bandstop filter is proposed using two bent open-end stubs. The proposed filter consists of the bent connecting line of /spl lambda//sub g//2 between two bent /spl lambda//sub g//4 stubs, which results in wideband design with a rejection bandwidth of 90% at 2.05 GHz. Further, the connecting line and stubs have the same characteristic impedance. The proposed filter compared to the conventional one is also more compact. The area of the novel filter is (/spl lambda//sub g//4)/sup 2/ at the center frequency of the stopband, while the area of the filter realized using the nonbent stubs and connecting line is 2(/spl lambda//sub g//4)/sup 2/ for the same stopband characteristics.

Abstracts

At least N+1 finite transmission zeros using frequency-variant negative source-load coupling

Sanghoon Shin and R.V. Snyder. "At least N+1 finite transmission zeros using frequency-variant negative source-load coupling." 2003 Microwave and Wireless Components Letters 13.3 (Mar. 2003 [MWCL]): 117-119.

A second-order cross-coupled combline filter which has three finite transmission zeros is presented. The problem of the frequency-invariant coupling in a real circuit is introduced. To make extra transmission zeros, a top metalized dielectric block is used.

Abstracts

Micromachined reconfigurable out-of-plane microstrip patch antenna using plastic deformation magnetic actuation

J.-C. Langer, J. Zou, C. Liu and J.T. Bernhard. "Micromachined reconfigurable out-of-plane microstrip patch antenna using plastic deformation magnetic actuation." 2003 Microwave and Wireless Components Letters 13.3 (Mar. 2003 [MWCL]): 120-122.

A new reconfigurable out-of-plane microstrip patch antenna is presented. Using micromachining processes, a microstrip antenna designed for operation around 26 GHz is covered with a thin layer of magnetic material and released from the substrate. Application of an external DC magnetic field causes plastic deformation of the antenna at the boundary point where it is attached to the microstrip feed line, resulting in a patch positioned at an angle over the substrate. Frequency and pattern reconfigurability are demonstrated with measurements. Results indicate that versions of this structure may be used to expand or enhance the capabilities of traditional planar arrays.

Abstracts

Multifrequency microstrip patch antenna using multiple stacked elements

J. Anguera, G. Font, C. Puente, C. Borja and J. Soler. "Multifrequency microstrip patch antenna using multiple stacked elements." 2003 Microwave and Wireless Components Letters 13.3 (Mar. 2003 [MWCL]): 123-124.

A multifrequency microstrip patch antenna comprised of a driven patch and a plurality of parasitic elements placed underneath a driven patch is proposed. The antenna features a multifrequency behavior (five operating band) with similar gain.

Abstracts

Meander-slot and U-slot antenna arrays for wide-band spatial power combiners

A.B. Yakovlev, M.V. Lukic, A.Z. Elsherbeni, C.E. Smith and M.B. Steer. "Meander-slot and U-slot antenna arrays for wide-band spatial power combiners." 2003 Microwave and Wireless Components Letters 13.3 (Mar. 2003 [MWCL]): 125-127.

In this work, we present a multilayered waveguide transition containing several interacting printed antenna arrays for spatial power combining applications. Narrow-band resonant rectangular slot antennas used in earlier designs are replaced by meander-slot antennas and their modifications, in order to increase the frequency bandwidth and efficiency of the system. Numerical results for finite arrays of meander-slot and U-slot antennas show significant advantages in scattering characteristics in comparison to traditionally used rectangular slot antenna arrays.

Abstracts

A simple, nearly perfectly matched layer for general electromagnetic media

S.A. Cummer. "A simple, nearly perfectly matched layer for general electromagnetic media." 2003 Microwave and Wireless Components Letters 13.3 (Mar. 2003 [MWCL]): 128-130.

A new implementation of the perfectly matched layer (PML) absorbing boundary condition is presented. This formulation is designed such that the partial differential equations in the PML are identical to those in the regular medium for any linear electromagnetic material. This makes this method particularly simple to implement, especially in dispersive and anisotropic materials. We call this method the nearly perfectly matched layer (NPML) because it employs variable changes that are not strictly exact when the PML conductivity is spatially variant. Comparisons with the convolutional PML in a Lorentz dielectric show that the NPML is as effective an absorber as exact PML formulations.

Abstracts

On the numerical errors induced by the space-time discretization in the LE-FDTD method

F. Alimenti and L. Roselli. "On the numerical errors induced by the space-time discretization in the LE-FDTD method." 2003 Microwave and Wireless Components Letters 13.3 (Mar. 2003 [MWCL]): 131-133.

In this work, the accuracy of the lumped element finite-difference time-domain (LE-FDTD) method is discussed in the particular case of a planar distribution of equal resistors. Following the von Neumann technique and assuming a uniform grid, the effective impedance of the lumped resistor has been rigorously derived in a closed form. The result obtained has been compared with the LE-FDTD simulation of a simple test structure. This structure consists of an infinitely long parallel-plate waveguide loaded with the planar distribution of resistors. The excellent agreement obtained validates the approach showing a dependence of the effective resistor impedance on spatial and temporal discretization steps.

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Optimized design of unique miniaturized planar baluns for wireless applications

B.P. Kumar and G.R. Branner. "Optimized design of unique miniaturized planar baluns for wireless applications." 2003 Microwave and Wireless Components Letters 13.3 (Mar. 2003 [MWCL]): 134-136.

The high frequency balun network has proven to be an important component in the design of certain RF and microwave system topologies-especially in wireless communications system architectures. This work describes the optimized design of planar balun circuits which operate in the 900 MHz wireless frequency band. The designs are an outgrowth of extensive in-depth computer analysis and fabrication and testing of a multiplicity of circuit realizations. A novel feature of these designs is their compact size which is almost one sixteenth that of conventional quarter wavelength-coupled line designs. Size reduction and excellent coupling are effectively obtained by novel use of discrete capacitors.

Click on title for a complete paper.

Abstracts

A second-order microwave differentiator

Ching-Wen Hsue, Tun-Ruey Cheng and Hwan-Mei Chen. "A second-order microwave differentiator." 2003 Microwave and Wireless Components Letters 13.3 (Mar. 2003 [MWCL]): 137-139.

A novel approach consisting of discrete signal processing (DSP) technique and optimization method is developed to implement a second-order differentiator at microwave frequencies. To utilize the transfer function of a second-order differentiator developed in the DSP study, we formulate the chain scattering parameters of transmission lines in the Z domain. In particular, it is shown that shunt stubs combining with nonuniform serial lines lead to the realization of a second-order microwave differentiator. Some examples are presented to illustrate the validity of this approach.

Abstracts

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"Patent abstracts (Mar. 2003 [MWCL])." 2003 Microwave and Wireless Components Letters 13.3 (Mar. 2003 [MWCL]): 140-148.

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A 900-MHz 1.5-V CMOS voltage-controlled oscillator using switched resonators with a wide tuning range

Zhenbiao Li and K. O. "A 900-MHz 1.5-V CMOS voltage-controlled oscillator using switched resonators with a wide tuning range." 2003 Microwave and Wireless Components Letters 13.4 (Apr. 2003 [MWCL]): 137-139.

A 900-MHz fully integrated VCO was fabricated in a 0.18-/spl mu/m foundry CMOS process. Under 1.5 V power supply, this VCO can be tuned from 667 MHz to 1156 MHz which corresponds to a 53.6% tuning range. The VCO has nearly constant phase noise over the whole tuning frequency, credit to the switched resonators used in this VCO. The phase noise at a 600 kHz offset is -123.1 dBc/Hz at 1125 MHz center frequency and -124.2 dBc/Hz at 667 MHz center frequency.

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Improved RF modeling techniques for enhanced AlGaN/GaN HFETs

S. Nuttinck, E. Gebara, J. Laskar, J. Shealy and M. Harris. "Improved RF modeling techniques for enhanced AlGaN/GaN HFETs." 2003 Microwave and Wireless Components Letters 13.4 (Apr. 2003 [MWCL]): 140-142.

Modeling procedures of an AlGaN/GaN HFET that incorporate the effects of both a GaN cap layer and an AlN sub-buffer layer are presented. A single off-state measurement method to extract all eight parasitic elements of an enhanced HFET has been successfully applied. In addition, procedures to model the nonlinear drain-to-source current characteristics featuring a kink are described.

Abstracts

A 77-GHz MMIC power amplifier for automotive radar applications

Hong-Yeh Chang, Huei Wang, M. Yu and Yonghui Shu. "A 77-GHz MMIC power amplifier for automotive radar applications." 2003 Microwave and Wireless Components Letters 13.4 (Apr. 2003 [MWCL]): 143-145.

A MMIC 77-GHz two-stage power amplifier (PA) is reported in this letter. This MMIC chip demonstrated a measured small signal gain of over 10 dB from 75 GHz to 80 GHz with 18.5-dBm output power at 1 dB compression. The maximum small signal gain is above 12 dB from 77 to 78 GHz. The saturated output power is better than 21.5 dBm and the maximum power added efficiency is 10% between 75 GHz and 78 GHz. This chip is fabricated using 0.1-/spl mu/m AlGaAs/InGaAs/GaAs PHEMT MMIC process on 4-mil GaAs substrate. The output power performance is the highest among the reported 4-mil MMIC GaAs HEMT PAs at this frequency and therefore it is suitable for the 77-GHz automotive radar systems and related transmitter applications in W-band.

Abstracts

A 2-bit miniature X-band MEMS phase shifter

Guan-Leng Tan, R.E. Mihailovich, J.B. Hacker, J.F. DeNatale and G.M. Rebeiz. "A 2-bit miniature X-band MEMS phase shifter." 2003 Microwave and Wireless Components Letters 13.4 (Apr. 2003 [MWCL]): 146-148.

The design and performance of a compact low-loss X-band true-time-delay (TTD) MEMS phase shifter fabricated on 8-mil GaAs substrate is described. A semi-lumped approach using microstrip transmission lines and metal-insulator-metal (MIM) capacitors is employed for the delay lines in order to both reduce circuit size as well as avoid the high insertion loss found in typical miniaturized designs. The 2-bit phase shifter achieved an average insertion loss of -0.70 dB at 9.45 GHz, and an associated phase accuracy of /spl plusmn/1.3/spl deg/. It occupies an area of only 5 mm/sup 2/, which is 44% the area of the smallest known X-band MEMS phase shifter . The phase shifter operates over 6-14 GHz with a return loss of better than -14 dB.

Abstracts

High-frequency noise in AlGaN/GaN HFETs

S. Nuttinck, E. Gebara, J. Laskar and M. Harris. "High-frequency noise in AlGaN/GaN HFETs." 2003 Microwave and Wireless Components Letters 13.4 (Apr. 2003 [MWCL]): 149-151.

We present in this letter the benefits of GaN-based electronic devices for low-noise MMICs. A temperature-dependent two-temperature noise model for AlGaN/GaN HFETs is implemented on a wide range of bias conditions. This study enables to access the device high-frequency noise parameters, and allow a comparison of the noise performances with SiC and GaAs technologies.

Abstracts

A new class of nonuniform, broadband, nonsymmetrical rectangular coaxial-to-microstrip directional couplers for high power applications

V. Teppati and A. Ferrero. "A new class of nonuniform, broadband, nonsymmetrical rectangular coaxial-to-microstrip directional couplers for high power applications." 2003 Microwave and Wireless Components Letters 13.4 (Apr. 2003 [MWCL]): 152-154.

An innovative class of coaxial-to-microstrip broad-band high power directional couplers is studied. The new devices overcome the drawbacks of both stripline and coaxial couplers and allow simple and low cost mechanical construction. In this letter, we present the design, realization and characterization of a set of broad-band (900 MHz to 5.5 GHz) low coupling (-30 dB, -40 dB) directional couplers with directivity of more than 10 dB over the whole band, demonstrating good agreement between predicted and obtained performances.

Abstracts

Dispersion analysis of a microstrip-based negative refractive index periodic structure

A. Grbic and G.V. Eleftheriades. "Dispersion analysis of a microstrip-based negative refractive index periodic structure." 2003 Microwave and Wireless Components Letters 13.4 (Apr. 2003 [MWCL]): 155-157.

We present the complete band structure of a negative refractive index metamaterial based on the concept of dual transmission lines. The metamaterial is a two-dimensional (2-D) microstrip periodic structure that has cell dimensions much smaller than the wavelength of operation. It can therefore be considered as an effective medium. First, the dispersion characteristics of the metamaterial are explained by way of a 2-D loaded transmission line representation. Subsequently, full-wave analysis is utilized to reveal additional modes that can be excited in the metamaterial.

Abstracts

Unified 3-D definition of CPW- and CSL-mode characteristic impedances of coplanar waveguide using MOM-SOC technique

Lie Zhu. "Unified 3-D definition of CPW- and CSL-mode characteristic impedances of coplanar waveguide using MOM-SOC technique." 2003 Microwave and Wireless Components Letters 13.4 (Apr. 2003 [MWCL]): 158-160.

Characteristic impedances of two dominant modes, even CPW- and odd CSL-mode, in the coplanar waveguide (CPW) are defined and characterized with resorting to the network equivalence of a finitely extended CPW line in a three-dimensional (3-D) method of moments (MoM) platform. By introducing the port model with a pair of even or odd symmetrical current sources, a determinant MoM scheme is at first formulated to establish the explicit relationship among the port currents and voltages. A short-open calibration (SOC) technique is then accommodated in this MoM to remove the parasitic port discontinuity effects. Our results are compared with those of the two-dimensional (2-D) definition and demonstrate for the first time the equivalent 3-D characteristic impedances of both CPW- and CSL-mode.

Abstracts

A differential active patch antenna element for array applications

T. Brauner, R. Vogt and W. Bachtold. "A differential active patch antenna element for array applications." 2003 Microwave and Wireless Components Letters 13.4 (Apr. 2003 [MWCL]): 161-163.

This letter describes the implementation of an active receiving antenna at 5-6 GHz. An aperture-coupled patch antenna is designed to provide a differential interface toward monolithically integrated circuits. The integration with a low-noise amplifier is shown. The proposed structure offers new advantages for the construction of compact and robust adaptive antenna arrays. Measurements show around 5.5 dBi antenna gain with a cross-polarization below -27 dB. The differential low-noise amplifier provides more than 10 dB gain improvement.

Abstracts

Reduced order models of refined Yee's cells

L. Kulas and M. Mrozowski. "Reduced order models of refined Yee's cells." 2003 Microwave and Wireless Components Letters 13.4 (Apr. 2003 [MWCL]): 164-166.

This letter introduces a new approach to increasing the accuracy of Finite Difference (FD) methods by means of local mesh refinement. The area slightly larger than single Yee's cell is covered by dense mesh and its macromodel is created by the Model Order Reduction (MOR) of state equations in the frequency domain. Such macromodels are subsequently used in the Finite Difference Time Domain (FDTD) or the Finite Difference Frequency Domain (FDFD) analysis of the entire structure. Unlike a popular subgridding technique, the model order reduction approach does not affect the stability or convergence properties of underlying numerical schemes.

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Resonance stub effect in a transition from a through via hole to a stripline in multilayer PCBs

T. Kushta, K. Narita, T. Kaneko, T. Saeki and H. Tohya. "Resonance stub effect in a transition from a through via hole to a stripline in multilayer PCBs." 2003 Microwave and Wireless Components Letters 13.5 (May 2003 [MWCL]): 169-171.

We present results of study of the resonance stub effect occurring in a transition from a through via hole to a stripline in a multilayer printed circuit board (PCB). This effect for via structures including ground vias is estimated by numerical simulations and measurements in the frequency band up to 20 GHz. Ways to alleviate problems in the design of interconnections embedded in multilayer PCBs due to the resonance stub effect and possible applications of the effect in microwave filtering are traced.

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A taper filtering finline at millimeter wavelengths for broadband harmonic multiplication

T. Decoopman, X. Melique, O. Vanbesien and D. Lippens. "A taper filtering finline at millimeter wavelengths for broadband harmonic multiplication." 2003 Microwave and Wireless Components Letters 13.5 (May 2003 [MWCL]): 172-174.

The design of a taper filtering finline aimed at simultaneously mode matching and frequency selecting multifrequency signal is presented. Based on the superimposition of a smoothly corrugated taper and a sinusoidal-shaped filter, a low insertion loss (L<0.1 dB) at W band [75:110] GHz and a high rejected stop band in the third harmonic range (R band [225:330] GHz) are demonstrated. Both sections are numerically optimized using chain matrix techniques and assessed by means of full three-dimensional electromagnetic simulations.

Abstracts

Compact microstrip resonators for 900 MHz frequency band

M.G. Banciu, R. Ramer and A. Ioachim. "Compact microstrip resonators for 900 MHz frequency band." 2003 Microwave and Wireless Components Letters 13.5 (May 2003 [MWCL]): 175-177.

A technique to reduce the size of planar resonators is investigated using a transmission line model and a finite-difference time-domain (FDTD) method. New miniaturized square microstrip resonators are proposed for 900 MHz band. The resonators offer low impedance sections leading to a better handling of power. The feasibility of compact filters using the proposed resonators is demonstrated. The input/output coupling lines of a two-pole filter have been positioned in a way that produces a filter response with transmission zeros on the both sides of the pass-band. Sharper skirts and higher out-of-band rejection are obtained for four-pole filters with cross-coupled resonators.

Abstracts

Modified Wilkinson power divider for nth harmonic suppression

Kun-Hui Yi and Bongkoo Kang. "Modified Wilkinson power divider for nth harmonic suppression." 2003 Microwave and Wireless Components Letters 13.5 (May 2003 [MWCL]): 178-180.

This paper presents a structure of the Wilkinson power divider that can suppress the nth harmonic output. The power divider consists of two /spl lambda//4n open stubs, which are located at the center of /spl lambda//4 branches and a parallel connection of a resistor and an inductor, which shunts the output ports. Experimental results show that this power divider suppresses the third harmonic component to less than -40 dB, while maintaining the characteristics of a conventional Wilkinson power divider; featuring an equal power split, a simultaneous impedance matching at all ports and a good isolation between output ports. These results agree quite well with the simulation results.

Abstracts

A new method developed in measuring the dielectric constants of metallic nanoparticles by a microwave double-cavity dielectric resonator

J.H. Liu, C.L. Chen, H.T. Lue and J.T. Lue. "A new method developed in measuring the dielectric constants of metallic nanoparticles by a microwave double-cavity dielectric resonator." 2003 Microwave and Wireless Components Letters 13.5 (May 2003 [MWCL]): 181-183.

A microwave double dielectric resonator is implemented to measure the dielectric constants of nano-metallic powders. The metallic nanoparticles prepared by vacuum evaporation in inert gas are collected and mixed with alumina powder to fill the inner hole of a sapphire disc by which the resonant frequency and Q factor are measured at the TE/sub 011/ mode to derive the complex dielectric constant.

Abstracts

The 3-D multidomain pseudospectral time-domain method for wideband simulation

Gang Zhao, Yan Qing Zeng and Q.H. Liu. "The 3-D multidomain pseudospectral time-domain method for wideband simulation." 2003 Microwave and Wireless Components Letters 13.5 (May 2003 [MWCL]): 184-186.

A three-dimensional (3-D) multidomain pseudospectral time-domain (PSTD) method with a well-posed PML is developed as an accurate and efficient solver for Maxwell's equations in conductive and inhomogeneous media. The curved object is accurately treated by curvilinear coordinate transformation. Spatial derivatives are obtained by the Chebyshev collocation method to achieve a high-order accuracy. Numerical results show an excellent agreement with solutions obtained by the FDTD method under fine sampling.

Abstracts

A novel FDTD formulation for dispersive media

Shaobin Liu, Naichang Yuan and Jinjun Mo. "A novel FDTD formulation for dispersive media." 2003 Microwave and Wireless Components Letters 13.5 (May 2003 [MWCL]): 187-189.

A novel FDTD formulation for dispersive media called piecewise linear JE recursive convolution (PLJERC) finite-different time-domain (FDTD) method is derived using the piecewise linear approximation and the recursive convolution relationship between the current density J and the electric field E. The high accuracy and efficiency of the PLJERC method is confirmed by computing the reflection coefficients of an electromagnetic wave through a collision plasma slab in one dimension.

Abstracts

Resonance frequencies calculated efficiently with the frequency-domain TLM method

J. Hesselbarth and R. Vahldieck. "Resonance frequencies calculated efficiently with the frequency-domain TLM method." 2003 Microwave and Wireless Components Letters 13.5 (May 2003 [MWCL]): 190-192.

An algorithm is presented for the calculation of eigenresonances using the frequency-domain TLM method. It is based on sparse matrices and allows the computationally efficient treatment of large structures. The numerical effort and the accuracy of the solutions are discussed using two example structures.

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Novel periodically loaded E-plane filters

G. Goussetis and D. Budimir. "Novel periodically loaded E-plane filters." 2003 Microwave and Wireless Components Letters 13.6 (Jun. 2003 [MWCL]): 193-195.

Novel E-plane waveguide filters with periodically loaded resonators are proposed. The proposed filters make use of the slow wave effect in order to achieve improved stopband performance and size reduction of roughly 50% without introducing any complexity in the fabrication process. Numerical and experimental results are presented to validate the argument.

Abstracts

A technique for interconnecting millimeter wave integrated circuits using BCB and bump bonds

R. Carrillo-Ramirez and R.W. Jackson. "A technique for interconnecting millimeter wave integrated circuits using BCB and bump bonds." 2003 Microwave and Wireless Components Letters 13.6 (Jun. 2003 [MWCL]): 196-198.

A low cost interconnection scheme for millimeter wave modules is presented. This technique allows the integration of hybrid components using an inexpensive micromachined silicon motherboard and benzocyclobutene (BCB) films. The excellent planarity of BCB allows vias to be formed using bumps fabricated prior to BCB application. This approach eliminates the need for laser drilling, plasma etching, and plated holes. Several representative GaAs pHEMT's were packaged using this technique. Measurements show minimal performance degradation from 1 GHz to 48 GHz.

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Abstracts

A dual-gate FET subharmonic injection-locked self-oscillating active integrated antenna for RF transmission

Yan Chen and Zhizhang Chen. "A dual-gate FET subharmonic injection-locked self-oscillating active integrated antenna for RF transmission." 2003 Microwave and Wireless Components Letters 13.6 (Jun. 2003 [MWCL]): 199-201.

A planar subharmonic injection-locked GaAs dual-gate MESFET (DGMESFET) self-oscillating active integrated antenna (AIA) is presented for RF transmission. The oscillation is obtained with one gate of the DGMESFET at 2.052 GHz, and the stabilization of the oscillation is achieved by injecting a small subharmonic low-noise signal into the other gate of the DGMESFET. Phase noise was measured to be -98 dBc/Hz at the 10 KHz offset. The structure was shown to have the potential in performing triple functions of radiation, low noise oscillation and mixing (or modulation), a capability required for low cost wireless systems such as RFID tags and indoor positioning systems.

Abstracts

A V-band up-converting InP HEMT active mixer with low LO-power requirements

A. Orzati, F. Robin, H. Meier, H. Benedikter and W. Bachtold. "A V-band up-converting InP HEMT active mixer with low LO-power requirements." 2003 Microwave and Wireless Components Letters 13.6 (Jun. 2003 [MWCL]): 202-204.

In this letter, we present a monolithically integrated up-converting active mixer that shifts a signal in the 16 GHz range up to the V-band using a 48 GHz local oscillator (LO) signal. The circuit was realized with the 0.2 /spl mu/m InP HEMT in-house process of the Swiss Federal Institute of Technology in Zurich using coplanar-waveguide technology. Measurements of the fabricated circuit show a peak conversion gain of 1 dB at 64.5 GHz for -1.7 dBm LO power, LO suppression better than 30 dB and input third-order intercept point of -1.6 dBm. This mixer will be employed in the signal up-conversion path of a 60 GHz transceiver for indoor wireless LANs.

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Abstracts

A low-power highly linear cascoded multiple-gated transistor CMOS RF amplifier with 10 dB IP3 improvement

Tae Wook Kim, Bonkee Kim, I. Nam, Beomkyu Ko and Kwyro Lee. "A low-power highly linear cascoded multiple-gated transistor CMOS RF amplifier with 10 dB IP3 improvement." 2003 Microwave and Wireless Components Letters 13.6 (Jun. 2003 [MWCL]): 205-207.

A low-power highly linear CMOS RF amplifier circuit composed of a Multiple-Gated common-source FET TRansistor (MGTR) in cascode configuration is reported. In a MGTR amplifier, linearity is improved by using transconductance linearization which can be achieved by canceling the negative peak value of g/sub m/" of the main transistor with the positive one in the auxiliary transistor having a different size and gate drive combined in parallel. This enhancement, however, is limited by the distortion originated from the combined influence of g/sub m/' and harmonic feedback, which can greatly be reduced by the cascoding MGTR output. IP3 improvement as large as 10 dB has been obtained from an experimental RF amplifier designed at 900 MHz and fabricated using 0.35 /spl mu/m BiCMOS technology using only CMOS at a similar power consumption and gain as those obtainable from conventional cascode single gate transistor amplifiers.

Abstracts

Noise analysis of a photoreceiver using a P-I-N and GaAs HBT distributed amplifier combination

Xizhen Tian, A.P. Freundorfer and L. Roy. "Noise analysis of a photoreceiver using a P-I-N and GaAs HBT distributed amplifier combination." 2003 Microwave and Wireless Components Letters 13.6 (Jun. 2003 [MWCL]): 208-210.

A noise analysis for a common-collector-cascode traveling wave HBT preamplifier is developed. The photoreceiver, consisting of a P-I-N and GaAs HBT MMIC distributed amplifier, was implemented using Nortel's f/sub T/=70 GHz GaAs HBT process, is the first to have a P-I-N mounted on the MMIC chip. The P-I-N preamplifier, having a measured bandwidth of 22 GHz, displayed a measured average equivalent input noise current density of 24 pA//spl radic/Hz. Good agreement was obtained between the predicted and measured noise performance.

Abstracts

Voltage and frequency dependent dielectric properties of BST-0.5 thin films on alumina substrates

S. Delprat, M. Ouaddari, F. Vidal, M. Chaker and Ke Wu. "Voltage and frequency dependent dielectric properties of BST-0.5 thin films on alumina substrates." 2003 Microwave and Wireless Components Letters 13.6 (Jun. 2003 [MWCL]): 211-213.

Dielectric properties of Ba/sub 0.5/Sr/sub 0.5/TiO/sub 3/ (BST-0.5) polycrystalline thin films, deposited on alumina substrates by means of reactive pulsed laser deposition (PLD), were measured at GHz frequencies using an interdigital capacitor (IDC). By applying a voltage up to 40 V between the two groups of fingers at room temperature, a high tunability of /spl sim/27% was achieved at 5 GHz. A relative dielectric constant of /spl sim/500 (consistent with the low-frequency IDC measurements) has been obtained using coplanar waveguides by means of the through-reflect-line (TRL) analysis combined with either a conformal mapping model or a full wave calculation. The BST loss tangent was estimated as /spl sim/0.05 in the range 3-16 GHz.

Abstracts

Coplanar-waveguide tandem couplers with backside conductor

Tien-Yu Chang, Chun-Lin Liao and Chun Hsiung Chen. "Coplanar-waveguide tandem couplers with backside conductor." 2003 Microwave and Wireless Components Letters 13.6 (Jun. 2003 [MWCL]): 214-216.

Novel tight coplanar-waveguide (CPW) directional couplers are developed by connecting two loose couplers in tandem configuration. In this study, the CPW tandem couplers without and with backside conductor are implemented on the FR4 substrate. These tandem couplers are carefully examined theoretically and experimentally, and good match between simulated and measured results is observed. The proposed tandem couplers have the merits of tight coupling under relaxed fabrication requirements.

Abstracts

An SCN-TLM model for the analysis of ferrite media

M.I. Yaich and M. Khalladi. "An SCN-TLM model for the analysis of ferrite media." 2003 Microwave and Wireless Components Letters 13.6 (Jun. 2003 [MWCL]): 217-219.

The modeling of ferrite media using the symmetrical condensed node (SCN) of transmission line matrix (TLM) method and current sources is developed. The proposed approach allows one to study the interaction between electromagnetic (EM) waves and gyromagnetic media. The obtained results are in good agreement with the analytical ones.

Abstracts

A modified unsplit PML formulation for evanescent mode absorption in waveguides

M. Ozkar, G. Lazzi and A. Mortazawi. "A modified unsplit PML formulation for evanescent mode absorption in waveguides." 2003 Microwave and Wireless Components Letters 13.6 (Jun. 2003 [MWCL]): 220-222.

In this letter, a modified unsplit perfectly matched layer (PML) formulation for the absorption of evanescent waves in waveguides is presented. The proposed formulation combines the advantages of the stretched coordinate and unsplit D - E - H PML formulations, which separates PML conductivities from the properties of the physical materials in the FDTD mesh. Results show that the proposed boundary outperforms the traditional unsplit PML in the evanescent region by 20 to 40 dB.

Abstracts

Electromagnetic scattering interference between two shallow objects buried under 2-D random rough surfaces

M. El-Shenawee and C. Rappaport. "Electromagnetic scattering interference between two shallow objects buried under 2-D random rough surfaces." 2003 Microwave and Wireless Components Letters 13.6 (Jun. 2003 [MWCL]): 223-225.

A rigorous electromagnetic model has been used to analyze the scattering from two dielectric shallow objects buried under the two-dimensional (2-D) random rough ground (3-D scattering problem) as a means of predicting false alarms. The method of moments (MoM) accelerated by the steepest descent fast multipole method (SDFMM) is used to compute the equivalent electric and magnetic surface currents on all scatterers (i.e., the rough ground and the two buried objects). The roughness parameters influence the scattering interference mechanism of the two objects, however, a large separation distance (e.g., several correlation lengths) showed stronger effect for small ground roughness.

Abstracts

Determination of the direction that has maximum phase-velocity for the 2-D and 3-D FDTD methods based on Yee's algorithm

An Ping Zhao. "Determination of the direction that has maximum phase-velocity for the 2-D and 3-D FDTD methods based on Yee's algorithm." 2003 Microwave and Wireless Components Letters 13.6 (Jun. 2003 [MWCL]): 226-228.

To easily evaluate the performance of the numerical dispersion of the FDTD method, a simple and efficient manner to theoretically determine the special direction that has the maximum phase-velocity for arbitrarily shaped two-dimensional (2-D) and three-dimensional (3-D) Yee's cells is proposed. It is found that the wave propagating along the special direction obeys the following physical rule: the time that the wave takes to traverse the spatial step sizes along each of the main axes of the cell is identical. It is demonstrated that this special direction is closely related to the aspect ratio(s) of the cells, rather than the diagonals of the cells. Moreover, the mathematical expressions for the maximum phase-velocity of the 2-D and 3-D cells with arbitrary aspect ratios are derived for the first time.

Abstracts

Simple K-band MMIC VCO utilizing a miniaturized hairpin resonator and a three-terminal p-HEMT varactor with low phase noise and high output power properties

Cheol-Gyu Hwang, Jeong-Seon Lee, Jeong-Hoon Kim, Noh-Hoon Myung and Jong-In Song. "Simple K-band MMIC VCO utilizing a miniaturized hairpin resonator and a three-terminal p-HEMT varactor with low phase noise and high output power properties." 2003 Microwave and Wireless Components Letters 13.6 (Jun. 2003 [MWCL]): 229-231.

Presents a fully monolithic K-band MMIC voltage-controlled oscillator (VCO) implemented by using a 0.25 /spl mu/m AlGaAs/InGaAs pseudomorphic HEMT (p-HEMT) technology. The use of a half-wavelength miniaturized hairpin-shaped resonator and a three-terminal p-HEMT varactor was effective in reducing the chip size and simplifying fabrication processes of the microwave MMIC VCO without impairing the performance of the circuit. The VCO provides a typical output power of 11.5 dBm at 20.8 GHz and a free-running phase noise of -82 dBc/Hz at 100 kHz offset and -95 dBc/Hz at 1 MHz offset. It also shows a tuning range of 70 MHz with little reduction in output power and high yield properties. The chip size of the MMIC VCO is 1.5 /spl times/ 2.0 mm/sup 2/.

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Abstracts

Wavelet harmonic balance

N. Soveiko and M. Nakhla. "Wavelet harmonic balance." 2003 Microwave and Wireless Components Letters 13.6 (Jun. 2003 [MWCL]): 232-234.

This letter introduces a new approach to steady state analysis of nonlinear microwave circuits under periodic excitation. The new method is similar to the well known technique of Harmonic Balance, but uses wavelets as basis functions instead of Fourier series. Use of wavelets allows significant increase in sparsity of the equation matrices and consequently decrease in CPU cost and storage requirements, while retaining accuracy and convergence of the traditional approach. The new method scales linearly with the size of the problem and is well suited for large scale simulations.

Abstracts

Near field vector beam measurements at 1 THz

C.-Y.E. Tong, D.V. Meledin, D.P. Marrone, S.N. Paine, H. Gibson and R. Blundell. "Near field vector beam measurements at 1 THz." 2003 Microwave and Wireless Components Letters 13.6 (Jun. 2003 [MWCL]): 235-237.

We have performed near-field vector beam measurements at 1.03 THz to characterize and align the receiver optics of a superconducting receiver. The signal source is a harmonic generator mounted on an X-Y translation stage. We model the measured two-dimensional complex beam pattern by a fundamental Gaussian mode, from which we derive the position of the beam center, the beam radius and the direction of propagation. By performing scans in the planes separated by 400 mm, we have confirmed that our beam pattern measurements are highly reliable.

Abstracts

Optical delay line employing an arrayed waveguide grating in fold-back configuration

B. Vidal, J.L. Corral and J. Marti. "Optical delay line employing an arrayed waveguide grating in fold-back configuration." 2003 Microwave and Wireless Components Letters 13.6 (Jun. 2003 [MWCL]): 238-240.

A novel optical delay line (ODL) using an arrayed-waveguide grating (AWG) in fold-back configuration is proposed and experimentally demonstrated. This fold-back configuration offers crosstalk reduction and loss-imbalance as compared with previously reported loop-back AWG-based ODL. The experimental results show that different highly accurate delays can be obtained with a single AWG over a huge modulation bandwidth (2-18 GHz).

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Compact-size coplanar waveguide bandpass filter

Shry-Sann Liao, Pou-Tou Sun, Hsien-Ku Chen and Xian-Yuan Liao. "Compact-size coplanar waveguide bandpass filter." 2003 Microwave and Wireless Components Letters 13.6 (Jun. 2003 [MWCL]): 241-243.

A compact-size coplanar waveguide (CPW) bandpass filter (BPF) is proposed. In this study, we use the bended stub with novel folded skill to improve the three parallel coupled-lines structure of BPF for N = 1. It gets the sharp transition band (TB) and reduces the dimension of the circuit by 66.67% at 2.45 GHz. Its center frequency can be shifted easily by adjusting the interfaces of SS and S'S' simultaneously. It is very useful for applications in the wireless communication systems.

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Ring-resonator method - effective procedure for investigation of microstrip line

S.A. Ivanov and V.N. Peshlov. "Ring-resonator method - effective procedure for investigation of microstrip line." 2003 Microwave and Wireless Components Letters 13.6 (Jun. 2003 [MWCL]): 244-246.

In addition to the traditional application of the ring-resonator method for determination of the microstrip line effective permittivity, measurements of the insertion losses and equivalent substrate permittivity are proposed. The obtained data for a number of isotropic and anisotropic substrate materials are in good agreement with the results predicted theoretically.

Abstracts

Cross-coupled dual-spiral high-temperature superconducting filter

C.Y. Tan, Linfeng Chen, Jian Lu, X.S. Rao and C.K. Ong. "Cross-coupled dual-spiral high-temperature superconducting filter." 2003 Microwave and Wireless Components Letters 13.6 (Jun. 2003 [MWCL]): 247-249.

A microstrip bandpass filter implemented with dual-spiral resonators is described in this letter. The dual-spiral resonators make the filter compact and allow implementation of positive and negative inter-resonator couplings. Implementation of the positive and negative couplings is used to introduce a pair of finite frequency transmission-zeros in the filter response. The two zeros are designed to be close to the passband, thus improving the selectivity of the filter. As an example, a four-stage cross-coupled dual-spiral filter is designed and fabricated using superconducting YBa/sub 2/Cu/sub 3/O/sub 7-/spl delta// thin films deposited on LaAlO/sub 3/ substrate.

Abstracts

Surface wave enhanced broadband planar antenna for wireless applications (Comments)

T.J. Ellis. "Surface wave enhanced broadband planar antenna for wireless applications (Comments)." 2003 Microwave and Wireless Components Letters 13.6 (Jun. 2003 [MWCL]): 250-251.

For original paper see K.M.K.H. Leong et al., ibid., vol. 11, pp.62-4 (2001). The above paper claims to present "a new class of broadband antenna in which TE/sub 0/ surface-wave is used as the primary source of free space radiation". After reviewing the references, and analyzing the parameters published, it does not appear that the antenna can operate in the manner claimed.

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Abstracts

Surface wave enhanced broadband planar antenna for wireless applications (Authors' Reply)

K.M.K.H. Leong, Yongxi Qian and T. Itoh. "Surface wave enhanced broadband planar antenna for wireless applications (Authors' Reply)." 2003 Microwave and Wireless Components Letters 13.6 (Jun. 2003 [MWCL]): 251-252.

For original paper see K.M.K.H. Leong et al., ibid., vol.11, pp.62-64 (2001). For comment see T.J. Ellis, ibid., vol.13, no.6, pp.250-51 (2003). The authors appreciate the investigation and comments by T. J. Ellis regarding the quasi-Yagi antenna. In fact, one of the co-authors (Y. Qian) has been challenged multiple times in the past on the novelty of the quasi-Yagi antenna and feels obliged to take this opportunity to make some clarifications and re-emphasize the uniqueness of this particular antenna structure.

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Abstracts

Small-signal substrate resistance effect in RF CMOS cascode amplifier

Choong-Yul Cha, Jin-Pil Kim and Sang-Gug Lee. "Small-signal substrate resistance effect in RF CMOS cascode amplifier." 2003 Microwave and Wireless Components Letters 13.7 (Jul. 2003 [MWCL]): 253-255.

With common-source RF application amplifier, it is well known that the small substrate resistance helps to improve the output resistance as well as the transconductance. This idea can be easily extended to all CMOS transistors in RF applications. However, with cascode amplifier at high frequencies, the maximum available gain, noise figure minimum, and the tuned output impedance are improved by increasing the substrate resistance of the common-gate transistor, so that the range of operational frequency can be extended. These contradicting phenomenons between the common-source and common-gate topology can be explained theoretically, and the supporting measurement results are presented base on a 0.35 /spl mu/m CMOS technology.

Abstracts

Controllability of novel Sn/sub 0.95/Au/sub 0.05/ microbumps using interlaminated tin and gold layers for flip-chip interconnection

K. Onodera, T. Ishii, S. Aoyama and M. Tokumitsu. "Controllability of novel Sn/sub 0.95/Au/sub 0.05/ microbumps using interlaminated tin and gold layers for flip-chip interconnection." 2003 Microwave and Wireless Components Letters 13.7 (Jul. 2003 [MWCL]): 256-258.

A flip-chip interconnection technology using novel lead-free solder microbumps with a balling temperature as low as 220 /spl deg/C is presented. Controllability of newly developed Sn/sub 0.95/Au/sub 0.05/ microbumps has been examined experimentally. By varying the bump volume and the diameter of the wettable bump electrodes, Sn/sub 0.95/Au/sub 0.05/ microbumps with heights from 11 /spl mu/m to 37 /spl mu/m were successfully fabricated with a standard deviation of 1.5 /spl mu/m. The deviation of on-chip CPW impedance from 50 /spl Omega/ was lower than 10% for nonmetallization motherboard. The smaller bumps exhibited a better performance since the degradation of reflection properties is ascribed to the bump capacitance, which was estimated 10-20 fF. Because of high process yield and good performance, the flip-chip bonding using Sn/sub 0.95/Au/sub 0.05/ microbumps of the order of 20 /spl mu/m in height may be advantageous for W-band interconnection of InP- or GaAs-based devices.

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Low noise 5 GHz differential VCO using InGaP/GaAs HBT technology

Yunseong Eo, Keechul Kim and Byungdu Oh. "Low noise 5 GHz differential VCO using InGaP/GaAs HBT technology." 2003 Microwave and Wireless Components Letters 13.7 (Jul. 2003 [MWCL]): 259-261.

The authors present the first InGaP/GaAs HBT differential VCOs with low phase noise performance. One is a cross coupled differential VCO, and the other is a Colpitts differential VCO. To achieve a fully integrated VCO, collector-base junction capacitance of HBT transistor is used for the frequency tuning varactor. The measured output frequency ranges of VCOs are 290 MHz and 190 MHz, and the phase noises at an offset frequency of 1 MHz are -118 dBc/Hz and -117 dBc/Hz respectively. The each VCO core dissipates 13.2 mW from a 3.5 V supply, and the output power is about -0.2 dBm. Concerned with cross coupled VCO, it shows the figure of merit of -179 dBc/Hz, which is the best result among the reported compound semiconductor FET and HBT VCOs.

Abstracts

Waveguide-to-microstrip transition with integrated bias-T

C. Risacher, V. Vassilev, A. Pavolotsky and V. Belitsky. "Waveguide-to-microstrip transition with integrated bias-T." 2003 Microwave and Wireless Components Letters 13.7 (Jul. 2003 [MWCL]): 262-264.

A novel device, a waveguide-to-microstrip transition with an integrated bias-T, is presented. The substrate-based planar structure comprises a waveguide E-probe, shaped as a radial line. The probe couples the RF field of a full-height waveguide to a microstrip line or directly to an active component, e.g., a transistor or diode in a mixer or direct detector. The radial probe is connected on its wide side to another port via a specially shaped high impedance line that provides RF/DC isolation. This port can then be used to inject DC and/or extract IF signals. The design of the presented structure was done using CAD (3-D EM simulation) and an X-band device was produced and fully characterized. The measured performance is in excellent agreement with the simulations; the device has return loss better than -20 dB, insertion loss less or equal to -0.15 dB and isolation for the bias-T line better than -20 dB. RF bandwidth for the transition is 30% of the central frequency.

Abstracts

Effective permittivity at the interface of dispersive dielectrics in FDTD

D. Popovic and M. Okoniewski. "Effective permittivity at the interface of dispersive dielectrics in FDTD." 2003 Microwave and Wireless Components Letters 13.7 (Jul. 2003 [MWCL]): 265-267.

A simple treatment of E-field component tangential to dispersive media interfaces in FDTD is introduced. The method uses concepts from the auxiliary differential equations method to average the constitutive parameters. The cases of a wave propagating in a coaxial line and of an open-ended coaxial line radiating into the dispersive media are investigated. Results show that the simulations could be significantly erroneous if the interface is not handled properly.

Abstracts

Efficient implementation of the Cauchy method for automated CAD-model construction

A. Lamecki, P. Kozakowski and M. Mrozowski. "Efficient implementation of the Cauchy method for automated CAD-model construction." 2003 Microwave and Wireless Components Letters 13.7 (Jul. 2003 [MWCL]): 268-270.

An efficient and stable implementation of the multidimensional Cauchy method for creating high quality multivariate models of microwave circuits from electromagnetic (EM) simulation data is presented in this paper. The algorithm uses the total least squares method to solve the ill-conditioned interpolation problem and automatically determines the model order and distribution of support points in the parameter space in such a manner that instabilities are prevented. Numerical tests show that the method requires fewer support points to achieve similar accuracy as the rational function models published previously. The utility and accuracy of the technique is demonstrated on a filter design example involving three- and five-dimensional models.

Abstracts

Simplified RF receive frontend architecture for active array applications

K. Solbach. "Simplified RF receive frontend architecture for active array applications." 2003 Microwave and Wireless Components Letters 13.7 (Jul. 2003 [MWCL]): 271-272.

A new concept for receive front end circuits is presented, which proposes the use of the low noise amplifier (LNA) in a second role as an amplifier of the local oscillator (LO) signal. Based on this concept, much of the complexity of the active array signal distribution networks (calibration and LO) can be reduced. It is shown that the danger of saturation, intermodulation and noise degradation can be overcome by using an unbalanced active mixer circuit which requires an LO-power level compatible with the limitations of modern LNAs.

Abstracts

An improved leaded small outline package and equivalent circuit

D. Jessie and L. Larson. "An improved leaded small outline package and equivalent circuit." 2003 Microwave and Wireless Components Letters 13.7 (Jul. 2003 [MWCL]): 273-275.

A leaded plastic package has been developed that significantly improves the insertion and return loss, and pin-to-pin isolation of SO-type packages based on measured data and three-dimensional electromagnetic simulations. In addition, an equivalent circuit has been developed that accurately models the circuit behavior of the improved package to above 8 GHz.

Abstracts

Fully integrated unequal Wilkinson power divider with EBG CPW

Young-Joon Ko, Jae-Yeong Park and Jong-Uk Bu. "Fully integrated unequal Wilkinson power divider with EBG CPW." 2003 Microwave and Wireless Components Letters 13.7 (Jul. 2003 [MWCL]): 276-278.

In this paper, a CPW with electromagnetic bandgap (EBG CPW) is newly proposed for designing a transmission line with high impedance. After designing, fabricating, and evaluating the characteristic impedance of the proposed EBG CPW transmission line, it will be applied to an integrated unequal Wilkinson power divider. In the EM simulation, the EBG-CPW transmission line with 10 /spl mu/m in line width has the same characteristic impedance as a CPW with a line width of 2.5 /spl mu/m. The insertion and return losses of the fabricated power divider with a power ratio of 1 to 3 are less than -0.7 dB and -15 dB, respectively. It also has excellent isolation characteristics with more than -20 dB. The experimental results are good agreement with the simulation.

Abstracts

Wideband and compact bandstop filter structure using double-plane superposition

Jin-Yang Kim and Hai-Young Lee. "Wideband and compact bandstop filter structure using double-plane superposition." 2003 Microwave and Wireless Components Letters 13.7 (Jul. 2003 [MWCL]): 279-280.

A novel bandstop filter (BSF) structure is proposed and measured for wideband and compact circuit applications. The proposed BSF realizes the wide stopband (2-octave) characteristics by superposing two different photonic bandgap (PBG) structures into a coupled double-plane configuration. Only three cells of the proposed structure are enough for the measured 10 dB stopband from 4.3 to 16.2 GHz. We expect this novel BSF structure is widely used for compact and wideband circuit applications, such as compact high-efficiency power amplifiers using harmonic tuning techniques.

Abstracts

On miniaturization isolation network of an all-ports matched impedance-transforming Marchand Balun

M. Chongcheawchamnan, Choon Yong Ng, K. Bandudej, A. Worapishet and I.D. Robertson. "On miniaturization isolation network of an all-ports matched impedance-transforming Marchand Balun." 2003 Microwave and Wireless Components Letters 13.7 (Jul. 2003 [MWCL]): 281-283.

A technique for reducing the isolation network's size in a Marchand balun needed for perfect all-ports matching and isolation is proposed in this letter. The proposed isolation circuit is realized using a coupled-line phase-inverter in place of the bulky 180/spl deg/ line section that has been previously proposed. Analysis of the proposed circuit yields the required relationship between the coupling coefficient and the electrical length of the coupler. Based on the design equations, the circuit is experimentally demonstrated at 1.8 GHz and has shown excellent results.

Abstracts

High-linearity class B power amplifiers in GaN HEMT technology

Shouxuan Xie, V. Paidi, R. Coffie, S. Keller, S. Heikman, B. Moran, A. Chini, S.P. DenBaars, U. Mishra, S. Long and M.J.W. Rodwell. "High-linearity class B power amplifiers in GaN HEMT technology." 2003 Microwave and Wireless Components Letters 13.7 (Jul. 2003 [MWCL]): 284-286.

A 36-dBm, high-linearity, single-ended class B MMIC power amplifier is reported in GaN HEMT technology. The circuit demonstrates high linearity, greater than 35 dBc of third-order intermodulation (IM3) suppression and high power added efficiency (PAE) of 34%. We demonstrate experimentally that class B power amplifiers can achieve IM3 suppression comparable to class A, while providing approximately 10% improved power added efficiency.

Abstracts

A fully integrated 5.8 GHz U-NII band 0.18-/spl mu/m CMOS VCO

Yuan-Kai Chu and Huey-Ru Chuang. "A fully integrated 5.8 GHz U-NII band 0.18-/spl mu/m CMOS VCO." 2003 Microwave and Wireless Components Letters 13.7 (Jul. 2003 [MWCL]): 287-289.

A fully integrated 5.8 GHz CMOS L-C tank voltage-controlled oscillator (VCO) using a 0.18-/spl mu/m 1P6M standard CMOS process for 5 GHz U-NII band WLAN application is presented. The VCO core circuit uses only PMOS to pursue a better phase noise performance since it has less 1/f noise than NMOS. The measurement is performed by using a FR-4 PCB test fixture. The output frequency of the VCO is from 5860 to 6026 MHz with a 166 MHz tuning range and the phase noise is -96.9 dBc/Hz at 300 kHz (or -110 dBc/Hz at 1 MHz) with V ctrl = 0 V. The power consumption of the VCO excluding buffer amplifiers is 8.1 mW at V/sub DD/ = 1.8 V and the output power is -4 dBm.

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Abstracts

Guest editorial: Special issue on 2002 European Conference on Wireless Technology (Aug. 2003 [MWCL])

J. Detlefsen, R. Ranson and R. Sorrentino. "Guest editorial: Special issue on 2002 European Conference on Wireless Technology (Aug. 2003 [MWCL])." 2003 Microwave and Wireless Components Letters 13.8 (Aug. 2003 [MWCL] (Special Issue on 2002 European Conference on Wireless Technology)): 293-295.

Abstracts

Preconditioned astigmatic beam tracing for urban propagation

Emidio Di Giampaolo, F. Bardati and M. Sabbadini. "Preconditioned astigmatic beam tracing for urban propagation." 2003 Microwave and Wireless Components Letters 13.8 (Aug. 2003 [MWCL] (Special Issue on 2002 European Conference on Wireless Technology)): 296-298.

In wireless communication network planning, deterministic and statistical propagation tools have been developed. Astigmatic Beam Tracing, a deterministic method based on ray tracing (GO/UTD), can be applied to urban propagation modeling. A numerical code has been applied to a model of urban scenario with increasing complexity. The results of a numerical analysis are discussed to evaluate the relevance of the test case size on the computational charge.

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Mixed traffic in UMTS downlink

A. Capone, M. Cesana, G. D'Onofrio and L. Fratta. "Mixed traffic in UMTS downlink." 2003 Microwave and Wireless Components Letters 13.8 (Aug. 2003 [MWCL] (Special Issue on 2002 European Conference on Wireless Technology)): 299-301.

The traffic being transferred within 3G mobile networks will be composed by different information flows with various constraints on the required QoS (bit rate, delays, etc.). In this scenario, flexibility will be a key point for the success of 3G systems. UMTS (Universal Mobile Telecommunication System) offers both circuit switched and packet switched transfer mode, and within each transfer mode, different QoS can be achieved by properly setting physical parameters such as the spreading factor of the physical channels, the power control scheme, the rate of the FEC protecting code, etc. In this letter, we give an evaluation of the downlink performance of W-CDMA UMTS radio interface when providing access to multimedia services. In particular, we analyze through simulations a typical scenario where voice calls and Web-browsing sessions share the same frequency carrier, the former using the dedicated channels (DCH), the latter being transferred on the downlink shared channel (DSCH).

Abstracts

Implementation of signal processing algorithms for 3G and beyond

J. Hausner and R. Denk. "Implementation of signal processing algorithms for 3G and beyond." 2003 Microwave and Wireless Components Letters 13.8 (Aug. 2003 [MWCL] (Special Issue on 2002 European Conference on Wireless Technology)): 302-304.

For communication systems of third generation and beyond, the algorithmic complexity will increase significantly compared with 2G and 2.5G systems, as we can see from the example of channel estimation. The answer to these demands will consist of transceivers with re-configurable hardware accelerators in advanced CMOS technology.

Abstracts

Free-space optics communication systems: first results from a pilot field-trial in the surrounding area of Milan, Italy

M. D'Amico, A. Leva and B. Micheli. "Free-space optics communication systems: first results from a pilot field-trial in the surrounding area of Milan, Italy." 2003 Microwave and Wireless Components Letters 13.8 (Aug. 2003 [MWCL] (Special Issue on 2002 European Conference on Wireless Technology)): 305-307.

A multiple FSO field-trial has been deployed in the surrounding area of Milan, Italy. After a brief description of the setup we focus our attention on the factors impacting system availability. In particular, we will investigate the effect of visibility and turbulence.

Abstracts

Application of convolutional error correcting codes in ultrawideband M-ary PPM signaling

A.R. Forouzan and M. Abtahi. "Application of convolutional error correcting codes in ultrawideband M-ary PPM signaling." 2003 Microwave and Wireless Components Letters 13.8 (Aug. 2003 [MWCL] (Special Issue on 2002 European Conference on Wireless Technology)): 308-310.

The interference issues related to ultrawideband (UWB) radio pose tight restrictions on the maximum data rate of UWB radio telecommunication systems. A possible solution is to reduce the required signal to interference ratio (SIR) that gives satisfactory performance to the UWB system. In this letter, we propose coded M-ary UWB radio communication systems. Two classes of convolutional codes, namely, low-rate superorthogonal codes and high-rate punctured codes are considered for this purpose. Simulation results on the bit error rate of the proposed system indicates that the system is capable to work in lower SIR's and therefore supports higher data transmission rates in a real interference environment compared to the previously proposed UWB communication systems.

Abstracts

Efficient WISH in an indoor environment

M. Angelaccio, B. Buttarazzi, R. Giuliano and G. Guidoni. "Efficient WISH in an indoor environment." 2003 Microwave and Wireless Components Letters 13.8 (Aug. 2003 [MWCL] (Special Issue on 2002 European Conference on Wireless Technology)): 311-313.

With the diffusion of wireless connections to Internet, the number of complex operations carried out from mobile users is increasing. To cope with bandwidth limitations and with disconnections, data caching is the most used technique. However for complex operation like dynamic searching a better solution is to take advantage of the multichannel property offered by CDMA protocol. In this case, cached documents can be allocated on distinguished channels in a dynamic way to obtain a better utilization of the radio communication links. We study a particular caching strategy suitable to be integrated with a radio-channel policy. We consider a semantic caching for intranet queries (or intranet searching) that takes advantage of data semantics by caching query answers instead of pages in order to exploit similarities between different queries. In fact, in a WLAN scenario, Internet activity is frequently composed by intranet searching operations characterized by local queries that aim to explore documents stored in a neighbor of the home site. We study benefits from a channel allocation strategy applied to intranet searching with semantic caching. Simulation experiments are carried out by considering an indoor scenario model where mobile clients perform keyword-based queries answered by local Web servers running application we refer to as WISH (Wireless Intranet SearcHing), an intranet searching tool based on semantic caching. The results show a 12% improvement in radio channel usage for 20% of users that share cached documents.

Abstracts

An analysis of wideband direction-of-arrival estimation for closely-spaced sources in the presence of array model errors

Tuan Do-Hong and P. Russer. "An analysis of wideband direction-of-arrival estimation for closely-spaced sources in the presence of array model errors." 2003 Microwave and Wireless Components Letters 13.8 (Aug. 2003 [MWCL] (Special Issue on 2002 European Conference on Wireless Technology)): 314-316.

This letter presents an analysis of wideband direction-of-arrival (DOA) estimation for closely-spaced sources using arbitrary antenna array taking into account the effect of array model error, which is important issue in practical implementation. Based on this analysis, a new wideband DOA estimation method without array calibration is then developed to deal with the effects of array errors. The performance improvement of the proposed method in the presence of array errors is shown in simulation results.

Abstracts

Site diversity against rain fading in LMDS systems

C. Sinka and J. Bito. "Site diversity against rain fading in LMDS systems." 2003 Microwave and Wireless Components Letters 13.8 (Aug. 2003 [MWCL] (Special Issue on 2002 European Conference on Wireless Technology)): 317-319.

Local Multipoint Distribution Services (LMDS) system is a fixed cellular radio based point-to-multipoint technology in the microwave band providing broadband services. These systems need very accurate network planning method because of the variable carrier-to-interference ratio (C/I) in the whole service area and high sensitivity for meteorological phenomena especially for precipitation. The effects of a moving rain cell over an LMDS system was analyzed and site diversity as one possible countermeasure technique is demonstrated. The location dependent C/I in the LMDS service area under rainy conditions with and without site diversity technique was calculated applying a rain shower profile.

Abstracts

Code sectoring methods in CDMA-based broadband point-to-multipoint networks

C. Novak, A. Tikk and J. Bito. "Code sectoring methods in CDMA-based broadband point-to-multipoint networks." 2003 Microwave and Wireless Components Letters 13.8 (Aug. 2003 [MWCL] (Special Issue on 2002 European Conference on Wireless Technology)): 320-322.

Code sectoring methods in broadband wireless point-to-multipoint (PMP) networks applying code-division multiple access (CDMA) are discussed in this paper. Interference reduction is the key factor in PMP network design, therefore antenna- and frequency-sectoring solutions are commonly applied. CDMA allows code sectoring strategies, moreover advanced interference suppression techniques (e.g., multiuser detection) can be utilized. The combination of different sectoring schemes and multiuser receivers in a CDMA-based PMP network provides the effective control of interference. In this study different CDMA code sectoring approaches are proposed and downlink interference analyses of a PMP network sector are presented.

Abstracts

The implementation of channel diversity in mobile software radio receivers

H. Schnepp, T. Muller, J.-F. Luy and P. Russer. "The implementation of channel diversity in mobile software radio receivers." 2003 Microwave and Wireless Components Letters 13.8 (Aug. 2003 [MWCL] (Special Issue on 2002 European Conference on Wireless Technology)): 323-325.

A novel channel diversity concept is proposed and demonstrated, which avoids receiving signal deterioration due to multipath fading in mobile receivers. The system is based on coherent superposition of the signals received from several transmitters supplying the same information at different frequencies. Based on a software radio architecture this concept may increase the quality of mobile reception in modern car receivers considerably. Compared with multiantenna-receivers which overcome the multipath fading problem by simultaneously receiving the same program with several antennas, the proposed solution is advantageous, since it requires only a single antenna.

Abstracts

A wireless data link for mobile applications

S. Lindenmeier, K. Boehm and J.F. Luy. "A wireless data link for mobile applications." 2003 Microwave and Wireless Components Letters 13.8 (Aug. 2003 [MWCL] (Special Issue on 2002 European Conference on Wireless Technology)): 326-328.

A short overview is given on wireless high speed data links for local-area-ad-hoc-networks in mobile applications and a multifunctional CDMA-Direct-Sequence Spread-Spectrum communicating platform is investigated which may be used for inter vehicle communication as well as for object detection and ranging in the environment of cars.

Abstracts

Low phase-noise integrated voltage controlled oscillator design using LTCC technology

Sin-Hang Cheng, K.-K.M. Cheng and Ke-Li Wu. "Low phase-noise integrated voltage controlled oscillator design using LTCC technology." 2003 Microwave and Wireless Components Letters 13.8 (Aug. 2003 [MWCL] (Special Issue on 2002 European Conference on Wireless Technology)): 329-331.

This paper describes the design and implementation of a highly integrated voltage controlled oscillator (VCO) module based upon Low-Temperature Co-fired Ceramic (LTCC) packaging technology. The circuit is realized by embedding the strip-line resonator and lumped passives inside a multilayer LTCC substrate. Measurement results of a silicon bipolar VCO circuit operating at 2.4 GHz is shown. The constructed module is compact in size and has good phase noise performance.

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40 Gb/s differential traveling wave modulator driver

V. Radisic, M. Yu, Zhihao Lao, V. Ho, Muliang Xu, K. Guinn, Shing Lee and K.C. Wang. "40 Gb/s differential traveling wave modulator driver." 2003 Microwave and Wireless Components Letters 13.8 (Aug. 2003 [MWCL] (Special Issue on 2002 European Conference on Wireless Technology)): 332-334.

In this letter a MMIC differential traveling wave driver for 40 Gb/s electro-absorption modulation driver is presented. The driver delivers 2.7 Vp-p or 2.4 V eye amplitude at each output into 50 /spl Omega/ load. The driver has high gain (>20 dB), a 3 dB bandwidth of 45 GHz, and rise/fall times of only 10/9 ps, respectively. The circuit uses a single -5.0 V power supply and consumes 1.8 W of dc power. The driver also features cross-point control and output amplitude control functions.

Abstracts

Resonator size effects on the TFBAR ladder filter performance

Kun-Wook Kim, Myeong-Gweon Gu, Jong-Gwan Yook and Han-Kyu Park. "Resonator size effects on the TFBAR ladder filter performance." 2003 Microwave and Wireless Components Letters 13.8 (Aug. 2003 [MWCL] (Special Issue on 2002 European Conference on Wireless Technology)): 335-337.

Thin-film bulk acoustic resonators with different resonator sizes are simulated and measured. Their effects on ladder filter performance are also presented. Aluminum nitride and platinum are used as piezoelectric material and electrodes, respectively. As the shunt resonator size increases, out-of-band rejection performance has been improved. The 3/2 stage filters that have twice or three times larger resonators reveal 6 dB and 11 dB out-of-band rejection improvements, respectively.

Abstracts

An integrated LTCC laminated waveguide-to-microstrip line T-junction

Yong Huang, Ke-Li Wu and M. Ehlert. "An integrated LTCC laminated waveguide-to-microstrip line T-junction." 2003 Microwave and Wireless Components Letters 13.8 (Aug. 2003 [MWCL] (Special Issue on 2002 European Conference on Wireless Technology)): 338-339.

In this paper, an integrated low-temperature co-fired ceramic (LTCC) laminated waveguide to microstrip line T-junction is proposed and experimentally verified. A multilayer bell-shape probe end comprising multiple parallel metallic pads is used to improve the bandwidth and matching condition. The experimental result shows good correlation with the simulated result. The configuration can also be used as the transition between microstrip line and laminated waveguide.

Abstracts

Digital filtering technique for the FDTD implementation of the anisotropic perfectly matched layer

O. Ramadan. "Digital filtering technique for the FDTD implementation of the anisotropic perfectly matched layer." 2003 Microwave and Wireless Components Letters 13.8 (Aug. 2003 [MWCL] (Special Issue on 2002 European Conference on Wireless Technology)): 340-342.

A new algorithm is presented for the finite difference time domain (FDTD) implementation of the anisotropic perfectly matched layer (PML) using the digital signal processing. The algorithm is based on modeling the anisotropic PML region as a set of infinite-impulse response (IIR) digital filters. The advantage of the proposed method is that it allows direct FDTD implementation of Maxwell's equations in the PML region. In addition, the formulations are implemented using D and B fields rather than E and H, and this allows the PML to be independent from the material properties of the FDTD computational domains. Numerical tests have been carried out in two dimensions to validate the formulations.

Abstracts

Compressed-width leaky EH/sub 1/ mode PBG antenna

Ching-Kuo Wu, Yu-Chiao Chen and C.-K.C. Tzuang. "Compressed-width leaky EH/sub 1/ mode PBG antenna." 2003 Microwave and Wireless Components Letters 13.8 (Aug. 2003 [MWCL] (Special Issue on 2002 European Conference on Wireless Technology)): 343-344.

The recently developed electric-magnetic-electric (EME) microstrip is successfully used to design a compact leaky-mode antenna with fan beam radiation patterns. The EME microstrip consists of composite metals paralleling the electric and magnetic surfaces, where the magnetic surface is made of an array of coupled inductors. The frequency scanning behavior, experimentally and theoretically confirmed by matrix-pencil analyses, indicates that the line width can be reduced by 20%, compared to that of the conventional microstrip with the identical radiation angle of the first higher order (EH/sub 1/) mode at the same frequency.

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Extension and validation of a perfectly matched layer formulation for the unconditionally stable D-H FDTD method

S. Schmidt and G. Lazzi. "Extension and validation of a perfectly matched layer formulation for the unconditionally stable D-H FDTD method." 2003 Microwave and Wireless Components Letters 13.8 (Aug. 2003 [MWCL] (Special Issue on 2002 European Conference on Wireless Technology)): 345-347.

In this letter, a modification to the recently proposed unconditionally stable D-H ADI FDTD method is presented that considerably reduces the late-time error induced by the corner cells. The PML boundary is derived from the direct discretization of the modified D-H Maxwell's equations rather than the superposition of uniaxial PML boundaries. An optimal choice of the PML conductivity profile coefficients is proposed. Results show that the reflection error of the PML is limited for increased time step size beyond the Courant-Friedrichs-Lewy stability bound, and maximum reflection errors are 15 to 20 dB lower than the original formulation.

Abstracts

An unsplit formulation of the Berenger's PML absorbing boundary condition for FDTD meshes

Tong-Bin Yu, Bi-Hua Zhou and Bin Chen. "An unsplit formulation of the Berenger's PML absorbing boundary condition for FDTD meshes." 2003 Microwave and Wireless Components Letters 13.8 (Aug. 2003 [MWCL] (Special Issue on 2002 European Conference on Wireless Technology)): 348-350.

An unsplit formulation of the Berenger's perfectly matched layer absorbing boundary condition (PML ABC) for finite-difference time-domain (FDTD) meshes is presented. This unsplit formulation uses the conventional E-H algorithm, but does not require the E and H fields to be split. The proposed formulation is memory-efficient like that of the previous unsplit PML following the theory of Sacks. This unsplit formulation is easy to be implemented, and many useful modification to the Berenger's PML can also be done to it.

Abstracts

Unified method for determining the complex propagation constant of reflecting and nonreflecting transmission lines

J.A. Reynoso-Hernandez. "Unified method for determining the complex propagation constant of reflecting and nonreflecting transmission lines." 2003 Microwave and Wireless Components Letters 13.8 (Aug. 2003 [MWCL] (Special Issue on 2002 European Conference on Wireless Technology)): 351-353.

In this letter, a unified method for computing the complex propagation constant /spl gamma/ of reflecting and nonreflecting lines is presented. The method uses a new matrix representation of the wave cascade matrix of a line having any characteristic impedance. To overcome the sign ambiguity problem inherent to the classical method some parameters of the fictitious X/sub AM/ matrix are used and determined by the method itself. The success of the new procedure to resolve the sign ambiguity problem lies in the new matrix representation of the wave cascade matrix of a line having any characteristic impedance and in the reliable criterion to determine the a/sub m//c/sub m/ and b/sub m/ parameters of the fictitious X/sub AM/ matrix.

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Analysis of sharp metal edge diagonal to the cell cube in FDTD grid

Feng Lu, Bin Chen, Yun Yi, Cheng Gao, Li-Hua Shi and Bi-Hua Zhou. "Analysis of sharp metal edge diagonal to the cell cube in FDTD grid." 2003 Microwave and Wireless Components Letters 13.8 (Aug. 2003 [MWCL] (Special Issue on 2002 European Conference on Wireless Technology)): 354-356.

The finite-difference time-domain(FDTD) update equations for sharp metal edges are extended in this paper. New FDTD update equations for sharp metal edges diagonal to cell cube in FDTD grid are presented. Unlike the literature , the edge is assumed to be not parallel to any cell face. A dramatic improvement in computed accuracy was observed when a stripline with two sharp edges diagonal to the cell cube in FDTD grid was analyzed using the new equations.

Abstracts

Proposal of a new folded comb-line filter

T. Kitamura, K. Yoshida, M. Geshiro and T. Ishizaki. "Proposal of a new folded comb-line filter." 2003 Microwave and Wireless Components Letters 13.8 (Aug. 2003 [MWCL] (Special Issue on 2002 European Conference on Wireless Technology)): 357-359.

We propose a new type of comb-line filter that is suitable for miniaturization utilizing stratifying technology. It consists of a couple of composite resonators. Each resonator is composed of two sections of a microstrip and a coplanar waveguide fabricated on the microstrip ground plane which are connected through a piece of wire at an open end to set up a new folded comb-line filter. The filtering characteristics are investigated through experiments as well as numerical simulations by means of the FD-TD method. It is shown that the filtering characteristics can be much improved by removing part of the barrier in the coplanar-line portion of the resonator to alter the coupling.

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"Table of Contents (Sep. 2003 [MWCL])." 2003 Microwave and Wireless Components Letters 13.9 (Sep. 2003 [MWCL]): 0_1-0_1.

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An X- to ku-band 3-bit digital MEMS varactor

L. Dussopt and G.M. Rebeiz. "An X- to ku-band 3-bit digital MEMS varactor." 2003 Microwave and Wireless Components Letters 13.9 (Sep. 2003 [MWCL]): 361-363.

A 3-bit digital microelectromechanical system (MEMS) varactor bank is demonstrated on a low-cost glass substrate. It is composed of three discrete-position varactors, each of them achieving a capacitance ratio close to 3:1. The total capacitance of the varactor bank is tunable from 146 fF to 430 fF in eight states and is suitable for X- or Ku-band operation. The design can be easily scaled to Ka-band frequencies.

Abstracts

Fully integrated electrothermal multidomain modeling of RF MEMS switches

B.D. Jensen, K. Saitou, J.L. Volakis and K. Kurabayashi. "Fully integrated electrothermal multidomain modeling of RF MEMS switches." 2003 Microwave and Wireless Components Letters 13.9 (Sep. 2003 [MWCL]): 364-366.

RF MEMS switches have demonstrated excellent performance. However, before such switches can be fully implemented, they must demonstrate high reliability and robust power-handling capability. Numerical simulation is a vital part of design to meet these goals. This paper demonstrates a fully integrated electrothermal model of an RF MEMS switch which solves for RF current and switch temperature. The results show that the beam temperature increases with either higher input power or increased frequency. The simulation data are used to predict switch failure due to temperature-related creep and self pull-in over a wide range of operating frequency (0.1-40 GHz) and power input (0-10 W). Self pull-in is found to be the dominant failure mechanism for an example geometry.

Abstracts

Noncontact measurement of charge induced voltage shift in capacitive MEM-switches

J.R. Reid, R.T. Webster and L.A. Starman. "Noncontact measurement of charge induced voltage shift in capacitive MEM-switches." 2003 Microwave and Wireless Components Letters 13.9 (Sep. 2003 [MWCL]): 367-369.

The use of a modulated microwave signal to directly measure the voltage shift induced by charge in the dielectric layer of a capacitive microelectromechanical (MEM) switch is presented. This method does not require the metal bridge to contact the dielectric layer and is thus much less intrusive than previously reported measurements. The technique is a useful tool for understanding charge build up and dissipation in capacitive MEM switches.

Abstracts

A microwave Doherty amplifier employing envelope tracking technique for high efficiency and linearity

Youngoo Yang, Jeonghyeon Cha, Bumjae Shin and Bumman Kim. "A microwave Doherty amplifier employing envelope tracking technique for high efficiency and linearity." 2003 Microwave and Wireless Components Letters 13.9 (Sep. 2003 [MWCL]): 370-372.

In this letter, we demonstrate a microwave Doherty amplifier employing an input signal envelope tracking technique. In the amplifier, the gate bias of the peaking amplifier is controlled according to the magnitude of the envelope. A 2.14-GHz Doherty amplifier is implemented using 4-W PEP LDMOSFETs, and an adaptive controlled gate bias circuit is constructed and the control shape is optimized experimentally. The performance of the microwave Doherty amplifier is compared with that of a class AB amplifier using one-tone, two-tone, and forward-link wideband code-division multiple access (WCDMA) signals. For a forward-link WCDMA signal, the measured power added efficiency (PAE) of the microwave Doherty amplifier is 39.4% at -30 dBc adjacent channel leakage ratio (ACLR), while that of the comparable class AB amplifier is 24.2% at the same ACLR level.

Abstracts

Silicon micromachined EBG resonator and two-pole filter with improved performance characteristics

T. Euler and J. Papapolymerou. "Silicon micromachined EBG resonator and two-pole filter with improved performance characteristics." 2003 Microwave and Wireless Components Letters 13.9 (Sep. 2003 [MWCL]): 373-375.

A novel micromachined resonator at 45 GHz based on a defect in a periodic electromagnetic bandgap structure (EBG) and a two-pole Tchebyshev filter with 1.4% 0.15 dB equiripple bandwidth and 2.3 dB loss employing this resonator are presented in this letter. The periodic bandgap structure is realized on a 400 /spl mu/m thick high-resistivity silicon wafer using deep reactive ion etching techniques. The resonator and filter can be accessed via coplanar waveguide feeds.

Abstracts

Scaled model measurement of the embedding impedance of a 660-GHz waveguide SIS mixer with a 3-standard deembedding method

W. Zhang, C.Y.E. Tong and S.C. Shi. "Scaled model measurement of the embedding impedance of a 660-GHz waveguide SIS mixer with a 3-standard deembedding method." 2003 Microwave and Wireless Components Letters 13.9 (Sep. 2003 [MWCL]): 376-378.

In this paper, the embedding impedance of a 660-GHz superconductor-insulator-superconductor (SIS) mixer is investigated using a 100-times scaled-model with a new 3-standard deembedding technique. The mixer embedding impedance is extracted from the reflection coefficients measured at the waveguide port of the mixer for three different terminations at the SIS junction's feed point. The three standards chosen are open-circuit, short-circuit and resistive load. Measured results are compared with those simulated by a high-frequency structure simulator (HFSS).

Abstracts

Microwave indirect holographic imaging using an adaptation of optical techniques

D. Smith, M. Leach and A.J. Sambell. "Microwave indirect holographic imaging using an adaptation of optical techniques." 2003 Microwave and Wireless Components Letters 13.9 (Sep. 2003 [MWCL]): 379-381.

Indirect holography provides a quick and inexpensive three-dimensional (3-D) imaging technique at optical frequencies which has not been directly adapted to microwave imaging. This letter describes a technique whereby a radiated offset reference plane wave can be electronically synthesized allowing this technique to be used at microwave frequencies. In this letter, this technique has been applied to the problem of determining antenna radiation patterns and reconstructing complex near fields. Early experimental results compare favorably with results taken using traditional methods.

Abstracts

A two-section dual-band Chebyshev impedance transformer

S.J. Orfanidis. "A two-section dual-band Chebyshev impedance transformer." 2003 Microwave and Wireless Components Letters 13.9 (Sep. 2003 [MWCL]): 382-384.

We derive a two-section dual-band impedance transformer that matches a resistive load at two arbitrary frequencies. The transformer is equivalent to a two-section Chebyshev transformer whose parameters have been adjusted to achieve reflectionless notches at the two desired frequencies.

Abstracts

A reduced-size dual-mode bandpass filter with capacitively loaded open-loop arms

A. Gorur, C. Karpuz and M. Akpinar. "A reduced-size dual-mode bandpass filter with capacitively loaded open-loop arms." 2003 Microwave and Wireless Components Letters 13.9 (Sep. 2003 [MWCL]): 385-387.

A novel type of dual-mode microstrip bandpass filter using degenerate modes of a dual-mode microstrip square loop resonator with capacitively loaded open-loop arms is proposed. Such a dual-mode bandpass filter with a 0.75% bandwidth at the center frequency of 1.603 GHz is designed and fabricated to demonstrate the design of reduced-size microstrip filters. It is shown that the proposed filter has a size reduction of about 59% at the same center frequency, as compared with the dual-mode bandpass filters such as microstrip patch, cross-slotted patch, square loop and ring resonator filter.

Abstracts

A Ka-band narrow bandpass filter using LTCC technology

B.G. Choi, M.G. Stubbs and C.S. Park. "A Ka-band narrow bandpass filter using LTCC technology." 2003 Microwave and Wireless Components Letters 13.9 (Sep. 2003 [MWCL]): 388-389.

A Ka-band low-temperature co-fired ceramic (LTCC) narrow bandpass filter (BPF) is presented first. This BPF shows a very narrow 3 dB fractional bandwidth of 4.5% centered at 28.7 GHz. The advantages of multilayered LTCC technology such as high integration and vertical stacking capabilities were employed to design a three-dimensional interdigital end-coupled embedded microstrip narrow BPF. The difficulties in controlling the precise distance between two adjacent resonators in LTCC end-coupled BPF were overcome by locating the resonators on different layers. The measured insertion loss is 3 dB at 28.7 GHz.

Abstracts

An efficient PEEC algorithm for modeling of LTCC RF circuits with finite metal strip thickness

Ke-Li Wu, Lap Kun Yeung and Yan Ding. "An efficient PEEC algorithm for modeling of LTCC RF circuits with finite metal strip thickness." 2003 Microwave and Wireless Components Letters 13.9 (Sep. 2003 [MWCL]): 390-392.

In this letter, a simple but effective method is introduced to facilitate the partial element equivalent circuit (PEEC) algorithm to model multilayered low-temperature co-fired ceramics (LTCC) embedded RF circuits with finite metal thickness. The method makes use of the quasistatic assumption that charges only reside on the surfaces of a conductor. In the calculation of the coefficient of potential matrix, one thick conductor plate is treated as two inter-connected zero-thickness plates. Recombining the two plates analytically can correctly account for the increase of plate-to-plate capacitance without adding extra elements to the resultant equivalent circuit model. Experimental results have verified the validation of the proposed method.

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Dual electromagnetic bandgap CPW structures for filter applications

F. Martin, F. Falcone, J. Bonache, T. Lopetegi, M.A.G. Laso and M. Sorolla. "Dual electromagnetic bandgap CPW structures for filter applications." 2003 Microwave and Wireless Components Letters 13.9 (Sep. 2003 [MWCL]): 393-395.

A novel coplanar waveguide (CPW) low pass filter based on electromagnetic bandgaps (EBG) with double periodicity has been designed and fabricated. The device consists on a CPW with T-shaped loading capacitances at periodic positions and slot width modulation. By properly choosing the ratio between the two periods of the structure, a huge band gap (more than five times the bandwidth) is obtained through the suppression of spurious frequencies. The fabricated prototypes also exhibit very sharp cutoff, very low insertion loss in the passband and slow wave effect.

Abstracts

Efficient analysis of waveguide components using a hybrid PEE-FDFD algorithm

M. Wiktor and M. Mrozowski. "Efficient analysis of waveguide components using a hybrid PEE-FDFD algorithm." 2003 Microwave and Wireless Components Letters 13.9 (Sep. 2003 [MWCL]): 396-398.

The partial eigenfunction expansion (PEE) method combined with the classical finite difference frequency domain (FDFD) algorithm is proposed to accelerate frequency domain analysis of waveguide components. Examples are shown validating the method both for eigenvalue and deterministic problems.

Abstracts

Time domain Green's functions for lossy and dispersive multilayered media

Chong-Jin Ong and Leung Tsang. "Time domain Green's functions for lossy and dispersive multilayered media." 2003 Microwave and Wireless Components Letters 13.9 (Sep. 2003 [MWCL]): 399-401.

We have introduced a fast method of calculating the time domain Green's functions for multilayered media. In this paper, we demonstrate the use of this method to compute the scalar potential Green's function for a multilayer lossy dispersive medium on a PEC ground. The strength of the method lies in obtaining the Green's function for many source-to-field distances /spl rho/ and time instances t simultaneously. It only takes 6 min 28 s to compute 100/spl times/336=33 600 space time Green's function points in Matlab on a Pentium III 867 MHz processor with 1 GB of RAM for a multilayered lossy dispersive medium.

Abstracts

Z-transform implementation of the perfectly matched layer for truncating FDTD domains

O. Ramadan and A.Y. Oztoprak. "Z-transform implementation of the perfectly matched layer for truncating FDTD domains." 2003 Microwave and Wireless Components Letters 13.9 (Sep. 2003 [MWCL]): 402-404.

A simple algorithm for implementing the perfectly matched layer (PML) is presented for truncating finite difference time domain (FDTD) computational domains. The algorithm is based on incorporating the Z-transform method into the PML FDTD implementation. The main advantage of the algorithm is its simplicity as it allows direct FDTD implementation of Maxwell's equations in the PML region. In addition, the formulations are independent of the material properties of the FDTD computational domain. Numerical examples are included to demonstrate the effectiveness of these formulations.

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A study of the numerical dispersion relation for the 2-D ADI-FDTD method

Saehoon Ju, Hyeongdong Kim and Hyung-Hoon Kim. "A study of the numerical dispersion relation for the 2-D ADI-FDTD method." 2003 Microwave and Wireless Components Letters 13.9 (Sep. 2003 [MWCL]): 405-407.

This letter presents a numerical dispersion relation for the two-dimensional (2-D) finite-difference time-domain method based on the alternating-direction implicit time-marching scheme (2-D ADI-FDTD). The proposed analytical relation for 2-D ADI-FDTD is compared with those relations in the previous works. Through numerical tests, the dispersion equation of this work was shown as correct one for 2-D ADI-FDTD.

Abstracts

An adjoint variable method for frequency domain TLM problems with conducting boundaries

M.H. Bakr and N.K. Nikolova. "An adjoint variable method for frequency domain TLM problems with conducting boundaries." 2003 Microwave and Wireless Components Letters 13.9 (Sep. 2003 [MWCL]): 408-410.

We propose a novel adjoint variable approach to design sensitivity analysis with the frequency domain transmission line modeling (FDTLM) method. An enlarged system matrix is constructed that includes the perturbed metal sections of the structure. The adjoint system of equations is then formed and solved. The derivatives of the responses with respect to all designable parameters are estimated using two analyses of the original and the adjoint systems. Second-order terms are included by approximating the values of the incident voltage waveforms in the perturbed areas. Our novel technique is illustrated through a number of examples.

Abstracts

A new twisted differential line structure on high-speed printed circuit boards to enhance immunity to crosstalk and external noise

Dong Gun Kam, Heeseok Lee, Jonghoon Kim and Joungho Kim. "A new twisted differential line structure on high-speed printed circuit boards to enhance immunity to crosstalk and external noise." 2003 Microwave and Wireless Components Letters 13.9 (Sep. 2003 [MWCL]): 411-413.

Differential signaling has become a popular choice for high-speed interconnection schemes on Printed Circuit Boards (PCBs), offering superior immunity to external noise. However, conventional differential transmission lines on PCBs have problems, such as crosstalk and radiated emission. To overcome these, we propose a Twisted Differential Line (TDL) structure on a multilayer PCB. Its improved immunity to crosstalk noise and the reduced radiated emission has been successfully demonstrated by measurement. The proposed structure is proven to transmit 3 Gbps digital signals with a clear eye-pattern. Furthermore, it is subject to much less crosstalk noise and achieves a 13 dB suppression of radiated emission.

Abstracts

Investigation on the characteristics of the envelope FDTD based on the alternating direction implicit scheme

Saehoon Ju, Kyung-Young Jung and Hyeongdong Kim. "Investigation on the characteristics of the envelope FDTD based on the alternating direction implicit scheme." 2003 Microwave and Wireless Components Letters 13.9 (Sep. 2003 [MWCL]): 414-416.

This letter presents numerical characteristics of recently developed the envelope FDTD based on the alternating direction implicit scheme (envelope ADI-FDTD). Through numerical simulations, it is shown that the envelope ADI-FDTD is unconditionally stable and we can get better dispersion accuracy than the traditional ADI-FDTD by analyzing the envelope of the signal. This fact gives the opportunity to extend the temporal step size to the Nyquist limit in certain cases. Numerical results show that the envelope ADI-FDTD can be used as an efficient electromagnetic analysis tool especially in the single frequency or band limited systems.

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Enhancement of locking range through reactive loading on the feedback path

M. Colwell and L.W. Pearson. "Enhancement of locking range through reactive loading on the feedback path." 2003 Microwave and Wireless Components Letters 13.9 (Sep. 2003 [MWCL]): 417-419.

Coupled oscillator systems require oscillators with properties that heretofore have not been addressed in oscillator design. Specifically, one needs to achieve wide locking bandwidth - the counterpart to low Q if the oscillator is based on a resonant circuit. This letter introduces an approach to design of wide locking bandwidth by dealing with oscillator design in a feedback format. The specific realization reported here employs a MMIC amplifier with transmission line feedback external to the MMIC. Reactive loads that are weakly coupled to the transmission line allow one to achieve wide locking bandwidth. Results for an implementation at K/sub /spl alpha// band are provided.

Abstracts

A low-power highly linear cascoded multiple-gated transistor CMOS RF amplifier with 10 dB IP3 improvement (Revised)

Tae Wook Kim, Bonkee Kim, I. Nam, Beomkyu Ko and Kwyro Lee. "A low-power highly linear cascoded multiple-gated transistor CMOS RF amplifier with 10 dB IP3 improvement (Revised)." 2003 Microwave and Wireless Components Letters 13.9 (Sep. 2003 [MWCL]): 420-422.

A low-power highly linear CMOS RF amplifier circuit composed of a Multiple-Gated common-source FET TRansistor (MGTR) in cascode configuration is reported. In an MGTR amplifier, linearity is improved by using transconductance linearization which can be achieved by canceling the negative peak value of g/sub m/" of the main transistor with the positive one in the auxiliary transistor having a different size and gate drive combined in parallel. This enhancement, however, is limited by the distortion originated from the combined influence of g/sub m/' and harmonic feedback, which can greatly be reduced by the cascoding MGTR output. IP3 improvement as large as 10 dB has been obtained from an experimental RF amplifier designed at 900 MHz and fabricated using 0.35 /spl mu/m BiCMOS technology using only CMOS at a similar power consumption and gain as those obtainable from conventional cascode single gate transistor amplifiers.

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"Information for Authors (Oct. 2003 [MWCL])." 2003 Microwave and Wireless Components Letters 13.10 (Oct. 2003 [MWCL]): 0_3-0_4.

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Abstracts

Wide-band VCOs in SiGe production technology operating up to about 70 GHz

H. Li, H.-M. Rein, R.-E. Makon and M. Schwerd. "Wide-band VCOs in SiGe production technology operating up to about 70 GHz." 2003 Microwave and Wireless Components Letters 13.10 (Oct. 2003 [MWCL]): 425-427.

Multipurpose VCOs with wide tuning range and oscillation frequencies up to 74 GHz (on wafer) and 69 GHz (mounted chip, with output buffer), respectively, have been fully integrated in a commercial SiGe production technology. To the best of the authors' knowledge these are record values for commercially available Si-based technologies, despite the moderate transistor f/sub T/ (62 GHz). The oscillation frequency can easily be dropped down to 41.5 GHz by cutting interconnection lines in the upper metallization layer. The phase noise obtained depends on the frequency range chosen and is sufficiently low for the intended applications.

Abstracts

Multifunctional substrates for high-frequency applications

Xun Gong, W.J. Chappell and L.P.B. Katehi. "Multifunctional substrates for high-frequency applications." 2003 Microwave and Wireless Components Letters 13.10 (Oct. 2003 [MWCL]): 428-430.

A substrate that is designed to suppress parasitic modes while at the same time provides high-Q filtering capability is presented. High-density circuits require the integration of multiple functions in very limited space. More specifically, with the design of three-dimensional (3-D) circuits, parasitic effects caused by the excitation of surface waves result in a serious degradation of performance and impose limitations on circuit density and performance. Herein, an effort is presented to use advanced design concepts to enable embedded functionality within a substrate. The presented substrate geometries can easily be extended to 3-D to allow for the development of system-in-a-package which incorporates a high-Q filter bank to provide effective frequency selectivity. To demonstrate this concept, resonators and filters in LTCC are designed, fabricated and measured. Resonators in LTCC with unloaded Q up to 428 were measured. A narrow-band 2-pole filter is realized to show that a function of a relatively high-Q can be incorporated into the packaging. The 2.28% filter has an insertion loss of 1.7 dB due to the low loss nature of the design. Simulation and measurement of the structures are presented with good agreement achieved.

Abstracts

Very high density RF MIM capacitors (17 fF//spl mu/m/sup 2/) using high-/spl kappa/ Al/sub 2/O/sub 3/ doped Ta/sub 2/O/sub 5/ dielectrics

M.Y. Yang, C.H. Huang, A. Chin, Chunxiang Zhu, B.J. Cho, M.F. Li and Dim-Lee Kwong. "Very high density RF MIM capacitors (17 fF//spl mu/m/sup 2/) using high-/spl kappa/ Al/sub 2/O/sub 3/ doped Ta/sub 2/O/sub 5/ dielectrics." 2003 Microwave and Wireless Components Letters 13.10 (Oct. 2003 [MWCL]): 431-433.

Using high-/spl kappa/ Al/sub 2/O/sub 3/ doped Ta/sub 2/O/sub 5/ dielectric, we have obtained record high MIM capacitance density of 17 fF//spl mu/m/sup 2/ at 100 kHz, small 5% capacitance reduction to RF frequency range, and low leakage current density of 8.9/spl times/10/sup -7/ A/cm/sup 2/. In combination of both high capacitor density and low leakage current density, a very low leakage current of 5.2/spl times/10/sup -12/ A is calculated for a typical large 10 pF capacitor used in RF IC that is even smaller than that of a deep sub-/spl mu/m MOSFET. This very high capacitance density with good MIM capacitor characteristics can significantly reduce the chip size of RF ICs.

Abstracts

2.4 GHz continuously variable ferroelectric phase shifters using all-pass networks

Dongsu Kim, Yoonsu Choi, M. Ahn, M.G. Allen, J. Stevenson Kenney and P. Marry. "2.4 GHz continuously variable ferroelectric phase shifters using all-pass networks." 2003 Microwave and Wireless Components Letters 13.10 (Oct. 2003 [MWCL]): 434-436.

Continuously variable ferroelectric (BST on sapphire) phase shifters based on all-pass networks are presented. An all-pass network phase shifter consists of only lumped LC elements, and thus the total size of the phase shifter is kept to less than 2.2 mm /spl times/ 2.6 mm at 2.4 GHz. The tunability (C/sub max//C/sub min/) of a BST interdigital capacitor is over 2.9 with a bias voltage of 140 V. The phase shifter provides more than 121/spl deg/ phase shift with the maximum insertion loss of 1.8 dB and the worst case return loss of 12.5 dB from 2.4 GHz to 2.5 GHz. By cascading two identical phase shifters, more than 255/spl deg/ phase shift is obtained with the maximum insertion loss of 3.75 dB. The loss figure-of-merit of both the single- and double-section phase shifters is over 65/spl deg//dB from 2.4 GHz to 2.5 GHz.

Abstracts

A MEMS reconfigurable matching network for a class AB amplifier

Yumin Lu, D. Peroulis, S. Mohammadi and L.P.B. Katehi. "A MEMS reconfigurable matching network for a class AB amplifier." 2003 Microwave and Wireless Components Letters 13.10 (Oct. 2003 [MWCL]): 437-439.

This letter presents the design of a reconfigurable amplifier with an adaptive matching network implemented by shunt MEMS switches. In particular, the MEMS switches are used as capacitive stubs in double-stub matching circuit designs. The effective capacitance of the switches can be varied by switch activation which results in a change of the matching configuration. The RF response of the adaptive matching network is studied and the power performance of the amplifier is presented.

Abstracts

Parallel-coupled microstrip filters with over-coupled end stages for suppression of spurious responses

Jen-Tsai Kuo, Sin-Ping Chen and Meshon Jiang. "Parallel-coupled microstrip filters with over-coupled end stages for suppression of spurious responses." 2003 Microwave and Wireless Components Letters 13.10 (Oct. 2003 [MWCL]): 440-442.

In a parallel-coupled microstrip filter, end stages with over-coupling are designed to suppress the unwanted responses at twice the passband frequency (2f/sub 0/). The inherent transmission zero of an over-coupled input/output stage is shown tunable. It is found that increasing the image impedance of the filter sections can further enhance the suppression. The designed bandpass filters thus have a wide upper stopband and improved passband response symmetry. Measured results of fabricated circuits show that the idea works very well.

Abstracts

A dual-band (13/22-GHz) VCO based on resonant mode switching

Donghyun Baek, Jeonggeun Kim and Songcheol Hong. "A dual-band (13/22-GHz) VCO based on resonant mode switching." 2003 Microwave and Wireless Components Letters 13.10 (Oct. 2003 [MWCL]): 443-445.

A dual band voltage-controlled oscillator (VCO) that can cover 13- and 22-GHz bands is proposed and implemented using an InGaP/GaAs heterojunction bipolar transistor (HBT) technology. The frequency band is selected by mode switching between differential mode at low frequency and common mode at high frequency. The differential mode means that voltages appearing at two tank ports have opposite polarities and the common mode, the same polarities. Mode switching allows the VCO to operate at two resonant frequencies with a single LC tank. The measured phase-noise performances of a dual band VCO are -108 and -106 dBc/Hz at 1 MHz offset at the frequencies of 13 and 22 GHz, respectively, while drawing 22 mA and 16 mA from a 4-V supply. Switching times between two bands are less than 24 ns.

Abstracts

8-GHz CMOS quadrature VCO using transformer-based LC tank

Donghyun Baek, Taeksang Song, Euisik Yoon and Songcheol Hong. "8-GHz CMOS quadrature VCO using transformer-based LC tank." 2003 Microwave and Wireless Components Letters 13.10 (Oct. 2003 [MWCL]): 446-448.

A fully integrated quadrature VCO at 8 GHz is presented. The VCO is implemented using a transformer-based LC tank in 0.18 /spl mu/m CMOS technology, in which two VCOs are coupled to generate I-Q signals. The VCO is realized employing the drain-gate transformer feedback configuration proposed here. This makes use of the quality factor enhancement in the resonator using a transformer and the deep switching-off technique by controlling gate bias. By turning off switching transistors of the differential VCO core deeply, the phase noise performance is improved more than 10 dB. The measured phase noise values are -110 and -117 dBc/HZ at the offset frequencies of 600 kHz and 1 MHz respectively. The tuning range of 250 MHz is achieved with the control voltage from 0 to 1 V. The VCO draws 8 mA in two differential core circuits from 3 V supply. When the bias voltage goes down to 2.5 V, the phase noise decrease only 2 dB compared to that of 3 V bias. The VCO performances are compared with previously reported quadrature Si VCOs in 5/spl sim/12 GHz frequency range.

Abstracts

A new empirical nonlinear model for sub-250 nm channel MOSFET

A. Siligaris, G. Dambrine, D. Schreurs and F. Danneville. "A new empirical nonlinear model for sub-250 nm channel MOSFET." 2003 Microwave and Wireless Components Letters 13.10 (Oct. 2003 [MWCL]): 449-451.

An empirical nonlinear model for sub-250 nm channel length MOSFET is presented which is useful for large signal RF circuit simulation. Our model is made of both analytical drain current and gate charge formulations. The drain current expression is continuous and infinitely derivable, and charge conservation is taken into account, as the capacitances derive from a single charge expression. The model's parameters are first extracted, prior the model's implementation into a circuit simulator. It is validated through dc, ac, and RF large signal measurements compared to the simulation.

Abstracts

Multi-order predistortion of power amplifiers using a second harmonic based technique

Kyoung-Joon Cho, Dong-Hee Jang, Sang-Hee Kim, Jong-Heon Kim, Byungje Lee, Nam-Young Kim, Jong-Chul Lee and S.P. Stapleton. "Multi-order predistortion of power amplifiers using a second harmonic based technique." 2003 Microwave and Wireless Components Letters 13.10 (Oct. 2003 [MWCL]): 452-454.

A novel multi-order predistortion linearizer is proposed to achieve independent control of the third- and fifth-order intermodulation products in high power amplifier. The approach is based on a combination of the second harmonic technique and the difference frequency technique. The second harmonic and difference frequency terms are generated using an envelope detector and two frequency multipliers. The RF predistorter has the advantage of low insertion loss and the requirement of a short delay line. Experimental results demonstrate an adjacent channel power ratio (ACPR) reduction of 11 dB for W-CDMA, at 2140 MHz.

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Abstracts

A -119.2 dBc/Hz at 1 MHz, 1.5 mW, fully integrated, 2.5-GHz, CMOS VCO using helical inductors

Joonho Gil, Seong-Sik Song, Hyunjin Lee and Hyungcheol Shin. "A -119.2 dBc/Hz at 1 MHz, 1.5 mW, fully integrated, 2.5-GHz, CMOS VCO using helical inductors." 2003 Microwave and Wireless Components Letters 13.11 (Nov. 2003 [MWCL]): 457-459.

This letter presents an implementation to reduce area occupation in designing voltage-controlled oscillators (VCOs) using a filtering technique. We applied a helical inductor to the noise filter in a 2.5-GHz CMOS VCO to reduce area occupation. Because a helical inductor has less area occupation, a small silicon area was achieved. This VCO operates in the 2.5-GHz band with power consumption of 1.5 mW and phase noise of -119.2 dBc/Hz at 1-MHz. Our VCO displays an excellent performance of phase noise in relation to power consumption.

Abstracts

Large Q-factor improvement for spiral inductors on silicon using proton implantation

K.T. Chan, C.H. Huang, A. Chin, M.F. Li, Dim-Lee Kwong, S.P. McAlister, D.S. Duh and W.J. Lin. "Large Q-factor improvement for spiral inductors on silicon using proton implantation." 2003 Microwave and Wireless Components Letters 13.11 (Nov. 2003 [MWCL]): 460-462.

We have improved the Q-factor of a 4.6 nH spiral inductor, fabricated on a standard Si substrate, by more than 60%, by using an optimized proton implantation process. The inductor was fabricated in a 1-poly-6-metal process, and implanted after processing. The implantation increased the substrate impedance by /spl sim/ one order of magnitude without disturbing the inductor value before resonance. The S-parameters were well described by an equivalent circuit model. The significantly improved inductor performance and VLSI-compatible process makes the proton implantation suitable for high performance RF ICs.

Abstracts

Measured propagation characteristics of coplanar waveguide on semi-insulating 4H-SiC through 800 K

G.E. Ponchak, S.A. Alterovitz, A.N. Downey, J.C. Freeman and Z.D. Schwartz. "Measured propagation characteristics of coplanar waveguide on semi-insulating 4H-SiC through 800 K." 2003 Microwave and Wireless Components Letters 13.11 (Nov. 2003 [MWCL]): 463-465.

Wireless sensors for high temperature industrial applications and jet engines require RF transmission lines and RF integrated circuits (RFICs) on wide bandgap semiconductors such as SiC. In this paper, the complex propagation constant of coplanar waveguide fabricated on semi-insulating 4H-SiC has been measured through 813 K. It is shown that the attenuation increases 3.4 dB/cm at 50 GHz as the SiC temperature is increased from 300 K to 813 K. Above 500 K, the major contribution to loss is the decrease in SiC resistivity. The effective permittivity of the same line increases by approximately 5% at microwave frequencies and 20% at 1 GHz.

Abstracts

Theoretical verification on the effect of an additional DR in push-push FET DROs

Seung Wook Park and I.S. Kim. "Theoretical verification on the effect of an additional DR in push-push FET DROs." 2003 Microwave and Wireless Components Letters 13.11 (Nov. 2003 [MWCL]): 466-468.

This letter theoretically verifies that a second Dielectric Resonator (DR) placed at the drain port of a push-push FET Dielectric Resonator Oscillator (DRO) can provide compensation for some phase difference/error between the output signals and improve the output power level. The theoretical verification starts from understanding the relationship between output power and phase in a balanced push-push oscillation scheme. The phase compensation causing power improvement is analyzed with an conceptual configuration of the circuit. The effect is confirmed by Advanced Design System (ADS) simulation for the same circuit as that in an earlier experimental report.

Abstracts

Convergence of FDTD and wavelet-collocation modeling of curved dielectric interface with the effective dielectric constant technique

M. Fujii, D. Lukashevich, I. Sakagami and P. Russer. "Convergence of FDTD and wavelet-collocation modeling of curved dielectric interface with the effective dielectric constant technique." 2003 Microwave and Wireless Components Letters 13.11 (Nov. 2003 [MWCL]): 469-471.

The convergence of the effective dielectric constant (EDC) model of curved dielectric surfaces has been investigated precisely for the finite-difference time-domain (FDTD) as well as for the interpolet-collocation time-domain (ICTD) methods. The EDC is computed by solving the Laplace equation of static electric potential by a finite-difference (FD) method for each cell located on the interface of arbitrary dielectric media. The FD solution of the Laplace equation provides an accurate EDC for arbitrary curved interface with even high contrast of the dielectric constants. It has been demonstrated in this paper that the precisely chosen EDC allows both the FDTD and the wavelet-collocation methods to exhibit second-order convergence for the analysis of not only planar but also curved dielectric interfaces.

Abstracts

Package macromodeling via time-domain vector fitting

S. Grivet-Talocia. "Package macromodeling via time-domain vector fitting." 2003 Microwave and Wireless Components Letters 13.11 (Nov. 2003 [MWCL]): 472-474.

This paper addresses the construction of lumped macromodels for package structures. A technique named Time-Domain Vector Fitting (TD-VF) is introduced for the identification of the dominant poles of the structure. This method uses as raw data transient excitations and responses at the ports of the structure. These responses are easily obtained from transient full-wave electromagnetic solvers based, e.g., on Finite Differences. The rational approximation can be easily synthesized into a SPICE-compatible subcircuit providing a broadband approximation to the input-output behavior of the package.

Abstracts

The unconditionally stable pseudospectral time-domain (PSTD) method

Gang Zhao and Q.H. Liu. "The unconditionally stable pseudospectral time-domain (PSTD) method." 2003 Microwave and Wireless Components Letters 13.11 (Nov. 2003 [MWCL]): 475-477.

This letter presents a new time-domain method for Maxwell's equations, in which the unconditionally stable techniques, the alternating direction implicit (ADI) and the split-step (SS) schemes, are developed for the pseudospectral time-domain (PSTD) algorithm to maintain stability while achieving higher accuracy and efficiency over the FDTD method. The multidomain strategy is employed to allow for a flexible treatment of internal inhomogeneities. Numerical results demonstrate the unconditional stability and the second-order accuracy for both ADI- and SS-PSTD algorithms.

Abstracts

A K-band InGaP/GaAs HBT balanced MMIC VCO

Jeong-Geun Kim, Dong-Hyun Baek, Sanghoon Jeon, Jae-Woo Park and Songcheol Hong. "A K-band InGaP/GaAs HBT balanced MMIC VCO." 2003 Microwave and Wireless Components Letters 13.11 (Nov. 2003 [MWCL]): 478-480.

A fully integrated K-band balanced voltage controlled oscillator (VCO) is presented. The VCO is realized using a commercially available InGaP/GaAs heterojunction bipolar transistor (HBT) technology with an f/sub T/ of 60 GHz and an f/sub MAX/ of 110 GHz. To generate negative resistance at mm-wave frequencies, common base inductive feedback topology is used. The VCO provides an oscillation frequency from 21.90 GHz to 22.33 GHz. The frequency tuning range is about 430 MHz. The peak output power is -0.3 dBm. The phase noise is -108.2 dBc/Hz at 1 MHz offset at an operating frequency of 22.33 GHz. The chip area is 0.84/spl times/1.00 mm/sup 2/.

Abstracts

Circular-pad via model based on cavity field analysis

G.A. Kouzaev, N.K. Nikolova and M.J. Deen. "Circular-pad via model based on cavity field analysis." 2003 Microwave and Wireless Components Letters 13.11 (Nov. 2003 [MWCL]): 481-483.

An equivalent circuit model of a circular-pad grounding via is proposed based on cavity modal analysis. The modes of the via are derived analytically. Each mode is represented by an equivalent circuit taking into account ohmic losses, as well as losses due to spatial and surface wave radiation. It is shown that the degradation of grounding via characteristics at high frequencies is caused by the multimode effects and radiation. The accuracy of the proposed semi-analytical via model is comparable with that of full-wave analysis up to 75 GHz. It is fast and is easily incorporated in high-frequency circuit simulators.

Abstracts

Experimental demonstration of the effect of groove shape on the wave properties of the helical groove waveguide

Yanyu Wei, Wenxiang Wang, Jiahong Sun, Baofu Jia, A.K. Sinha, Sheng-Gang Liu and Gun-Sik Park. "Experimental demonstration of the effect of groove shape on the wave properties of the helical groove waveguide." 2003 Microwave and Wireless Components Letters 13.11 (Nov. 2003 [MWCL]): 484-486.

This letter presents a simple and general fabrication method for helical groove waveguides (HGWs) with successful fabrication of a number of novel HGWs such as the hole-gap-shaped groove HGW, the swallow-tailed groove one, the trapezoid groove one and the ridge-loaded rectangular one. Also, measurements on these structures have been carried out to determine their dispersion properties. The experimental results agree well with the theoretical results and demonstrate the large influence of groove shape on the dispersion characteristics of the structures.

Abstracts

Integrated antennas on Si with over 100 GHz performance, fabricated using an optimized proton implantation process

K.T. Chan, A. Chin, Y.D. Lin, C.Y. Chang, C.X. Zhu, M.F. Li, D.L. Kwong, S. McAlister, D.S. Duh and W.J. Lin. "Integrated antennas on Si with over 100 GHz performance, fabricated using an optimized proton implantation process." 2003 Microwave and Wireless Components Letters 13.11 (Nov. 2003 [MWCL]): 487-489.

We have improved the performance of integrated antennas on Si for possible application in wireless communications and wireless interconnects. For practical VLSI integration, we have reduced the antenna size and optimized the proton implantation to a low energy of /spl sim/4 MeV with a depth of /spl sim/175 /spl mu/m. To avoid any possible contamination, the ion implantation is applied after device fabrication. Excellent performance such as very low RF power loss up to 50 GHz, record high 103 GHz antenna resonance, and sharp 5 GHz bandwidth have been achieved.

Abstracts

A reconfigurable slot antenna with switchable polarization

M.K. Fries, M. Grani and R. Vahldieck. "A reconfigurable slot antenna with switchable polarization." 2003 Microwave and Wireless Components Letters 13.11 (Nov. 2003 [MWCL]): 490-492.

A novel reconfigurable slot antenna architecture allowing polarization switching is presented. The antenna shape consists of a slot-ring with perturbations which are switched on and off using pin-diodes. Two antennas allowing switching either between linear and circular polarization or between two circular polarizations are demonstrated. The antenna architecture is interesting for commercial wireless applications because it is compatible with modern fabrication processes and can be realized on low cost dielectric materials.

Abstracts

Measurement of intermediate frequency bandwidth of hot electron bolometer mixers at terahertz frequency range

D. Meledin, C.-Y.E. Tong, R. Blundell and G. Goltsman. "Measurement of intermediate frequency bandwidth of hot electron bolometer mixers at terahertz frequency range." 2003 Microwave and Wireless Components Letters 13.11 (Nov. 2003 [MWCL]): 493-495.

We have developed a new experimental setup for measuring the IF bandwidth of superconducting hot electron bolometer mixers. In our measurement system we use a chopped hot filament as a broadband signal source, and can perform a high-speed IF scan with no loss of accuracy when compared to coherent methods. Using this technique we have measured the 3 dB IF bandwidth of hot electron bolometer mixers, designed for THz frequency operation, and made from 3-4 nm thick NbN film deposited on an MgO buffer layer over crystalline quartz.

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Editorial (Dec. 2003 [MWCL])

S.M. El-Ghazaly. "Editorial (Dec. 2003 [MWCL])." 2003 Microwave and Wireless Components Letters 13.12 (Dec. 2003 [MWCL]): 497-498.

Abstracts

A novel high-Q LTCC stripline resonator for millimeter-wave applications

Young Chul Lee and Chul Soon Park. "A novel high-Q LTCC stripline resonator for millimeter-wave applications." 2003 Microwave and Wireless Components Letters 13.12 (Dec. 2003 [MWCL]): 499-501.

We have implemented a novel high-Q low temperature co-fired ceramic (LTCC) stripline resonator by including air cavities in the LTCC substrate for millimeter-wave applications. This new resonator presents Q-factor of 290 and total loss of 0.03 dB/mm at 34.8 GHz, and they are improved by 138% and 58%, respectively, compared to the conventional one. Its dielectric loss is analyzed as small as 0.0003 dB/mm at the resonant frequency, and that improved by a factor of 120 compared to the conventional one.

Abstracts

A 2.7-V SiGe HBT variable gain amplifier for CDMA applications

Chang-Woo Kim and Young-Gi Kim. "A 2.7-V SiGe HBT variable gain amplifier for CDMA applications." 2003 Microwave and Wireless Components Letters 13.12 (Dec. 2003 [MWCL]): 502-504.

A monolithic SiGe HBT variable gain amplifier with high dB-linear gain control and high linearity has been developed for CDMA applications. The VGA achieves a 30-dB dynamic gain control with a control range of 0-2.7 Vdc in 824-849 MHz band. The maximum gain and attenuation are 23 dB and 7 dB, respectively. Input/output VSWRs keep low and constant despite change in the gain-control voltage. At a low operation voltage of 2.7 V, the VGA produces a 1-dB compression output power of 13 dBm and /spl plusmn/885-kHz ACPR of -57 dBc at a 5-dBm output power.

Abstracts

A high-performance 40-85 GHz MMIC SPDT switch using FET-integrated transmission line structure

Junghyun Kim, Won Ko, Sung-Ho Kim, Jinho Jeong and Youngwoo Kwon. "A high-performance 40-85 GHz MMIC SPDT switch using FET-integrated transmission line structure." 2003 Microwave and Wireless Components Letters 13.12 (Dec. 2003 [MWCL]): 505-507.

A compact ultra-broadband distributed SPDT switch has been developed using GaAs PHEMTs. An FET-integrated transmission line structure, where the source pad of the shunt FET has been integrated into the signal line while the drain has been grounded to a via-hole with minimum parasitic inductance, has been proposed to extend the operating bandwidth of the distributed switches. SPDT and SPST switches using this structure have been fabricated using a commercial GaAs PHEMT foundry. The SPDT switch showed low insertion loss (<2 dB) and good isolation (>30 dB) over an octave bandwidth from 40 to 85 GHz. At 77 GHz, the SPDT switch showed extremely low insertion loss of 1.4 dB and high isolation of 38 dB. The chip size was as small as 1.45/spl times/1.0 mm/sup 2/. To the best of our knowledge, this is among the best performance ever reported for an octave-band SPDT switch at this frequency range. SPST switch also showed the excellent performance with the insertion loss of 0.4 dB and isolation of 34 dB at 60 GHz.

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Influence of the SRO as passivation layer on the microwave attenuation losses of the CPWs fabricated on HR-Si

J.A. Reynoso-Hernandez, R. Rangel-Rojo, M. Aceves, I. Zaldivar, L.E. Sanchez and M. Herrera. "Influence of the SRO as passivation layer on the microwave attenuation losses of the CPWs fabricated on HR-Si." 2003 Microwave and Wireless Components Letters 13.12 (Dec. 2003 [MWCL]): 508-510.

In this letter, silicon rich oxide (SRO) is used as the passivation layer of coplanar wave guides (CPWs) fabricated on high resistivity silicon (HR-Si). The microwave performance of the CPWs is evaluated computing the attenuation loss (/spl alpha/) of the device in the 0.045-50 GHz frequency range. It is shown that for frequencies lower than 5 GHz the losses of CPWs using SRO as a passivation layer are lower than those of CPWs using SiO/sub 2/. It is also shown that using a combination of thermal and CVD SiO/sub 2/, a reduction of the losses of CPWs is obtained.

Abstracts

Miniaturized coplanar waveguide stop band filters based on multiple tuned split ring resonators

F. Martin, F. Falcone, J. Bonache, R. Marques and M. Sorolla. "Miniaturized coplanar waveguide stop band filters based on multiple tuned split ring resonators." 2003 Microwave and Wireless Components Letters 13.12 (Dec. 2003 [MWCL]): 511-513.

A novel compact stop band filter consisting of a 50 /spl Omega/ coplanar waveguide (CPW) with split ring resonators (SRRs) etched in the back side of the substrate is presented. By aligning SRRs with the slots, a high inductive coupling between line and rings is achieved, with the result of a sharp and narrow rejection band in the vicinity of the resonant frequency of the rings. In order to widen the stop band of the filter, several ring pairs tuned at equally spaced frequencies within the desired gap are cascaded. The frequency response measured in the fabricated prototype device exhibits pronounced slopes at either side of the stop band and near 0 dBs insertion loss outside that band. Since SRR dimensions are much smaller than signal wavelength, the proposed filters are extremely compact and can be used to reject frequency parasitics in CPW structures by simply patterning properly tuned SRRs in the back side metal. Additional advantages are easy fabrication and compatibility with MMIC or PCB technology.

Abstracts

Bi-directional coupling between two coupled transmission lines

Dengpeng Chen and Zhongxiang Shen. "Bi-directional coupling between two coupled transmission lines." 2003 Microwave and Wireless Components Letters 13.12 (Dec. 2003 [MWCL]): 514-516.

Coupled mode theory including backward coupling is employed to investigate the bi-directional coupling mechanism in two symmetrical coupled microstrip transmission lines. Analytical scattering parameter expressions for the case of matched terminations are presented. Reflections and near-end crosstalk is attributed to the combined effects of distributed backward coupling and interference between discrete reflections caused by termination mismatches at two ends.

Abstracts

A novel coupling structure suitable for cross-coupled filters with folded quarter-wave resonators

Chi-Yang Chang and Cheng-Chung Chen. "A novel coupling structure suitable for cross-coupled filters with folded quarter-wave resonators." 2003 Microwave and Wireless Components Letters 13.12 (Dec. 2003 [MWCL]): 517-519.

A new class of coupling structure for cross-coupled filters with folded quarter-wave resonators is presented. The cross coupling mechanism is realized by magnetic coupling from the short ends of the resonator. The proposed magnetic coupling solves the problem of response limitation of folded quarter-wave resonator cross-coupled filters that were introduced previously using electrical cross coupling. Several quadruplet and trisection filters are proposed and fabricated. The measured results matched well with the theoretical prediction.

Abstracts

An improved compact 2-D finite-difference frequency-domain method for guided wave structures

Ling-Yun Li and Jun-Fa Mao. "An improved compact 2-D finite-difference frequency-domain method for guided wave structures." 2003 Microwave and Wireless Components Letters 13.12 (Dec. 2003 [MWCL]): 520-522.

An improved compact two-dimensional (2-D) finite-difference frequency-domain method is presented to determine the dispersion characteristics of guided wave structures. Eigenvalue equations that contain only two transverse electric field components are derived from Maxwell's differential equations. Compared to the traditional 2-D FDFD containing four or six field components, both the order and number of nonzero elements of the coefficient matrix are reduced simultaneously. The method is verified by two application examples.

Abstracts

90-nm CMOS for microwave power applications

M. Ferndahl, H.-O. Vickes, H. Zirath, I. Angelov, F. Ingvarson and A. Litwin. "90-nm CMOS for microwave power applications." 2003 Microwave and Wireless Components Letters 13.12 (Dec. 2003 [MWCL]): 523-525.

We report, for the first time, the experimental evaluation of a very short channel 90-nm CMOS transistor under RF over-voltage conditions. At 9 GHz and 1.5 V supply a 40 /spl mu/m gate width device is able to deliver 370 mW/mm output power with a PAE of 42% and a transducer power gain of 15 dB. Measurement results at 3 and 6 GHz is also presented. The transistor does not show any degradation in either dc or RF performance after prolonged operation at 1 and 6 dB compression. Simulation show, that the peak voltage, V/sub ds/ at this condition is 3.0 V, while the maximum allowed dc supply voltage is limited by the design rules to 1.2 V. We show for the first time that nanometer-scale CMOS can be used for microwave power applications with severe RF over-voltage conditions without any observable degradation.

Abstracts

A 5.7-GHz 0.18-/spl mu/m CMOS gain-controlled differential LNA with current reuse for WLAN receiver

Che-Hong Liao and Huey-Ru Chuang. "A 5.7-GHz 0.18-/spl mu/m CMOS gain-controlled differential LNA with current reuse for WLAN receiver." 2003 Microwave and Wireless Components Letters 13.12 (Dec. 2003 [MWCL]): 526-528.

This letter presents a 5.7 GHz 0.18 /spl mu/m CMOS gain-controlled differential LNA for an IEEE 802.11a WLAN application. The differential LNA, fabricated with the 0.18 /spl mu/m 1P6M standard CMOS process, uses a current-reuse technology to increase linear gain and save power consumption. The circuit measurement is performed using an FR-4 PCB test fixture. The LNA exhibits a noise figure of 3.7 dB, linear gain of 12.5 dB, P/sub 1dB/ of -11 dBm, and gain tuning range of 6.9 dB. The power consumption is 14.4 mW at V/sub DD/=1.8 V.

Abstracts

Novel design for small-size coplanar waveguide frequency tripler

Shry-Sann Liao, Hsien-Ku Chen, Pou-Tou Sun, Chen-Yen Lai, Hsien-Yuan Liao and Yin-Cheng Chang. "Novel design for small-size coplanar waveguide frequency tripler." 2003 Microwave and Wireless Components Letters 13.12 (Dec. 2003 [MWCL]): 529-531.

This letter presents a novel design for a small-size coplanar waveguide frequency tripler. In this study, a new BPF has been replaced the conventional stub lines in the output termination of the multiplier. Not only enhance the performance of the tripler, but also reduce the whole circuit size. to 2.125/spl times/2.275 cm/sup 2/ in the frequency 0.8/2.4 GHz, The spurious suppressions are 37.48, 33.38, and 32.08 dBc for the 1st, 2nd, and 4th harmonics, respectively. It reveals the best output power of -1.92 dBm for a 0 dBm input signal and maximum conversion gain of -1.92 dB. It is very useful for applications in the wireless communication and radar systems.

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Multiple-coupled microstrip hairpin-resonator filter

Yingjie Di, P. Gardner, P.S. Hall, H. Ghafouri-Shiraz and Jiafeng Zhou. "Multiple-coupled microstrip hairpin-resonator filter." 2003 Microwave and Wireless Components Letters 13.12 (Dec. 2003 [MWCL]): 532-534.

This letter presents the design of six-resonator multiple-coupled microstrip filter. A low-pass prototype of six-resonator multiple-coupled filter is developed first based on the conventional Chebyshev filter. The characteristics of attenuation poles located on both sides of the frequency response are described. According to the low-pass prototype, the design of a six-resonator multiple-coupled microstrip hairpin filter at 6 GHz is completed with the aid of EM simulation. The experimental results are demonstrated and discussed.

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A surface-mountable membrane supported filter

M. Chatras, P. Blondy, D. Cros, O. Vendier and J.L. Cazaux. "A surface-mountable membrane supported filter." 2003 Microwave and Wireless Components Letters 13.12 (Dec. 2003 [MWCL]): 535-537.

A silicon micro-machined filter with a simple planar integration on an other substrate is proposed in this article. The excitation is made from the top of the shielding substrate of a membrane supported micro-machined filter. Packaging and inter-connection are included in the design. Experimental results are presented on a two pole 30 GHz, 4% fractional bandwidth filter with a quality factor of 602 and insertion loss of 1.8 dB. Such a filter can be easily integrated in any circuit using flip-chip technology.

Abstracts

A new method to suppress harmonics using /spl lambda//4 bias line combined by defected ground structure in power amplifiers

Yong-Chae Jeong, Si-Gyun Jeong, Jong-Sik Lim and Sangwook Nam. "A new method to suppress harmonics using /spl lambda//4 bias line combined by defected ground structure in power amplifiers." 2003 Microwave and Wireless Components Letters 13.12 (Dec. 2003 [MWCL]): 538-540.

A new /spl lambda//4 bias line combined by a dumb-bell shaped defected ground structure (DGS) is proposed to suppress harmonics in power amplifiers. The proposed DGS bias line maintains the required high impedance even after DGS is inserted, while the width and length of the /spl lambda//4 bias line are broader and shorter than those of conventional bias lines. When the DGS bias line is used in power amplifiers, the third harmonic components as well as the second harmonic are reduced, because of the increased slow-wave effect over wide harmonic band. It is shown that the reduction of the third harmonic component, the improvement of 1 dB compression point, and power added efficiency are 26.5 dB, 0.45 dB, and 9.1%, respectively.

Abstracts

A universal building block for advanced modular design of microwave filters

S. Amari and U. Rosenberg. "A universal building block for advanced modular design of microwave filters." 2003 Microwave and Wireless Components Letters 13.12 (Dec. 2003 [MWCL]): 541-543.

A universal building block for modular design of microwave filters is introduced. The second order block contains two resonators which are not coupled to each other. By adjusting the strengths and signs of its coupling coefficients, the block can be used to design bandpass, bandstop and linear-phase filters. For bandpass filters, Chebychev as well as symmetric and asymmetric pseudo-elliptic responses with one or two finite transmission zeros can be designed. For linear-phase filters, two finite transmission zeros can placed practically anywhere in the complex plane as long as the realizability condition is met. Bandstop filters with no finite reflection zeros as well as symmetric and asymmetric pseudo-elliptic responses with one or two finite reflection zeros can be achieved by the same building block. The block is so flexible it can even generate bandstop responses with complex finite reflection zeros for group delay control. Higher order filters are designed modularly by cascading the appropriate number of building blocks. Coupling matrices of a number of cases are presented to demonstrate the flexibility and the universality of the building block.

Abstracts

Wideband coplanar waveguide RF probe pad to microstrip transitions without via holes

Guizhen Zheng, J. Papapolymerou and M.M. Tentzeris. "Wideband coplanar waveguide RF probe pad to microstrip transitions without via holes." 2003 Microwave and Wireless Components Letters 13.12 (Dec. 2003 [MWCL]): 544-546.

A novel via-less coplanar waveguide (CPW) to microstrip transition is discussed and design rules based on simulations and experimental results are presented. This transition demonstrates a maximum insertion loss of 1 dB over the frequency range from 10 GHz to 40 GHz with a value of 0.4 dB at 20 GHz. This transition could find a variety of applications due to its compatibility with RF systems-on-a chip, low loss performance, low cost and its ease of fabrication.

Abstracts

Positive/negative refractive index anisotropic 2-D metamaterials

C. Caloz and T. Itoh. "Positive/negative refractive index anisotropic 2-D metamaterials." 2003 Microwave and Wireless Components Letters 13.12 (Dec. 2003 [MWCL]): 547-549.

An anisotropic metamaterial, based on a transmission line (TL) approach, that exhibits positive refractive index (PRI) in one direction and negative refractive index (NRI) in another (orthogonal) direction is presented, characterized and demonstrated in terms of analytic dispersion diagrams, equivalent refractive indexes, and circuit-simulated voltage/current/power distributions. This anisotropic structure may also be implemented in distributed architectures and lead to novel antenna and reflector applications.

Abstracts

A class-B push-pull power amplifier based on an extended resonance technique

Xin Jiang, A.L. Martin and A. Mortazawi. "A class-B push-pull power amplifier based on an extended resonance technique." 2003 Microwave and Wireless Components Letters 13.12 (Dec. 2003 [MWCL]): 550-552.

A class B push-pull power amplifier based on an extended resonance power combining technique is presented. In this design, advantages of push-pull power amplifier, such as doubling power capability and reduced common lead effects, have been achieved with a simple and compact circuit topology. The measured power combining efficiency (PCE) is 93% with 1-dB bandwidth of 12.6% at 1.75 GHz. The measured output power at 1-dB compression is 30 dBm with power added efficiency (PAE) of 59%.

Abstracts

Z-transform implementation of the perfectly matched layer for truncating fdtd domains (Errata)

O. Ramadan and A.Y. Oztoprak. "Z-transform implementation of the perfectly matched layer for truncating fdtd domains (Errata)." 2003 Microwave and Wireless Components Letters 13.12 (Dec. 2003 [MWCL]): 553-553.

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A general SPICE model for arbitrary linear dispersive multiport components described by frequency-domain data

V. Rizzoli, A. Costanzo, F. Mastri and A. Neri. "A general SPICE model for arbitrary linear dispersive multiport components described by frequency-domain data." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 9-12 vol.1.

The paper introduces a general and efficient approach to dispersive multiport component modeling for use in conjunction with SPICE-like time-domain transient analysis programs. The model computes at any time instant the port currents making use of the time-dependent exciting voltages and of frequency-domain data generated once for all by electromagnetic or circuit analysis.

Abstracts

Multidimensional time-domain macromodels for microwave applications

P. Gunupudi, R. Khazaka, T. Smy, D. Celo and M. Nakhla. "Multidimensional time-domain macromodels for microwave applications." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 13-16 vol.1.

During the design of microwave circuits there is a significant need for efficient but accurate macromodels of components. These macromodels are derived from physical models of the components and may model either electrical or thermal behavior. However, increased levels of integration and higher power levels in microwave devices and modules have produced a need to include effects previously neglected during simulations. Accurate prediction of these effects involve solution of large systems of equations, the direct simulation of which is prohibitively CPU expensive. In this paper, an algorithm is proposed to form passive reduced-order macromodels of large linear networks that match the characteristics of the original network in time as well as other design parameters of the circuit. A novel feature of the algorithm is the ability to incorporate a set of design parameters within the reduced model.

Abstracts

A new wavelet-based technique for fast full-wave physical simulations of millimeter-wave transistors

Y.A. Hussein, S.M. El-Ghazaly and S.M. Goodnick. "A new wavelet-based technique for fast full-wave physical simulations of millimeter-wave transistors." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 17-20 vol.1.

A new wavelet-based simulation approach for the global modeling of high-frequency transistors is presented. The proposed approach solves the active device model that combines the transport physics and Maxwell's equations on nonuniform self-adaptive grids. The nonuniform grids are obtained by applying Daubechies wavelet transforms followed by thresholding. This allows forming fine and coarse grids in locations where variable solutions change rapidly and slowly, respectively. The developed technique is validated by simulating a submicrometer transistor. Different numerical examples are presented along with illustrative comparison graphs, showing more than 75% reduction in CPU time, while maintaining the same degree of accuracy achieved using a uniform grid case. To the extent of the authors' knowledge, this is the first time in literature to implement and report a unified wavelet technique for fast full-wave physical simulations of millimeter-wave transistors.

Abstracts

A fast filter optimization scheme based on model order reduction

K. Krohne and R. Vahldieck. "A fast filter optimization scheme based on model order reduction." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 21-24 vol.1.

This paper presents a novel, fast optimization technique that is especially suitable for the design of microwave filters. For the discretization of the structure, the well established Finite Integration Technique (FIT) is used. A recently published two step Model Order Reduction (MORe) technique computes the poles and residuals of the structure's impedance matrix as well as its sensitivity to the geometry parameters. The actual optimization is then performed in the reduced order space of the poles and residuals. This significantly reduces the number of full-wave simulation runs, that is usually associated with the optimization of filters.

Abstracts

Extraction of coupling parameters for microwave filters: determination of a stable rational model from scattering data

F. Seyfert, L. Baratchart, J.-P. Marmorat, S. Bila and J. Sombrin. "Extraction of coupling parameters for microwave filters: determination of a stable rational model from scattering data." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 25-28 vol.1.

We present a method to derive a rational model from scattering data for electrical parameter extraction. Unlike other methods, the stability and the MacMillan degree of the rational approximation are guaranteed. In order to improve the usability of our method in computer-aided tuning, we also present an algorithm performing automatic reference plane adjustment. Results obtained on a 10/sup th/ order dual mode IMUX filter are presented.

Abstracts

A novel 15 to 45 GHz monolithic passive balun for MMICs applications

K.W. Hamed, A.P. Freundorfer and Y.M.M. Antar. "A novel 15 to 45 GHz monolithic passive balun for MMICs applications." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 31-34 vol.1.

This paper presents the design and performance characteristics of a novel broadband monolithic passive balun that has been developed for MMIC's applications. The new balun utilizes a multi-dielectric layer structure to achieve a broadband performance of up to 3:1 in a simple coplanar configuration. A return loss better than 15 dB, with a maximum insertion loss of 4.5 dB including the 3 dB power splitting loss from 15 to 45 GHz has been realized. The developed balun also achieves better than 0.35 dB and 1.5/spl deg/ of amplitude and phase imbalance over the same frequency band. This performance is specially important to the intended use with wideband double balanced mixers, and amplifiers.

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A dual-band 3-dB three-port power divider based on a two-section transmission line transformer

S. Srisathit, S. Virunphun, K. Bandudej, M. Chongcheawchamnan and A. Worapishet. "A dual-band 3-dB three-port power divider based on a two-section transmission line transformer." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 35-38 vol.1.

A new dual-band 3-dB three-port power divider with arbitrary impedance terminations is presented in this paper. The structure is composed of a two-section transmission line transformer and an isolation resistor. The transmission line's electrical length is /spl pi//3 each at fundamental frequency, resulting in a 2/spl pi//3 total length. The proposed circuit's design equations and graph obtained from analytical results are also given. The technique is validated by the experimental results on 3-dB 900/1800 MHz power divider with Z/sub s/=100 /spl Omega/ and Z/sub L/=50 /spl Omega/. Good performances of the proposed power combiner/divider at both frequencies are obtained.

Abstracts

Broadband 180/spl deg/ bit phase shifter using a new switched network

Soon Young Eom, Soon Ick Jeon, Jong Seok Chae and Jong Gwan Yook. "Broadband 180/spl deg/ bit phase shifter using a new switched network." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 39-42 vol.1.

In this paper, a broadband 180/spl deg/ bit phase shifter using a new switched network was presented. A new network is composed of coupled lines (section) and 45/spl deg/ open and short stubs, which are shunted at the edge points of the main line, respectively. The design graphs provide the required Z/sub m/, Z/sub s/ values, and I/O match and phase bandwidths. Four different 180/spl deg/ bit phase shifters, operated at 3 GHz, were designed and fabricated using the design graphs, and were experimented. The measured performances of each phase shifter were well in agreement with the corresponding the simulation ones over the operating bands, and showed broadband phase characteristics.

Abstracts

Directivity improvement of microstrip coupled line couplers based on equivalent admittance approach

I. Ohta, T. Kawai, T. Fujii and Y. Kokubo. "Directivity improvement of microstrip coupled line couplers based on equivalent admittance approach." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 43-46 vol.1.

The present paper suggests a simple and effective technique for remarkably improving the directivity of inhomogeneous coupled line couplers such as a microstrip coupler. The technique is based upon the equivalent admittance approach and requires only properly designed matching networks. In this paper, we treat a 1/4-wave parallel-coupled microstrip coupler of 15.8 dB, and obtain the directivity improvement of 20 or more dB over a bandwidth of about 1.2 GHz at a center frequency of 3.5 GHz. Finally the design results are confirmed by an em-simulator.

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Ultra-thin broadband OMT with turnstile junction

Y. Aramaki, N. Yoneda, M. Miyazaki and T. Horie. "Ultra-thin broadband OMT with turnstile junction." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 47-50 vol.1.

This paper presents an ultra-thin broadband waveguide orthomode transducer (OMT) for low profile reflector antenna feed systems. The presented OMT is composed of a turnstile junction with a metallic pyramid, a circular-to-square waveguide step, and thin combiners/dividers. A broadband design of the OMT is performed by applying a circular-to-square waveguide step to obtain good match. An ultra-thin Ku-band OMT fabricated with the aid of the design techniques has realized wideband excellent performance with very low height, that is, VSWR less than 1.18 over 30% bandwidth and reducing the height to 20.2 mm.

Abstracts

Novel invasive electronic tuning of dielectric resonators

B.S. Virdee, A.S. Virdee and L.A. Trinogga. "Novel invasive electronic tuning of dielectric resonators." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 51-54 vol.1.

Electronically tuned dielectric resonator (DR) structures have, in the main, in the past employed external tuning techniques. This paper presents the investigation results on a novel tuning technique termed "invasive tuning". Invasive tuning involves the machining of rectangular shaped slot in the dielectric resonator and embedding the tuning mechanism inside this slot, which is within the boundary of the resonator. This results in a very compact tuning arrangement, which provides substantial tuning bandwidth of 7.1% using electronic means. The effect of slot perturbations on the DR resonant frequency and quality-factor are reported in this paper. Variations in the performance of the slotted resonator are characterized and the results from a number of tuning experiments are discussed. The incorporation of the new tuning technique into practical circuits such as filters have shown good performance for a compact design. This technique may also be used for the electronic timing of oscillators.

Abstracts

Miniature lumped element 180/spl deg/ Wilkinson divider

H.S. Nagi. "Miniature lumped element 180/spl deg/ Wilkinson divider." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 55-58 vol.1.

This paper presents a novel way to design a 180/spl deg/ Lumped element Wilkinson divider. It uses a conventional Wilkinson divider, a negative and a positive phase shifter. It presents an example at C-band with its measured and simulated results showing a good agreement.

Abstracts

A novel compact uniplanar MMIC Wilkinson power divider with ACPS series stubs

K. Hettak, C.J. Verver, M.G. Stubbs and G.A. Morin. "A novel compact uniplanar MMIC Wilkinson power divider with ACPS series stubs." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 59-62 vol.1.

Short-circuit series stubs realized in the signal conductor of an asymmetric coplanar stripline (ACPS) transmission line are investigated as a circuit element in order to achieve a significant size reduction of a MMIC Wilkinson divider. A simple ideal transmission line equivalent circuit is used to model the ACPS line/stub combination yielding good agreement with EM simulation. The stubs are then utilized to shorten the /spl lambda//4 transmission lines by approximately 35% in a Wilkinson divider application at 23 GHz.

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A study of meandered microstrip coupler with high directivity

Shih-Ming Wang, Chin-Hsiung Chen and Chi-Yang Chang. "A study of meandered microstrip coupler with high directivity." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 63-66 vol.1.

A novel design technique to improve the directivity of a microstrip direction coupler by a meandered structure is proposed in this paper. Increasing of even-mode phase velocity by the proposed meandering method is reported for the first time. An analytical method to obtain closed-form equations or even-mode phase velocity is developed. The proposed structure is verified by experiments. More than 40 dB measured directivity improvement comparing to conventional microstrip coupler is achieved.

Abstracts

200W push-pull & 110W single-ended high performance RF-LDMOS transistors for WCDMA basestation applications

C. Dragon, W. Brakensiek, D. Burdeaux, W. Burger, G. Funk, M. Hurst and D. Rice. "200W push-pull & 110W single-ended high performance RF-LDMOS transistors for WCDMA basestation applications." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 69-72 vol.1.

The performance of a 200W push-pull device and a 110W single-ended device, both using state-of-the-art silicon RF-LDMOS die technology, is described. In the 2.1 GHz band with a two-carrier WCDMA signal applied and a supply voltage of 28V, -37 dBc IM3 and 25-26% drain efficiency is achieved at 38W and 19W respectively for the two devices. This combination of linear power and efficiency make these devices ideally suited for power amplifier designs in basestation transceiver systems.

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A 90W S-band high power amplifier for broadband wireless applications

K. Matsunaga and H. Shimawaki. "A 90W S-band high power amplifier for broadband wireless applications." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 73-76 vol.1.

This paper describes a successfully developed 90W high power amplifier with the wide band range in S-band. The power amplifier consists of two 50W GaAs FET chips and small 180 degrees coupler transmission line circuit that was developed in an external matching network. The wide band performance was achieved by the 180 degrees coupler transmission line circuit and the multi-stage internal circuit. The power amplifier delivered an output power of 90W in the frequency range of 2.9 to 3.3 GHz. To our knowledge, this is the highest power and frequency range ever reported in S-band. A low 3rd-order intermodulation distortion (IM3) of less than -30 dBc was also achieved at a 10 dB back-off point from saturation power in the frequency range of 2.9 to 3.4 GHz. The developed power amplifier is suitable for the base station in broadband wireless access in the S-band.

Abstracts

Highly efficient feed-forward amplifier using a Class-F Doherty amplifier

Y. Suzuki, T. Hirota and T. Nojima. "Highly efficient feed-forward amplifier using a Class-F Doherty amplifier." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 77-80 vol.1.

A new feed-forward amplifier configuration is proposed that uses a Doherty amplifier with Class-F operation as the main amplifier. Due to the new configuration, the enhanced main amplifier operates well with less output back-off and achieves high efficiency under Class-F operation compared with Class-B amplifier (non Doherty amplifier). A 2-GHz band 1-W class feed-forward amplifier is investigated. A back-off improvement of 3 dB is experimentally achieved compared with a conventional feed-forward amplifier for the same intermodulation distortion level. The efficiency of the main amplifier is also improved from 33% to 52% when third-order intermodulation distortion of feed-forward amplifier is - 50 dB. The proposed technique can effectively reduce the power consumption of the power amplifiers for cellular base stations.

Abstracts

An adaptive bias controlled power amplifier with a load-modulated combining scheme for high efficiency and linearity

Jeonghyeon Cha, Youngoo Yang, Bumjae Shin and Bumman Kim. "An adaptive bias controlled power amplifier with a load-modulated combining scheme for high efficiency and linearity." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 81-84 vol.1.

This paper presents a highly efficient linear power amplifier with an adaptive bias control circuit. In the amplifier, two amplifiers are power-combined using load modulation networks and then gate biases are controlled according to the input signal envelope. The gate voltage shapes of the two amplifiers have been optimized by envelope simulation to maximize the power added efficiency for the ACLR of -30 dBc. For verification, an adaptively controlled power amplifier has been implemented at 2.14 GHz using 4 watts PEP LDMOSFET's and its bias circuit were constructed based on simulated control shapes. The performances of the amplifier were compared with the class AB and Doherty amplifiers using a one-tone and forward-link WCDMA signals. The measured PAE of the amplifier is 41 % at -30 dBc ACLR, while those of the class AB and Doherty amplifiers are 24.5 % and 28.1 %, respectively.

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Abstracts

Novel sub-harmonically pumped mixers incorporating dual-band quarter-wave and in-line stub (2003 Vol. I [MWSYM])

Tsz Yin Yum, Quan Xue and Chi Hou Chan. "Novel sub-harmonically pumped mixers incorporating dual-band quarter-wave and in-line stub (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 87-90 vol.1.

Sub-harmonically pumped (SHP) mixers with very low conversion loss are developed. These mixers entail the use of novel dual-band quarter-wave stubs and in-line stub simultaneously providing return paths for the IF, LO and RF frequencies and terminating unwanted frequency mixing products. These stubs are realized in the form of compact microstrip resonant cells with spiral patterns. The measured 4.1 dB conversion loss at 11.8 GHz RF signal of our new 2/sup nd/ SHP mixer outperforms typical designs of 8-10 dB. The 8/sup th/ SHP mixer designed at 44 GHz RF signal achieves a simulated minimum conversion loss of 9.5 dB. These novel designs provide viable solutions to low-cost high-performance wireless communications subsystems.

Abstracts

A 40 GHz communication link with IF-assisted self-heterodyne direct down conversion

M. DeVincentis and T. Itoh. "A 40 GHz communication link with IF-assisted self-heterodyne direct down conversion." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 91-94 vol.1.

A 40 GHz communication link was demonstrated using a combination of super-heterodyne mixing and self-heterodyne direct down conversion. The broadcast carrier and modulated signals inherent in self-heterodyne transmission were first mixed down from 40 GHz to an IF of 1.5 GHz using a 10.375 GHz LO and a novel, low LO power 4/sup th/ harmonic diode mixer. These IF signals passed through an amplifier chain with a total gain of G=75 dB and noise figure of NF=1.21 dB prior to direct down conversion with a self-mixer. It was shown analytically and experimentally that the phase noise cancellation inherent in self-heterodyne detection is preserved independent of the phase noise of the additional LO signal. The input and output IF signals had the same phase noise up to 100 kHz carrier offset for a transmission distance of 2 meters.

Abstracts

CMOS mixer linearization by the low-frequency signal injection method

C.F. Au-Yeung and K.K.M. Cheng. "CMOS mixer linearization by the low-frequency signal injection method." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 95-98 vol.1.

This paper presents, for the first time, the application of low-frequency signal injection technique to the linearization of a doubly balanced dual gate mixer. The down-conversion mixer is fabricated using 0.35 /spl mu/m CMOS technology and is designed to operate at 900 MHz RF input frequency with good port-to-port isolation, low LO power and current consumption. Reduction of third-order intermodulation distortion (IMD) level of almost 20 dB is achieved by the proposed scheme.

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A broadband HBT MMIC IQ modulator and millimeter-wave vector signal characterization

Hong-Yeh Chang, Tian-Wei Huang, Huei Wang, Yu-Chi Wang, Pane-Chane Chao and Chung-Hsu Chen. "A broadband HBT MMIC IQ modulator and millimeter-wave vector signal characterization." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 99-102 vol.1.

A broadband 50-110 GHz HBT MMIC IQ modulator and a vector signal measurement system for millimeter-wave applications are reported in this paper. For the digital modulation measurement, a QPSK modulation format was used with a 2-Mbps data rate for the IQ modulation. Using the 50-110 GHz vector signal measurement system, this MMIC chip shows an error vector magnitude (EVM) of within 12 % rms and a carrier rejection of more than 21 dB. The 110-GHz operation frequency of this MMIC is the highest among all the reported HBT vector modulators. Also, this is the first time the EVM test was performed for an IQ modulator at V-band and W-band. This MMIC is suitable for software defined radio (SDR), linearization techniques of power amplifier and related transmitter applications both in V-band and W-band.

Abstracts

A Q-band uniplanar MMIC diode mixer with lumped-element coplanar waveguide-to-slotline transition

Chi-Hsueh Wang, Yo-Shen Lin, Huei Wang and Chun Hsiung Chen. "A Q-band uniplanar MMIC diode mixer with lumped-element coplanar waveguide-to-slotline transition." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 103-106 vol.1.

A uniplanar GaAs MMIC diode mixer is fabricated for Q-band applications using the lumped-element coplanar waveguide-to-slotline transition to implement the required 180/spl deg/ hybrid. By adopting the lumped-element transition, the mixer chip size can be largely reduced with an excellent RF-to-IF isolation. This mixer is designed to operate with RF frequency from 34.5 to 43 GHz, IF frequency from 0.5 to 9 GHz, and LO frequency at 34 GHz. The lower sideband conversion loss is about 7 dB, and the isolations are all better than 20 dB. To our best knowledge, it is the first MMIC with such transition topology in Q-band.

Abstracts

A miniaturized K-band balanced frequency doubler using InGaP HBT technology

Dong-Woo Kang, Dong-Hyun Baek, Sang-Hoon Jeon, Jae-Woo Park and Songcheol Hong. "A miniaturized K-band balanced frequency doubler using InGaP HBT technology." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 107-110 vol.1.

A K band balanced frequency doubler using InGaP HBTs is presented, which features high conversion gain, wide bandwidth and high rejection of fundamental signal. To obtain the balanced signal, a differential amplifier with a base-collector feedback resistor is utilized. The push-pull doubler operates in a near class B region for good efficiency. This circuit has a conversion gain of 6 dB over the output frequencies from 14 GHz to 24 GHz. The fundamental frequency suppression is better than 17 dB. The MMIC chip size is 0.6 /spl times/ 0.7 mm/sup 2/.

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Low-noise performance near BV/sub CEO/ in a 200 GHz SiGe technology at different collector design points

D. Greenberg, S. Sweeney, G. Freeman and D. Ahlgren. "Low-noise performance near BV/sub CEO/ in a 200 GHz SiGe technology at different collector design points." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 113-116 vol.1.

We explore the low-noise behavior of both high-f/sub T/ and enhanced-breakdown SiGe HBTs, showing key differences as a function of V/sub CB/. Both devices achieve values for F/sub min/ below 0.4, 1.2 and 1.4 dB at 10, 15 and 20 GHz, respectively, with corresponding G/sub A/ values better than 18.5, 14.5 and 13.2 dB. In addition, the enhanced-breakdown device demonstrates the ability to operate at 1 V higher V/sub CB/ compared with the high-f/sub T/ device prior to the onset of avalanche-induced F/sub min/ degradation. Combined with a lower C/sub CB/, this improved V/sub CB/ range allows the device to achieve higher gain for the same or lower noise.

Abstracts

InP HBT transimpedance amplifier for 43 Gb/s optical link applications

Z.M. Nosal and T.P.E. Broekaert. "InP HBT transimpedance amplifier for 43 Gb/s optical link applications." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 117-120 vol.1.

Transimpedance amplifiers with the bandwidth in the 50 GHz range for applications in long haul optical networks are presented. Transimpedance value is in the 220 to 300 /spl Omega/ range, integrated input noise current /spl ap/ 7.5 - 8.5 /spl mu/A (0 - 60 GHz) and the output amplitude is between 600 mV/sub pp/ and 900 mV/sub pp/ (single ended) - dependent on the version. Circuits are designed in an InP HBT technology and consume 200 to 300 mW with +3.3 V supply voltage.

Abstracts

Bias circuit for high yield self-bias MMIC amplifier for APAAs

K. Yamanaka, K. Mori, H. Ikematsu, Y. Sasaki and M. Nakayama. "Bias circuit for high yield self-bias MMIC amplifier for APAAs." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 121-124 vol.1.

In this paper, a Ka-band self-bias low-noise MMIC amplifier is presented, which is equipped with a bias circuit that compensates for the gain variation of the self-bias amplifier between chips due to process variations. The Ka-band low noise MMIC amplifier, with proposed bias circuit, was designed and manufactured. It was proved that the proposed bias circuit reduced the gain variation between chips from 0.8 dB RMS to 0.3 dB RMS. This amplifier is suitable for active phased array applications.

Abstracts

Monolithic coplanar 77 GHz balanced HEMT mixer with very small chip size

H.J. Siweris and H. Tischer. "Monolithic coplanar 77 GHz balanced HEMT mixer with very small chip size." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 125-128 vol.1.

A balanced HEMT mixer for 76-77 GHz car radar applications has been designed and fabricated on a 6 inch GaAs production line. The monolithic circuit has a very small chip size of only 0.56 mm/sup 2/. With 2 dBm of LO power, a conversion loss below 11 dB was measured in the 76-77 GHz band. The results demonstrate that the single-device concept used in the circuit design is suitable for very compact monolithic millimeter-wave mixers.

Abstracts

A 120-GHz millimeter-wave MMIC chipset for future broadband wireless access applications

T. Kosugi, T. Shibata, T. Enoki, M. Muraguchi, A. Hirata, T. Nagatsuma and H. Kyuragi. "A 120-GHz millimeter-wave MMIC chipset for future broadband wireless access applications." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 129-132 vol.1.

A flexible CPW-MMIC (coplaner-waveguide monolithic microwave integrated circuit) chipset has been fabricated for 120 GHz future broadband wireless systems. The power amplifier has small signal gain of 8.5 dB from 115 to 135 GHz. The 1 dB compression point is 3 dBm at 120 GHz. We employed a traveling wave switch configuration for the ASK modulator. The insertion loss of the switch is less than 1.5 dB and the on-off ratio is more than 13.5 dB at 120 GHz. For the ASK modulator-demodulator chipset, the measured BER is 1e/sup -10/ for 10 Gbit/s PRBS 2/sup 11/-1 data at -13 dBm input power and 120 GHz RF frequency. The frequency doubler has an output power of -11 dBm at 120 GHz with fundamental and harmonics rejection better than 30 dBc.

Abstracts

A W-band monolithic medium power amplifier

M. Morgan and S. Weinreb. "A W-band monolithic medium power amplifier." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 133-136 vol.1.

This paper summarizes the design and measured performance of a MMIC power amplifier for W-band. The chip was fabricated on a 50 /spl mu/m GaAs substrate using 0.1 /spl mu/m AlGaAs/InGaAs/GaAs pseudomorphic-HEMT technology. Measurements show that it has small-signal gain of 19/spl plusmn/1 dB from 72 to 95 GHz. During scalar measurements with moderate heat-sinking, the chip delivered more than 100 mW between 75 and 93 GHz, with a corresponding large signal gain of 11 dB. Such an amplifier is widely useful in millimeter-wave applications requiring moderately high power over broad frequency ranges, including emerging wireless communication systems in W-band.

Abstracts

95 GHz metamorphic HEMT power amplifiers on GaAs

K.J. Herrick, S.M. Lardizabal, P.F. Marsh and C.S. Whelan. "95 GHz metamorphic HEMT power amplifiers on GaAs." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 137-140 vol.1.

This paper reports on the first 95 GHz metamorphic HEMT power amplifier demonstration including power as a function of temperature. Two power MHEMT materials with 53% and 53%/43% indium channels are investigated showing a slight advantage to the split channel material. At 95 GHz, G/sub max/ values ranging 8.25-10.8 dB are shown for both materials. Single stage 0.15 mm periphery amplifiers using single 4/spl times/37.5 /spl mu/m FETs show >10 dB small signal gain. Two dB compressed power data at 95 GHz yields 15.3 dBm (224 mW/mm) and PAEs up to 22.8%. Increasing temperature up to 80/spl deg/C results in output power and PAE degradation of only 0.43 dB and 2.6 percentage points, respectively. These promising results are on the path to 100-300 mW MHEMT power amplifiers at W-band with improved manufacturability over InP HEMT.

Abstracts

Optical submillimeter-wave generation employing antenna integrated ultra-fast travelling-wave 1.55 /spl mu/m photodetectors

A. Malcoci, A. Stohr, K. Lill, F. Siebe, P. van der Waal, A. Sauerwald, R. Gusten and D. Jager. "Optical submillimeter-wave generation employing antenna integrated ultra-fast travelling-wave 1.55 /spl mu/m photodetectors." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 143-146 vol.1.

Optical heterodyne submillimeter-wave (submmw) generation using waveguide and antenna coupled 1.55 /spl mu/m travelling-wave photodetectors (TW-PD's) is experimentally investigated up to about 500 GHz.

Abstracts

Metamorphic optoelectronic integrated circuits

R.E. Leoni III, C.S. Whelan, P.F. Marsh, Y. Zhang, J.G. Hunt, C.S. Laighton, W.E. Hoke and T.E. Kazior. "Metamorphic optoelectronic integrated circuits." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 147-150 vol.1.

As the required operational bandwidth of photoreceivers is increased, it becomes desirable to monolithically integrate photodiodes and transistors in order to optimize performance and enhance yield. In this paper we describe our demonstration of material and process capabilities which allow us to integrate high electron mobility transistors and 1.55 /spl mu/m PIN photodiodes on one substrate. The demonstration vehicles used for this are a DC-45 GHz traveling wave amplifier and a photodiode with 12 /spl mu/m optical windows. Measured results of three interconnection approaches (standard attenuator, optimized lossy match, buffer amplifier) are described.

Abstracts

Wide bandwidth, high performance waveguide-integrated P-I-N photodiodes for 40 Gbits/s receiver modules

G. Wang, A. Takechi, K. Araki, T. Tokumitsu, I. Hanawa, Y. Yoneda, K. Sato and M. Kobayashi. "Wide bandwidth, high performance waveguide-integrated P-I-N photodiodes for 40 Gbits/s receiver modules." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 151-154 vol.1.

A side-illuminated waveguide integrated PIN photodiode (WG PIN PD) has been developed and modeled for use in 40 Gb/s PIN/preamp receiver module. The WG PIN PD exhibited a wide bandwidth over 40 GHz with a high responsivity. For the PIN/preamp modules with a GaAs pHEMT traveling wave amplifier (TWA), a clear eye-opening was observed and a recorded minimum received power of -11.2 dBm at 40 Gb/s was obtained for the first time.

Abstracts

Investigation of the high power integrated uni-traveling carrier and waveguide integrated photodiode

T.S. Liao, P. Mages, P.K.L. Yu, E.W. Jacobs and J.B. Sobti. "Investigation of the high power integrated uni-traveling carrier and waveguide integrated photodiode." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 155-158 vol.1.

A uni-traveling carrier waveguide integrated photodiode (UTC-WIP) combining the advantages of a coupled waveguide integrated photodiode (WIP) and a uni-traveling carrier photodiode (UTC-PD) is investigated. Preliminary measurement results show that the DC responsivity is 0.4 A/W without an anti-reflection coating, and the peak pulse response can reach 94 mA (4.7 V across a 50 /spl Omega/ load) when the bias voltage is -9 V. The resulting device is capable of operating at 20 GHz. The IP/sub 3/ at 1 GHz and 18 GHz are 24 dBm and 8 dBm, respectively.

Abstracts

Photonic tunable RF filter with reconfiguration capabilities based on arrayed waveguide gratings and fiber dispersion

B. Vidal, V. Polo, J.L. Corral and J. Marti. "Photonic tunable RF filter with reconfiguration capabilities based on arrayed waveguide gratings and fiber dispersion." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 159-162 vol.1.

A novel photonic microwave filter architecture based on the use of laser arrays and the periodicity of N/spl times/N arrayed waveguide gratings (AWG) optical response is proposed. Independent filter response coarse and fine tuning as well as reshaping of each filter response have been experimentally demonstrated showing an excellent agreement with theory.

Abstracts

An adjoint dynamic neural network technique for exact sensitivities in nonlinear transient modeling and high-speed interconnect design

Y. Cao, J.J. Xu, V.K. Devabhaktuni, R.T. Ding and Q.J. Zhang. "An adjoint dynamic neural network technique for exact sensitivities in nonlinear transient modeling and high-speed interconnect design." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 165-168 vol.1.

We propose a new adjoint dynamic neural network (ADNN) technique aimed at enhancing computer-aided design (CAD) of high-speed VLSI modules. A novel formulation for exact sensitivities is derived employing the Lagrange functions approach, and by defining an adjoint of a dynamic neural network (DNN), for the first time. The proposed ADNN is a dynamic model that we solve using integration backwards through time. One ADNN solution can be used to efficiently compute exact sensitivities of the corresponding DNN with respect to all its parameters. Using these sensitivities, we developed a training algorithm that facilitates DNN learning of nonlinear transients directly from continuous time-domain waveform data. Resulting accurate and fast DNN models can be straightaway used for carrying out high-speed VLSI CAD in SPICE-like time-domain environment. The technique can also speed-up physics-based nonlinear circuit CAD through faster sensitivity computations. Applications of the proposed ADNN technique in transient modeling and nonlinear design are demonstrated through high-speed interconnect driver examples.

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EM-based design tools for microwave circuits using fuzzy logic techniques

V. Miraftab and R.R. Mansour. "EM-based design tools for microwave circuits using fuzzy logic techniques." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 169-172 vol.1.

This paper introduces a new approach based on fuzzy logic techniques for microwave circuit design. The Fuzzy Logic System (FLS) is constructed using data pairs generated from an EM simulator. A 3-pole microstrip filter is used to demonstrate the concept. The FLS is employed as a design tool to directly synthesize the filter physical dimensions for a required filter response. Theoretical results for three filters having different bandwidths are presented to demonstrate the validity of the proposed approach.

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Neuro-Space Mapping technique for nonlinear device modeling and large signal simulation

Lei Zhang, Jianjun Xu, M.C.E. Yagoub, Runtao Ding and Qijun Zhang. "Neuro-Space Mapping technique for nonlinear device modeling and large signal simulation." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 173-176 vol.1.

A new Neuro-Space Mapping (Neuro-SM) approach is presented enabling the space mapping (SM) concept to be applied to nonlinear device modeling and large signal circuit simulation. Suppose that an existing device model (namely, the coarse model) cannot match the actual device behavior (namely, the fine model). Using the proposed technique, the voltage and current signals between the coarse and the fine device models are mapped by a neural network. This mapping automatically modifies the behavior of the coarse model such that the mapped model accurately matches the actual device behavior. New training methods for such mapping neural networks are proposed. Examples of SiGe HBT and GaAs MESFET modeling and use of the models in harmonic balance simulation demonstrate that Neuro-SM is a systematic method to allow us to exceed the present capabilities of the existing device models.

Abstracts

Dynamically configurable pHEMT model using neural networks for CAD

B. Davis, C. White, M.A. Reece, M.E. Bayne, Jr., W.L. Thompson II, N.L. Richardson and L. Walker, Jr.. "Dynamically configurable pHEMT model using neural networks for CAD." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 177-180 vol.1.

A novel approach to developing CAD microwave device models is presented. Traditional CAD devices are implemented using static empirical equations to describe electrical behavior. Recently, neural networks have been used in place of empirical equations to model device behavior. This paper describes the implementation of a CAD device model that utilizes a dynamically configurable combination of empirical equations and neural networks to increase the flexibility of the model's capabilities. The model was developed for pHEMT devices but can be customized to work with other device structures such as HBTs. The framework for this model is a common-source large-signal equivalent FET circuit. With the exception of the drain current source, all of the nonlinear elements of the circuit are configurable to either empirical or bias-dependent neural network controlled components. The neural network architecture employed is based on the knowledge-based algorithm.

Abstracts

A neural network modeling of microwave circuits on PBG structures

E.N.R.Q. Fernandes, P.H. da Fonseca Silva, A.G. d'Assuncao and M.A.B. de Melo. "A neural network modeling of microwave circuits on PBG structures." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 181-184 vol.1.

A new technique is proposed to analyze microwave circuits on uniplanar compact photonic bandgap (UC-PBG) structures. This structure is a two-dimensional square lattice with each element consisting of a metal pad and four connecting branches. The UC-PBG structure can be used in the development of high-performance and compact circuit components for microwave and millimeter-wave frequencies. Usually, accurate analyses of PBG structures are performed through complex techniques, like FDTD. Lately, a growing interest was observed in the use of neurocomputational techniques to study the properties of electromagnetic devices and circuits. The main goal of this work is to develop a new and efficient technique to analyze microwave circuits with UC-PBG based on neural networks. The proposed neural network analysis for UC-PBG structures gave results in excellent agreement with measured results available in the literature. Besides, this technique provided a very good generalization, allowing the comparison with a set of measured results that were not used in the training process.

Abstracts

Metamaterials with negative permittivity and permeability: background, salient features, and new trends

N. Engheta. "Metamaterials with negative permittivity and permeability: background, salient features, and new trends." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 187-190 vol.1.

Here the author presents a brief background and the history of complex media, in particular the materials with negative permittivity and permeability, and then he discusses some of the salient electromagnetic features of these metamaterials. This is followed by description of some of the ideas regarding potential future applications of these metamaterials in devices and components, along with physical remarks and intuitive justification.

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A planar negative-refractive-index medium without resonant elements

A.A. Oliner. "A planar negative-refractive-index medium without resonant elements." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 191-194 vol.1.

Until now, structures that exhibited negative-refractive-index properties were 3D in form and employed resonant elements. It is widely believed that such resonant elements are essential. The present paper introduces two new features: non-resonant elements in the periodic array, and the adaptation of these ideas to planar structures, such as strip line or microstrip line.

Abstracts

Novel microwave devices and structures based on the transmission line approach of meta-materials

C. Caloz and T. Itoh. "Novel microwave devices and structures based on the transmission line approach of meta-materials." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 195-198 vol.1.

This paper is composed of two parts. In the first part, the fundamentals of ideal transmission lines (TL) meta-materials (NM) with their physical characteristics and the synthesis of practical artificial TL-MMs with their circuital characteristics are presented. A microstrip implementation of a composite right/left handed (CRLH) TL is shown. In the second part, several novel applications based on the theory of the first part are demonstrated: a backfire-to-endfire leaky wave antenna, a coupled-line coupler with arbitrary coupling, a compact enhanced-bandwidth hybrid ring, a dual-band inharmonic branch-line coupler and a negative reflection/refraction phase-conjugating array interface.

Abstracts

Sub-wavelength focusing in loaded transmission line negative refractive index metamaterials

A.K. Iyer, A. Grbic and G.V. Eleftheriades. "Sub-wavelength focusing in loaded transmission line negative refractive index metamaterials." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 199-202 vol.1.

We have previously demonstrated that a new class of planar Negative Refractive Index Metamaterials (NRIMs) can be constructed by periodically loading a host transmission line medium with inductors and capacitors in a dual (high-pass) configuration, and we have experimentally demonstrated focusing of a cylindrical wave inside such a NRIM, using a single-interface prototype. In this paper, we examine the conditions required to observe sub-wavelength focusing using a theory based on the plane-wave expansion of cylindrical waves, supplemented by permeability and permittivity functions characteristic to our NRIMs. This theory is validated by full-wave simulations and experimental data for a single-interface structure, and subsequently applied to the study of a two-interface (NRIM slab lens) structure. Finally, we present microwave circuit simulations showing clear, sub-wavelength focusing in a realizable NRIM lens.

Abstracts

Tailoring double negative metamaterial responses to achieve anomalous propagation effects along microstrip transmission lines (2003 Vol. I [MWSYM])

R.W. Ziolkowski and Ching-Ying Cheng. "Tailoring double negative metamaterial responses to achieve anomalous propagation effects along microstrip transmission lines (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 203-206 vol.1.

Several double negative (DNG) metamaterials, artificial materials with simultaneous negative permittivity and permeability, have been fabricated and tested experimentally at X-band frequencies. These include a negative index of refraction slab matched to free space and a perfect magnetic conducting slab. The basic concepts of propagation in DNG metamaterials, their designs and experimental verifications will be reviewed. These DNG metamaterials may indeed be very suitable for a variety of electromagnetic applications dealing with guided wave environments, sensors, and antennas. The use of a DNG metamaterial to tailor the propagation characteristics of a microstrip transmission line will be described in detail. It will be demonstrated that a DNG-loaded microstrip transmission line segment that exhibits a negative index of refraction can be matched to an ordinary microstrip fine.

Abstracts

Voltage optimization for state of the art RF-LDMOS for 2.1 GHz W-CDMA cellular infrastructure applications

H. Brech, W. Burger, C. Dragon and B. Pryor. "Voltage optimization for state of the art RF-LDMOS for 2.1 GHz W-CDMA cellular infrastructure applications." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 209-212 vol.1.

The breakdown and operating voltage optimization of a RF-LDMOS power amplifier (PA) transistor for high power base station applications is presented. For a given device a local maximum in linear PAE is observed to be a function of the drain supply voltage. Best results were achieved for an optimized 10 mm device with a supply voltage of 32V. W-CDMA results (single carrier W-CDMA 3GPP signal at 2.14GHz, 8.5dB P/A) were 29% PAE with Pout=162mW/mm at -45dBc ACP, and 62% PAE with Pout=785mW/mm at P3dB with tuning for optimum back-off performance. To our knowledge these results represent the highest PAE's for this back-off level ever reported for transistors of any material that are appropriate for high power infrastructure applications, as well as state of the art peak power densities for silicon.

Abstracts

Improved electrical and thermal performance of ultra-thin RF LDMOS power transistors

J.A. Herbsommer, H. Safar, W. Brown, E.W. Lau, D.P. Farrell, P. Gammel, O. Lopez and G. Terefenko. "Improved electrical and thermal performance of ultra-thin RF LDMOS power transistors." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 213-216 vol.1.

We present the electrical and thermal performance of ultra-thin RF LDMOS devices. Following a proprietary process, we fabricated such devices with a thickness as reduced as 40/spl mu/m. This results in a reduction of the operating junction temperature, as demonstrated by infrared imaging experiments and three-dimensional finite-element-analysis simulations. As a result, the thermal resistance of our packaged devices reaches substantially lower values than industry standard. This allows for a higher power output and improved efficiency, as demonstrated by RF measurements.

Abstracts

High performance RF power LDMOSFET technology for 2.1GHz power amplifier applications

Shuming Xu, A. Shibib, Zhijian Xie, H. Safar, J. Lott, D. Farrel and M. Mastrapasqua. "High performance RF power LDMOSFET technology for 2.1GHz power amplifier applications." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 217-220 vol.1.

Silicon RF LDMOSFET technology is demonstrated with excellent RF performance. It achieves high power gain of 14.5dB with a high power of 130W at 2.1GHz. Its high efficiency and high linearity makes it highly desired for base station applications. 2mil substrate enables the best-in-class of thermal stability. Low HCI effect, integrated ESD and gold metal ensure high long-term reliability.

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High temperature performances of AlGaN/GaN power HFETs

S. Nuttinck, B. Banerjee, S. Venkataraman, J. Laskar and M. Harris. "High temperature performances of AlGaN/GaN power HFETs." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 221-223 vol.1.

We report the variation with temperature of key parameters extracted from dc, small-signal, large-signal, and noise measurements, of AlGaN/GaN HFETs. The rates obtained are lower than that of GaAs pHEMTs confirming the potential of GaN for high temperature applications.

Abstracts

An 80W AlGaN/GaN heterojunction FET with a field-modulating plate

Y. Okamoto, Y. Ando, H. Miyamoto, T. Nakayama, T. Inoue and M. Kuzuhara. "An 80W AlGaN/GaN heterojunction FET with a field-modulating plate." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 225-228 vol.1.

An AlGaN/GaN heterojunction FET with a field-modulating plate (FP) has been fabricated on a SiC substrate. The gate breakdown voltage (BV/sub gd/) was improved from 50V to 160V by introducing an FP electrode. The highest BV/sub gd/ was obtained with an FP length of 1.0 /spl mu/m. A 4mm-wide unit-cell FET exhibited 32.5W (8.1W/mm) output power, 62% power-added efficiency, and 12.4 dB linear gain at a drain bias of 41V. The linear gain decreased with increasing the FP length, but the difference in the linear gain among FETs with various FP lengths decreased with increasing the drain bias. To the best of our knowledge, a power density of 8.1W/mm is the highest for GaN based FETs with over 1mm gate width. For a 24mm-wide 6-cell FET, an output power of 80.0W (3.3W/mm) was obtained with a linear gain of 8.5dB and a power-added efficiency of 42% at a drain bias of 31V.

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Stability analysis and layout design of an internally stabilized multi-finger FET for high-power base station amplifiers

S. Goto, T. Kunii, K. Fujii, A. Inoue, Y. Sasaki, Y. Hosokawa, R. Hattori, T. Ishikawa and Y. Matsuda. "Stability analysis and layout design of an internally stabilized multi-finger FET for high-power base station amplifiers." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 229-232 vol.1.

A high-power, discrete, and internally-matched FET, such as for use in base station amplifiers, consists of lots of gate fingers to realize a very large periphery. It is well-known that many active devices combined in parallel likely form many closed loops and cause odd mode oscillation. However, stability analysis among FET fingers is usually complex, because of the existence of lots of active nodes. In this paper, novel internally stabilized multi-finger FET layout methodology with a branched gate feed structure is proposed, to stabilize among gate fingers without increasing the occupied layout area of the FET. The feature of this layout is that the branched gate feed structure, which can be fabricated without any extra processing step, functions as a resistor to isolate each FET cell. Stability analysis and layout design were achieved by using the NDF (Normalized Determinant Function) evaluation technique, which can deal with lots of active nodes. In an experiment for a GaAs FET of 134 mm gate width with 168 gate fingers, this stability analysis precisely predicted an oscillation frequency of the FET having multiple closed loops. The new approach presented here on the gate feed structure effectively suppressed odd mode oscillation.

Abstracts

A 2 GHz high-gain differential InGaP HBT driver amplifier matched for high IP3

M.P. van der Heijden, M. Spirito, L.C.N. de Vreede, F. van Straten and J.N. Burghartz. "A 2 GHz high-gain differential InGaP HBT driver amplifier matched for high IP3." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 235-238 vol.1.

A 2GHz single-stage linear InGaP HBT differential driver amplifier is presented operating at I/sub C/ = 30mA and V/sub C/ = 3V. The amplifier utilizes a collector-base capacitance neutralization technique, yielding a maximum stable gain of 30dB at 2GHz. Furthermore, second-harmonic control is implemented in the in- and output terminations yielding a 20dB reduction of third-order intermodulation distortion (IM3). Moreover, the well-defined second-order terminations result in a good symmetry of the lower and upper IM3 side bands.

Abstracts

A 23GHz differential amplifier with monolithically integrated T-coils in 0.09/spl mu/m CMOS technology

T. Toifl, M. Kossel, C. Menolfi, T. Morf and M. Schmatz. "A 23GHz differential amplifier with monolithically integrated T-coils in 0.09/spl mu/m CMOS technology." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 239-242 vol.1.

We present a four-stage differential amplifier using coupled inductors in a T-coil configuration to match the capacitive load to the driving transistor. The chip was fabricated in a 90 nm CMOS technology and achieves a bandwidth of 23 GHz with a differential gain of 18 dB at 1.2 V supply voltage. At 10 V supply voltage, the circuit displays a bandwidth of 23 GHz with 15 dB gain at 54 mW dissipated power.

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A merged structure of LNA & sub-harmonic mixer for multi-band DCR applications

Kwang-Jin Koh, Mun-Yang Park, Yong-Sik Youn, Scon-Ho Han, Jang-Hong Choi, Cheon-Soo Kim, Sung-Do Kim and Hyun-Kyu Yu. "A merged structure of LNA & sub-harmonic mixer for multi-band DCR applications." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 243-246 vol.1.

A merged structure of variable gain LNA and sub-harmonic mixer is designed for multi-band direct conversion receiver (DCR) applications with a 0.18 /spl mu/m CMOS process. The circuit uses inductive peaking loads to increase the 3dB-bandwidth and achieves 22.7/spl sim/32dB conversion gain, 2.8/spl sim/4.1dB DSB NF, -10.5/spl sim/4.1dBm IIP3 and 5/spl sim/17.3 dBm IIP2 from a 800 MHz to 2.4 GHz input range. The variable gain range is 11.5 dB at 2.1 GHz and typical LO to RF isolation is less than -50 dBm, and DC offset voltage is less than 10 mV. The overall power consumption is 17 mW with a 1.8 V supply voltage and the chip size is 2.3 mm/spl times/1.2 mm.

Abstracts

A novel microwave cross-point switch MMIC employing thyristors for broadband services

R.A. La Rue, T.P. Ngo, E. Chan and J.D. Levine. "A novel microwave cross-point switch MMIC employing thyristors for broadband services." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 247-250 vol.1.

A novel GaAs 16/spl times/16 cross-point switch MMIC is presented. The switch MMIC incorporates 256 GaAs microwave thyristor devices as the switching elements. The thyristors are two terminal devices with anodes connected to a common horizontal electrode and cathodes connected to a common vertical electrode. The bistable operation of the thyristors permits x-y addressing at the edge of the chip to turn on and off each thyristor. Applications include low cost, low power, high bandwidth switching of signals for broadband services. A detailed description of the thyristor device, MMIC structure and design, and simulation and experimental results are presented.

Abstracts

Performance of AlGaN/GaN HEMTs for 2.8 GHz and 10 GHz power amplifier applications

A.P. Zhang, L.B. Rowland, E.B. Kaminsky, J.W. Kretchmer, V. Tilak, A.F. Allen and B.J. Edward. "Performance of AlGaN/GaN HEMTs for 2.8 GHz and 10 GHz power amplifier applications." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 251-254 vol.1.

AlGaN/GaN high electron mobility transistors (HEMTs) have demonstrated great potential for microwave power transmitter applications as required by phased array radar and wireless base stations. In this paper, we report on state-of-the-art power density generated from large gate periphery AlGaN/GaN HEMTs. At 2.8 GHz, 7 W/mm gate periphery (14.7 W total) was obtained under pulsed conditions from 2.1 mm gate periphery devices and 5 W/mm (42 W total) pulsed power was demonstrated from 2/spl times/4.2 mm gate periphery devices. At 10 GHz, 9.2 W/mm (13.8 W total) power was obtained under pulsed conditions from 1.5 mm gate periphery devices with drain bias up to 55 V. The 4/spl times/4.2 mm (16.8 mm/sup 2/) multiple-die hybrid power amplifiers at 2.8 GHz and 4/spl times/1.5 mm (6 mm/sup 2/) multiple-die package at 10 GHz were also evaluated.

Abstracts

Heterojunction PIN diode switch

D. Hoag, J. Brogle, T. Boles, D. Curcio and D. Russell. "Heterojunction PIN diode switch." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 255-258 vol.1.

This paper describes the development of a heterojunction AlGaAs/GaAs PIN diode as a replacement for the homojunction GaAs PIN diodes commonly used in microwave systems as a control element for commercial and military switch applications up through millimeter wave frequencies. In particular, a single heterojunction PIN diode, when simulated at a bias of 10 mA in a 50 ohm series configuration, indicates a potential reduction in insertion loss of 37% (Rs) with no degradation in isolation (Cj). This paper describes a switch topology of choice which uses a series-shunt element at the main junction, since it offers the widest bandwidth due to the low zero bias capacitance of the series diode. This simple structure has an upper frequency limitation that is dependent on the electrical distance due to the physical location of the series diode relative to the center of the actual device junction and the maximum isolation achievable by the Cj of a discrete diode. PIN switch circuits and RF probable test structures were processed through our GaAs wafer fab and later tested on-wafer for broadband RF performance from 50 MHz through 40 GHz. A comparison between simulated and empirical results for insertion loss, return loss and isolation demonstrates excellent agreement for isolation and a 10% offset for insertion loss and return loss.

Abstracts

Simultaneous 3-band modulation 2.5-Gb/s baseband, microwave-, and 60-GHz-band signals using a single electroabsorption modulator for radio-on-fiber systems (2003 Vol. I [MWSYM])

K. Ikeda, T. Kuri and K.-I. Kitayama. "Simultaneous 3-band modulation 2.5-Gb/s baseband, microwave-, and 60-GHz-band signals using a single electroabsorption modulator for radio-on-fiber systems (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 261-264 vol.1.

A simultaneous modulation using a single 60 GHz-band EAM and fiber-optic transmission of 2.5 Gb/s baseband, microwave-band, and 59.6 GHz 155.52 Mb/s differential-phase-shift-keying (DPSK) signals on a single wavelength and transmission over 40 km-long dispersion-shifted fiber (DSF) are experimentally demonstrated. The optimum 3-band operation conditions are investigated. The degradation due to the non-linearity of the EAM for millimeter-wave signals is also investigated theoretically.

Abstracts

Combined digital/wireless link over the multi-mode fiber with a vertical cavity surface emitting laser

M. Maeng, Y.S. Hur, N. Lal, E. Gebara, S.-W. Yoon and J. Laskar. "Combined digital/wireless link over the multi-mode fiber with a vertical cavity surface emitting laser." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 265-268 vol.1.

In this paper, we present the simultaneous transmission of the baseband digital signal and wireless LAN signal over a multi-mode fiber using a VCSEL. For this hybrid optical link, a new type of combiner is used. For the overall link simulation, a rate-equation based VCSEL model is implemented with circuit components, which describe the high-speed modulation characteristic as well as the thermal effect on the L-I characteristic. The overall optical link is implemented on a Multi-Layer Organic board. An OC-48 baseband data stream and wireless LAN (802.11a) signal at 5.8GHz are applied to the link and successfully transmitted. To the best knowledge of the authors, this is the first demonstration of VCSEL technology for a hybrid optical link.

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110 km 256-QAM digital microwave over fiber link

E.E. Funk, V.J. Urick, S.J. Strutz, J.L. Dexter and K.J. Williams. "110 km 256-QAM digital microwave over fiber link." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 269-272 vol.1.

A 110 km digital microwave fiber-optic link has been designed and demonstrated with 256 QAM at 20 GHz. The design approach, involving the management of loss, dispersion, and Brillouin threshold throughout the link is discussed.

Abstracts

The merging of a WDM fiber-radio backbone with a 25 GHz WDM ring network

C. Lim, A. Nirmalathas, M. Attygalle, D. Novak and R. Waterhouse. "The merging of a WDM fiber-radio backbone with a 25 GHz WDM ring network." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 273-276 vol.1.

We propose the merging of millimeter-wave broadband fiber-radio systems with WDM access networks at 25 GHz channel spacing. We investigate the performance characteristics of such fiber-radio systems experimentally and via simulation. The overall performance exhibits a penalty of < 2 dB.

Abstracts

Experimental reduction of fiber-induced intensity noise in analog optical links employing chirped fiber Bragg gratings

J. Marti, F. Ramos and V. Polo. "Experimental reduction of fiber-induced intensity noise in analog optical links employing chirped fiber Bragg gratings." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 277-279 vol.1.

The use of chirped fiber Bragg gratings to mitigate dispersion-induced intensity noise in analog optical systems is experimentally demonstrated. The measurements show a 20 dB reduction in a 50 km standard single-mode optical span.

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Integrated polymer photonic RF phase shifters for optically controlled beam forming systems

Jeehoon Han, Byoung-Joon Seo and H.R. Fetterman. "Integrated polymer photonic RF phase shifters for optically controlled beam forming systems." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 281-284 vol.1.

We have demonstrated integrated polymer photonic RF phase shifter arrays with a novel balanced design, new symmetric mode configurations and a simplified fabrication procedure, which is capable of removing conventional drawbacks in this type of phase shifter architecture. These devices showed four independent highly linear RF phase outputs and negligible RF power fluctuation at the modulation frequency of 20 GHz.

Abstracts

Multiport MM/FE technique for the efficient CAD of folded and cross-coupled rectangular combline filters

F. Arndt and J. Brandt. "Multiport MM/FE technique for the efficient CAD of folded and cross-coupled rectangular combline filters." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 287-290 vol.1.

The hybrid mode-matching/finite-element (MM/FE) technique extended to multiports yields generalized scattering matrix (GSM) building blocks for the CAD of advanced coax-fed rectangular combline filters of improved performance. The novelty of the formulation consists in the very efficient EM based modeling of folded and cross-coupled rectangular combline filters that allows their optimization within typically an overnight run on a PC. Usual coax feeds (direct post, disc, probe or loop coupling) are directly included. The attractive feature of the hybrid MM/FE approach is the combination of the computational speed of the MM technique with the flexibility of the FE method also for this class of components. Design examples demonstrate the flexibility of the CAD method; experimental results show its validity for practical applications.

Abstracts

EM based design of large-scale dielectric resonator multiplexers by space mapping

M.A. Ismail, D. Smith, A. Panariello, Y. Wang and M. Yu. "EM based design of large-scale dielectric resonator multiplexers by space mapping." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 291-294 vol.1.

A novel design methodology for multiplexer design is presented. For the first time, finite element EM based simulators and space-mapping optimization are combined to produce an accurate design for manifold coupled output multiplexers with dielectric resonator (DR) loaded filters. Finite element EM based simulators are used as a fine model of each multiplexer channel and a coupling matrix representation is used as a coarse model. Fine details such as tuning screws are included in the fine model. Therefore channel dispersion and spurious modes are taken into account. The DR filter channel design parameters are kept bounded during optimization. Our approach has been used to design large-scale manifold coupled output multiplexers and it has significantly reduced the overall tuning time compared to traditional techniques. The technique is illustrated through design of a 10-channel output multiplexer with 5-pole DR filter based channels.

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Minimal-order multi-dimensional linear interpolation for a parameterized electromagnetic model database

J. Sercu and S. Hammadi. "Minimal-order multi-dimensional linear interpolation for a parameterized electromagnetic model database." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 295-298 vol.1.

We present a minimal-order multi-dimensional linear interpolation schema used to interpolate in an N-dimensional EM model database. The EM model database is used to link a computation time expensive EM simulator with a general purpose circuit simulator. The EM model database enables fast EM/Circuit co-simulation, co-optimization and the simultaneous tuning of lumped component elements and distributed layout parameters. The interpolation scheme is minimal-order in the sense that it minimizes the number of samples needed to perform the multi-dimensional linear interpolation. The accuracy and computational efficiency of the proposed modeling technique are validated through different circuit simulation examples.

Abstracts

Feasible adjoint sensitivity technique for EM design exploiting Broyden's update

R. Safian, N.K. Nikolova, M.H. Bakr and J.W. Bandler. "Feasible adjoint sensitivity technique for EM design exploiting Broyden's update." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 299-302 vol.1.

The EM-FAST feasible adjoint sensitivity technique has been proposed for use with frequency domain electromagnetic solvers. It employs finite differences to approximate the derivatives of the system matrix with respect to the design parameters. Here, we propose to estimate and update these derivatives by the classical Broyden technique. This significantly accelerates the response sensitivity analysis when EM-FAST is used for gradient-based optimization. Regardless of the number of design parameters, the response sensitivity is obtained with. computational overhead negligible in comparison with the system analysis. Our EM-Broyden technique is illustrated through the optimization of a Yagi-Uda antenna.

Abstracts

De-embedding of port discontinuities in full-wave CAD models of multi-port circuits

V.I. Okhmatovski, J. Morsey and A.C. Cangellaris. "De-embedding of port discontinuities in full-wave CAD models of multi-port circuits." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 303-306 vol.1.

Systematic numerical methodology is proposed for accurate de-embedding of the port discontinuities in full-wave models of the unbounded multi-port circuits. The approach is based on the idea of short-open calibration (SOC). The latter being a numerical analog of the experimental TRL-technique provides a consistent removal of the feed networks in a wide range of frequencies. The treatment of multi-port topologies is achieved through the continuation of the original scalar SOC into the vector space. The new vector short-open calibration (VSOC) method provides a seamless interface with the integral equation based method of moments (MoM) solvers. Owing to the distributed nature of the microwave circuits the method allows for a substantial flexibility in the choice of the excitation mechanisms. Such commonly used MoM driving schemes as the ports locally backed up by the vertical wall, ungrounded-internal differential ports or via-mounted ports can be accurately de-embedded within the framework of the VSOC.

Abstracts

Electronic aspects of propagation in left-handed guided wave structures: electromagnetic-media interactions

C.M. Krowne and M. Daniel. "Electronic aspects of propagation in left-handed guided wave structures: electromagnetic-media interactions." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 309-312 vol.1.

Dispersion diagrams and magnetic and electric field distributions are found for a microstrip structure containing a left-handed medium (LHM). The material constituting the LHM making the substrate has characteristics chosen to overlap with potentially realizable substances. Calculations are done using a fast solver Green's function spectral domain computer code. It is found that the dispersion diagrams and field distributions are very unusual and admit the possibility of completely new device realizations based on combining LHM with conventional materials in a multi-layered configuration.

Abstracts

Mono-modal waveguides filled with a pair of parallel epsilon-negative (ENG) and mu-negative (MNG) metamaterial layers

A. Alu and N. Engheta. "Mono-modal waveguides filled with a pair of parallel epsilon-negative (ENG) and mu-negative (MNG) metamaterial layers." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 313-316 vol.1.

Here we analyze guided wave propagation in a parallel-plate waveguide filled with a pair of parallel lossless slabs; one possessing negative real permittivity but positive real permeability, and the other with negative real permeability and positive real permittivity, in the range of frequency of interest. It is shown that such a waveguide can support only a single propagating mode, essentially independent of the total thickness of this structure. Furthermore, this waveguide can still possess a propagating mode even when its thickness is very small. Field distribution and dispersion relations in such a mono-modal waveguide are obtained and discussed with physical insights and intuitive description for the mathematical findings.

Abstracts

A broadband left-handed (LH) coupled-line backward coupler with arbitrary coupling level

C. Caloz, A. Sanada, L. Liu and T. Itoh. "A broadband left-handed (LH) coupled-line backward coupler with arbitrary coupling level." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 317-320 vol.1.

A novel broadband left-handed (LH) coupled-line backward coupler with arbitrary coupling level is presented. This coupler is composed of two LH transmission lines (TL) constituted of series interdigital capacitors and shunt shorted-stub inductors. A quasi-0dB implementation of the coupler is demonstrated by simulation and measurement results, and shown to exhibit a bandwidth of 35% despite the relatively wide lines-gap of 0.3mm. An even/odd modes analysis is presented to explain the working principle of the component. A 3dB-quadrature implementation, with 37% bandwidth, is also demonstrated. Finally, parametric results illustrate the versatility of the LH coupler and its strongly enhanced backward coupling compared with the conventional coupled-line coupler.

Abstracts

A planar metamaterial co-directional coupler that couples power backwards

R. Islam and G.V. Eleftheriades. "A planar metamaterial co-directional coupler that couples power backwards." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 321-324 vol.1.

A metamaterial coupler made of a regular microstrip line and a negative-refractive-index (NRI) line is examined. Peculiar coupling effects are observed in which co-directional traveling waves result in contra-directional Poynting vectors on the lines thus leading to power being coupled backwards. This coupler demonstrates better performance in terms of coupled power and port isolation, but at a slightly reduced bandwidth, when compared to a commensurate regular microstrip coupled-line coupler.

Abstracts

A branch-line coupler with two arbitrary operating frequencies using left-handed transmission lines

I-Hsiang Lin, C. Caloz and T. Itoh. "A branch-line coupler with two arbitrary operating frequencies using left-handed transmission lines." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 325-328 vol.1.

A branch-line coupler (BLC) working at two arbitrary frequencies using left-handed (LH) transmission lines (TLs) is presented. The analysis of the structure is based on the even-odd mode analysis of the conventional BLC as well as a recently developed model for the LH-TL. We demonstrate that the two operating frequencies can be obtained by tuning the phase slope of the different line sections. A prototype is demonstrated by both simulation and measurement results. The operating frequencies of the two pass-bands are 920 MHz and 1740 MHz, respectively.

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A compact enhanced-bandwidth hybrid ring using a left-handed transmission line section

H. Okabe, C. Caloz and T. Itoh. "A compact enhanced-bandwidth hybrid ring using a left-handed transmission line section." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 329-332 vol.1.

A novel compact enhanced-bandwidth hybrid ring using a left-banded (LH) transmission line (TL) is proposed. The LH-TL is used in replacement of the 270/spl deg/ TL of the conventional hybrid ring. The proposed hybrid shows a 54% bandwidth enhancement and 67% size reduction compared to the conventional hybrid at 2 GHz. The working principle is explained and the performances of the components are demonstrated by measurement results.

Abstracts

The linearized microwave power module

A. Katz and R. Gray. "The linearized microwave power module." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 335-338 vol.1.

Microwave power modules (MPMs) provide the most compact and efficient source of microwave/millimeter wave amplification in the 50 to 150 W power range. They can also amplify over a multi-octave frequency band. MPMs have been around for almost ten years and applied in military radar and electronic warfare, but have seen little application in communications. This paper shows that by combining an MPM with a linearizer, high power, high efficiency and high linearity can all be achieved. This combination should make linearized MPMs highly attractive for both commercial and military communications applications.

Abstracts

A novel predistorter using a balanced type IM3 generator

Sang Won Kim, Hyeong Tae Jeong, Chul Dong Kim and Ik Soo Chang. "A novel predistorter using a balanced type IM3 generator." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 339-342 vol.1.

This paper presents a novel linearization scheme for a nonlinear RF amplifier. It is based on amplitude modulation with the envelope signal. The 3/sup rd/ order distortion generator is composed of two FETs and it adopts a balanced structure for the purpose of main carrier cancellation. The amplitude and phase of the IM3 components can be controlled in the RF band. This predistorter is implemented and tested at the KOREA PCS Tx band (1840/spl sim/1870 MHz). Experimental results of the two-tone test show that the IM3 cancellation of about 30-40 dB is achieved for a wide dynamic range. The adjacent channel power ratio is improved by over 10 dB for the CDMA signal with a peak to average power ratio of 10 dB, and this improvement is maintained over a wide range of output power levels.

Abstracts

Statistical modeling of cross modulation in multichannel power amplifiers using a new behavioral modeling technique

K. Gharaibeh and M. Steer. "Statistical modeling of cross modulation in multichannel power amplifiers using a new behavioral modeling technique." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 343-346 vol.1.

A statistically based analysis technique is developed for multichannel amplifier environments enabling in-band and out-of-band intermodulation and cross modulation distortions to be predicted with very little computation. This is coupled with the introduction of a multiple envelope behavioral modeling technique that captures the black box characteristics of multichannel amplifiers. A CDMA two channel amplifier with a two-channel signal is characterized experimentally and verifies the approach presented here.

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Closed-loop digital pre-distortion for power amplifier linearization using genetic algorithms

R. Sperlich, J.A. Sills and J.S. Kenney. "Closed-loop digital pre-distortion for power amplifier linearization using genetic algorithms." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 347-350 vol.1.

This paper continues our investigation of genetic pre-distortion algorithms to power amplifier (PA) linearization. In previous work, we reported simulation results of an adaptive algorithm that requires only a measure of out-of-band emission. Compared to traditional algorithms that require wideband feedback, the proposed algorithm is implemented using narrowband feedback, affording a large cost savings in ADC components. In our current work we apply the genetic algorithm to a laboratory PA and present linearization results in terms of adjacent and alternate channel leakage ratio (ACLR) and efficiency improvement.

Abstracts

Dynamic electro-thermal behavioral model for RF power amplifiers

S. Boumaiza, J. Gauthier and F.M. Ghannouchi. "Dynamic electro-thermal behavioral model for RF power amplifiers." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 351-354 vol.1.

Electrical and electro-thermal memory effects influence significantly the performance of RF power amplifiers and predistortion-based linearizers as signal bandwidth and operation power increase. In this paper, we present an electro-thermal behavior model for RF power amplifiers. Input and output time domain waveforms have been used to identify the PAs model parameters. Measurements that have been conducted on a 90-watt peak LDMOS power amplifier were found to be in good agreement with those obtained from a simulation that uses the model developed and implemented in ADS environment.

Abstracts

Ultrawideband - the next step in short-range wireless (2003 Vol. I [MWSYM])

D.G. Leeper. "Ultrawideband - the next step in short-range wireless (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 357-360 vol.1.

Forces of economics and laws of physics have been driving the growth of short-range wireless technologies such as IEEE 802.11b/a, Bluetooth/spl trade/, and most recently, ultrawideband. Developed initially for defense-related communications, ultrawideband offers data rates of 100-500 Mbps at distances of 2-10 meters, using an average radiated power of about 200 microwatts. With its low cost, low power, and small size, ultrawideband looks attractive for inter-connecting portable data-driven devices without wires as well as maximizing wireless spatial capacity measured in terms of bits/sec/square-meter.

Abstracts

Challenges for ultra-wideband (UWB) CMOS integration (2003 Vol. I [MWSYM])

G.R. Aiello. "Challenges for ultra-wideband (UWB) CMOS integration (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 361-364 vol.1.

Various methods of utilizing the UWB spectrum have been developed to date, characterized by specific modulation schemes, such as pulse position, pulse amplitude or bi-phase modulation. A new method emerging today utilizes a multi-band approach, where information is encoded in multiple RF subbands at staggered time, each occupying 500MHz bandwidth. A description of multi-band modulation schemes for UWB is included in the paper. The long term vision for UWB-based products is to enable personal devices with integrated wireless connectivity. This requires 110, 200 and 480Mbps at 10m, and reasonably low power consumption. UWB requires CMOS designs in order to achieve low power and low cost integration with other devices, and to fulfill the vision of integrated connectivity. One of the design challenges is the high operating frequencies (3.1-10.6GHz), an additional challenge is that low Q systems are more sensitive to parasitics, especially in pads and wire bonds. Some UWB receiver architectures require good isolation among subbands. They also require quick switching between subbands at different frequencies. Example transmitter and receiver architectures are described in the paper.

Abstracts

UWB path loss characterization in residential environments (2003 Vol. I [MWSYM])

S.S. Ghassemzadeh and V. Tarokh. "UWB path loss characterization in residential environments (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 365-368 vol.1.

In this paper, we describe a simple method for measurement of the Ultra-Wideband Band (UWB) frequency response for evaluation of the path loss and impulse response of the UWB indoor channel. We propose a simple statistical path loss model for the residential channel that is based on over 300,000 frequency response measurements. The probability distributions of the model parameters for different locations are presented.

Abstracts

Ultra wide band 24GHz automotive radar front-end (2003 Vol. I [MWSYM])

I. Gresham, A. Jenkins, R. Egri, C. Eswarappa, F. Kolak, R. Wohlert, J. Bennett and J.-P. Lanteri. "Ultra wide band 24GHz automotive radar front-end (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 369-372 vol.1.

The recent approval granted by the FCC for the use of Ultra Wide Band (UWB) signals for vehicular radar applications has provided a gateway for production of these sensors as early as in 2004. However, the rules governing the allowable spectral occupancy create significant constraints on the operation of the sensors. The implications for waveform design and the consequent limitation on system architecture, including antenna design and receiver architecture are discussed. Other practical considerations such as available semiconductor technology with low-cost plastic packaging are reviewed. This is developed into a methodology for developing a single board sensor with integrated antenna. Results are presented for a specification compliant antenna, and a low-cost plastic package for 24GHz ICs. Finally, the required IC architecture for a Transceiver is presented, along with measured results of a single-chip homodyne I/Q down-conversion receiver fabricated in SiGe.

Abstracts

1.25 Gbps wireless Gigabit Ethernet link at 60GHz-band (2003 Vol. I [MWSYM])

K. Ohata, K. Maruhashi, M. Ito, S. Kishimoto, K. Ikuina, T. Hashiguchi, K. Ikeda and N. Takahashi. "1.25 Gbps wireless Gigabit Ethernet link at 60GHz-band (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 373-376 vol.1.

A 1.25Gbps 60GHz-band full duplex wireless Gigabit Ethernet link has been developed. Direct ASK modulation and demodulation scheme is adopted for the 60GHz-band transceiver. CPW MMICs and planar filters are flip-chip mounted in TX and RX LTCC MCMs. The wireless Gigabit Ethernet link has a function to convert an optical fiber link to a wireless link seamlessly combining a 60GHz-band transceiver with a 1000 Base-SX optical in/out module. The size is 159/spl times/97/spl times/44mm/sup 3/.

Abstracts

Experimental investigation of microwave imaging via space-time beamforming for breast cancer detection

Xu Li, S.C. Hagness, B.D. Van Veen and D. van der Weide. "Experimental investigation of microwave imaging via space-time beamforming for breast cancer detection." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 379-382 vol.1.

We investigate the experimental feasibility of detecting small malignant breast tumors using a recently proposed method of microwave imaging via space-time beamforming. A microwave sensor comprised of a planar synthetic array of compact ultrawideband (1-11 GHz) antennas is placed above a breast tissue phantom - a tank of homogeneous normal breast tissue simulant covered by a thin layer of skin simulant. A small (< 0.5 cm) synthetic tumor is embedded in the breast phantom. At each position in the array, the antenna transmits a synthetically generated ultra-short pulse into the breast phantom. A robust data-adaptive algorithm removes the artifact caused by the dominant backscatter from the skin-breast interface. The signals are passed through a 3-D space-time beamformer designed to image backscattered energy as a function of location. Even millimeter-sized malignant tumors have relatively large microwave scattering cross-sections due to their significant dielectric-properties contrast with normal breast tissue. Therefore they produce localized regions of large backscatter energy levels in the beamformer image. The successful detection and localization of very small synthetic tumors embedded in the skin-breast tissue phantom is demonstrated.

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Abstracts

Experimental feasibility of breast tumor detection and localization

E.C. Fear, J. Sill and M.A. Stuchly. "Experimental feasibility of breast tumor detection and localization." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 383-386 vol.1.

Microwave breast imaging with radar-based techniques has been proposed for breast tumor detection. The feasibility study reported in this paper is designed to evaluate detection and localization of objects in three dimensions (3D). Experimental setups consisting of a PVC pipe (skin) and wood spheres (tumors) are illuminated with a resistively loaded monopole antenna. Improved image reconstruction algorithms are applied to the measured data, and the resulting images demonstrate detection and localization of smaller 3D tumor models.

Abstracts

Breast tumor characterization via complex natural resonances

Y. Huo, R. Bansal and Q. Zhu. "Breast tumor characterization via complex natural resonances." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 387-390 vol.1.

The research described in this paper is aimed at modeling tumors in breast tissue as buried dielectric targets so that their complex natural resonances (CNR) can be identified and correlated with clinically useful properties. FDTD simulation and Prony's method are used to demonstrate the approach numerically. The technique is proposed as a modality complementary to ultrasound tumor detection.

Abstracts

A conformal microwave antenna applicator for circumferential ablation

Zeji Gu, C.M. Rappaport, P.J. Wang and Wei Zhu. "A conformal microwave antenna applicator for circumferential ablation." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 391-394 vol.1.

This paper presents a circumferential tissue ablation device used to form a circumferential conduction block in a pulmonary vein. The circumferential ablation element includes an expandable balloon that is adapted to conform to the pulmonary vein (PV) in the region of its ostium; a microwave transducer is provided and conformed to the balloon's skin, which can form the circumferential ablation by transmitting microwave energy. The microwave transducer includes a mechanism of impedance tuning by which the microwave ablation catheter system can match the impedance of its power supply with the transmission line to minimize reflected power and optimize energy delivery to targeted tissues.

Abstracts

FDTD simulation of interstitial arrays of sleeved-slot antennas for hyperthermic cancer therapy

P. Bernardi, M. Cavagnaro, J.C. Lin, S. Pisa and E. Piuzzi. "FDTD simulation of interstitial arrays of sleeved-slot antennas for hyperthermic cancer therapy." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 395-398 vol.1.

In this paper, a graded-mesh FDTD code is used for studying triangular arrays of sleeved-slot antennas immersed in a brain-equivalent phantom. The code allows accurate modeling of the fine structure of each antenna and of a sufficiently wide surrounding region with acceptable computational costs. The study performed illustrates the ability of a triangular array with 15 mm inter-antenna spacing to produce a fairly uniform power deposition in a spherical volume around the center of the array.

Abstracts

110 GHz broadband measurement of permittivity on human epidermis using 1 mm coaxial probe

Hyeonseok Hwang, Jounghwa Yim, Jei-Won Cho, Changyul Cheon and Youngwoo Kwon. "110 GHz broadband measurement of permittivity on human epidermis using 1 mm coaxial probe." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 399-402 vol.1.

In this work, we have characterized the permittivity of human epidermis (outer skin layer) using microwave up to 110 GHz. A one mm-diameter coaxial probe was adopted to increase measuring bandwidth as well as to enhance the spatial resolution. Pork was used to discriminate the permittivities between muscle tissues and fat tissues. The influence of the sample thickness was also. studied. Considering several factors, the permittivity was measured on epidermis of the human palm and the wrist. In addition, a relaxation phenomenon observed in the wrist skin, revealed by Cole-Cole parameters, suggested that it originated from high water content beneath the thin epidermis of the wrist skin. A relaxation phenomenon revealed by Cole-Cole parameters was observed in the wrist skin. This explains that high water content cells exist beneath the thin epidermis of the wrist skin.

Abstracts

A UTD/FDTD model to evaluate human exposure to base-station antennas in realistic urban environments

P. Bernardi, M. Cavagnaro, R. Cicchetti, S. Pisa, E. Pitizzi and O. Testa. "A UTD/FDTD model to evaluate human exposure to base-station antennas in realistic urban environments." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 403-406 vol.1.

A technique combining uniform asymptotic theory of diffraction and finite-difference time-domain (UTD/FDTD), suitable to characterize human exposure in realistic urban environments at a reasonable computational cost, is presented. The technique allows an accurate evaluation of field interaction with penetrable objects (walls, windows, furniture, etc.) and of power absorption in a high-resolution model of the exposed subject. The method has been applied to analyze the exposure of a subject standing behind a window in a building situated in front of a rooftop-mounted base-station antenna. A comparison of the obtained results with those computed neglecting the presence of the building (free-space condition) evidences that a realistic modeling of field propagation in the actual scenario is essential for an accurate evaluation of absorbed power distribution inside the human body.

Abstracts

Investigation of specific absorption rate of electromagnetic fields at 100 MHz in the head of a person wearing hoodless protection garment

A. Hadjem, D. Lautru, C. Dale, Man Fai Wong, J. Wiart, F. Jacquin and V.F. Hanna. "Investigation of specific absorption rate of electromagnetic fields at 100 MHz in the head of a person wearing hoodless protection garment." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 407-410 vol.1.

This paper presents a study of Specific Absorption Rate (SAR) induced in the head of a person wearing a protection garment without a hood. Electromagnetic fields in the head are determined using a combination of the Finite Difference Time Domain (FDTD) method and the Method of Moments (MoM). The maximum level of ambient electric field, to which a person can be exposed in the case in which he uses a protection garment without a hood, is given.

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Abstracts

An optically controlled isolator using ferrite edge mode

T. Kodera. "An optically controlled isolator using ferrite edge mode." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 413-416 vol.1.

This paper introduces a new type of microwave isolator. The nonreciprocity of the isolator can be optically controlled. The operation is based on the two phenomena: the ferrite edge-mode and the photo-generated plasma on silicon substrate. Conventional ferrite edge-mode isolator has been made of the ferrite and the resistive material. The later is used to absorb the reverse-propagating wave of the isolator. An inadequate choice of the resistive body leads to the imperfect absorption; the isolation ratio decreases. In this paper, a novel isolator is introduced by using this change of isolation. The optical control is realized by changing the intensity of illumination to produce the variation of the plasma density on the silicon substrate. On the isolator, the frequency response is investigated both experimentally and numerically. The numerical analysis is performed by the FDTD method. Both numerical and experimental results have shown that the isolation ratio can be controlled for 39 dB at 11GHz by the laser-illumination on the silicon substrate.

Abstracts

Improved lumped-element two-port isolator

S. Takeda, H. Mikami and K. Ichikawa. "Improved lumped-element two-port isolator." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 417-420 vol.1.

In a lumped-element two-port isolator, the relationship between the angle across two central conductors and electric characteristics is revealed using circuit analysis. At /spl phi/=90 degree, high isolation loss is achieved. At /spl phi/=60 degree, the bandwidth of insertion loss becomes maximum. This theoretical prediction at /spl phi/=60 degree was confirmed qualitatively by 360 MHz band experiments. Furthermore, we obtained the interesting result that the perfect isolation conditions at /spl phi/=60 degree is quite similar to three-port circulator conditions.

Abstracts

Novel general finite element solver for gyroelectric structures

Lian Yuh Tio, L.E. Davis, A.A.P. Gibson and B.M. Dillon. "Novel general finite element solver for gyroelectric structures." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 421-424 vol.1.

A novel general finite element solver for gyroelectric structures is presented. The solver is validated and compared with known gyrotropic waveguide solutions. Slab loaded semiconductor waveguides are investigated for nonreciprocity and differential phase shift is calculated. The proposed structures can potentially be exploited as nonreciprocal phase shift and control components for terahertz frequencies.

Abstracts

Microstrip line on the oppositely magnetized ferrite substrate and its application to the nonreciprocal devices

K. Okubo and M. Tsutsumi. "Microstrip line on the oppositely magnetized ferrite substrate and its application to the nonreciprocal devices." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 425-428 vol.1.

This paper newly proposes a microstrip line on the oppositely magnetized ferrite substrate. Strong nonreciprocal transmission characteristic was confirmed with both theory and experiments. After discussions of the physical meaning of nonreciprocity of the line, a nonreciprocal four port junction and new design of a ring circulator along singular point of the bias field were demonstrated as applications of the strip line proposed.

Abstracts

Microwave permeability measurement of unsaturated hexaferrites of Y-type

M. Obol and C. Vittoria. "Microwave permeability measurement of unsaturated hexaferrites of Y-type." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 429-432 vol.1.

We have investigated the zero field permeability behavior of Y-type hexaferrites. The measured permeability from 0.045 to 10 GHz was theoretically explained in term of zero magnetic field multi-domain and domain wall resonance. The basal plane anisotropy field, H/sub /spl phi///sup A/, domain wall thickness /spl delta/ and length L of the domain wall were estimated from resonance and permeability data.

Abstracts

Ultra broadband ferrite transmission line transformer

J. Horn and G. Boeck. "Ultra broadband ferrite transmission line transformer." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 433-436 vol.1.

A ferrite transmission line transformer with an impedance transformation of 1:4 and a bandwidth of 1 MHz to 5 GHz is presented. The circuit is based on a straight semi-rigid coaxial transmission line and a single ferrite tube mounted on a PCB. Analysis and modeling of the circuit is presented together with theoretical and experimental results.

Abstracts

Low loss phase shifter based on piezo-controlled layered dielectric structure

Y. Poplavko, V. Kazmirenko, Y. Prokopenko, Moongi Jeong and Sunggi Baik. "Low loss phase shifter based on piezo-controlled layered dielectric structure." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 437-440 vol.1.

Layered structure made of high-/spl epsiv/ dielectric and piezo-controlled air slot, filling various type waveguides, is used as tunable low loss wide-band phase shifter. A contemporary piezoelectric actuator is employed for fast variation of air slot width. This alteration results in considerable change in effective dielectric constant /spl epsiv//sub ef/ of the structure. Using high quality microwave dielectrics, it is possible to realize low loss phase shifters in the microwave as well as in the millimeter wave region.

Abstracts

A complete self-defined empirical model for enhancement-mode AlGaAs/InGaAs pHEMTs

W.K. Wang, C.K. Lin, C.C. Wu and Y. Chan. "A complete self-defined empirical model for enhancement-mode AlGaAs/InGaAs pHEMTs." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 443-446 vol.1.

We propose a complete self-defined empirical large-signal and noise including model for enhancement-mode AlGaAs/InGaAs pHEMTs. This model achieves excellent fitting of the DC transconductance, g/sub m/, which considers the difference of the drain-to-source conductance between DC and RF measurements. In addition, for a full prediction at various biases, all parameters of the model are characterized against the gate-to-source and drain-to-source voltages. In consequence, the predictions of the power and IM3 are very accurate. Additionally, it can also predict the NF/sub min/ and /spl Gamma//sub opt/ points well using the noise parameters by calculating the thermal noise of the equivalent circuit model. This noise figure prediction including model is not always available from the commonly used conventional pHEMT models.

Abstracts

ANN model for AlGaN/GaN HEMTs constructed from near-optimal-load large-signal measurements

D. Schreurs, J. Verspecht, E. Vandamme, N. Vellas, C. Gaquiere, M. Germain and G. Borghs. "ANN model for AlGaN/GaN HEMTs constructed from near-optimal-load large-signal measurements." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 447-450 vol.1.

AlGaN/GaN HEMTs have a high potential for high-power applications at microwave frequencies. We developed a behavioural model corresponding to the operation condition as how this device will be used in power amplifiers, i.e., at a high output load. The model is based on time-domain large-signal measurements, and the representation format is an artificial neural network (ANN). AlGaN/GaN devices on sapphire are known to be temperature sensitive. Therefore, we also consider the incorporation of the self-heating effect in the behavioural model description.

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Abstracts

Large signal modeling of AlGaN/GaN HEMTs with P/sub sat/>4 W/mm at 30 GHz suitable for broadband power applications

F. van Raay, R. Quay, R. Kiefer, M. Schlechtweg and G. Weimann. "Large signal modeling of AlGaN/GaN HEMTs with P/sub sat/>4 W/mm at 30 GHz suitable for broadband power applications." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 451-454 vol.1.

Large signal modeling and investigations of an AlGaN/GaN HEMT processed on SiC with l/sub g/=150 nm are performed with respect to broadband amplifiers up to 30 GHz. Output power values of 3.4 W or 4.25 W/mm at 18 GHz and P/sub out/=1.6 W, equivalent to 4 W/mm at 30 GHz, are measured. The device modeling shows good agreement of the measured and modeled power sweeps at 10 GHz and 30 GHz. The large signal simulations show the suitability of AlGaN/GaN HEMTs for multi-band amplifiers in the K-band.

Abstracts

Mechanism of power density degradation due to trapping effects in AlGaN/GaN HEMTs

S. De Meyer, C. Charbonniaud, R. Quere, A. Campovecchio, R. Lossy and J. Wurfl. "Mechanism of power density degradation due to trapping effects in AlGaN/GaN HEMTs." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 455-458 vol.1.

AlGaN/GaN HEMTs are promising devices for very high power applications. These transistors present high breakdown voltages and have already shown their ability to operate at high temperature. But their power performances are limited because of the presence of traps within the material, decreasing the drain current density. In order to predict the loss of power density and quantify trapping effects, simulations need to be performed with a suitable model, which accounts for these parasitic trapping effects. This paper deals with the characterization, modeling and simulation of trapping effects and power behavior of a 1 mm GaN device on a SiC substrate. Experimental results are compared to the simulations.

Abstracts

Analysis of RF performances of GaN MESFETs including self-heating and trapping effects

S.S. Islam and A.F.M. Anwar. "Analysis of RF performances of GaN MESFETs including self-heating and trapping effects." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 459-462 vol.1.

A physics-based large-signal model of GaN-MESFETs is reported which includes temperature dependences of transport and trapping parameters. RF power performances are analyzed using generalized Volterra series techniques. At 2 GHz, the calculated maximum output power of a 0.3 /spl mu/m/spl times/100 /spl mu/m GaN MESFET is 22.8 dBm at a power gain of 6.1 dB and power added efficiency of 28.5%. The corresponding quantities are in excellent agreement with the measured values of 23 dBm, 5.8 dB and 27.5%, respectively. At 2 GHz, gain compressions, due to self-heating effects, of 2.2 dB and 0.75 dB are obtained for 0.30 /spl mu/m/spl times/100 /spl mu/m and 0.75 /spl mu/m/spl times/100 /spl mu/m GaN MESFETs, respectively. At 4 GHz and 10 dBm output power, the calculated third-order intermodulations (IM3) for 0.30 /spl mu/m/spl times/100 /spl mu/m and 0.75 /spl mu/m/spl times/100 /spl mu/m GaN MESFETs are -56 dBc and -44 dBc, respectively. For the same devices, IM3 increases by 6 dBc and 3 dBc due to self-heating effects, respectively.

Abstracts

A recursive scheme for MESFET nonlinear current coefficient evaluation applied in Volterra-series analysis

Chien-Chang Huang and Han-Ting Pai. "A recursive scheme for MESFET nonlinear current coefficient evaluation applied in Volterra-series analysis." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 463-466 vol.1.

A recursive scheme for the 2D Taylor-series coefficient evaluation of MESFET drain current characteristics is proposed by using low-frequency harmonic power measurements with the associated phase polarity information. The formulation is in a systematic approach to acquire the general expressions for various order terms. Numerical studies examine the validity of the proposed method with additional measurement uncertainty simulations. Experimental verifications with the two-tone intermodulation distortion of a MESFET amplifier are also shown.

Abstracts

A large-signal FET model including thermal and trap effects with pulsed I-V measurements

Kyoungmin Koh, Hyun-Min Park and Songcheol Hong. "A large-signal FET model including thermal and trap effects with pulsed I-V measurements." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 467-470 vol.1.

A large signal FET model is presented. This includes a quiescent bias dependency to predict the non-linear dynamic behavior of a FET where thermal and trap effects are present. The intrinsic device of the model is represented by a parallel connection of non-linear currents and charges. The model parameters are extracted from bias dependent pulsed I-Vs and small-signal S-parameters. Measurements and simulations of pulsed I-Vs and S-parameters have been compared for the verification of the model at various quiescent bias voltages. Also load-pull measurement results, including the output power and PAE, have been compared to the simulation results for the validation of the non-linear behavior of the model.

Abstracts

Novel configuration of a SAW-dielectric antenna duplexer for Personal Digital Cellular (PDC) phone system with simultaneously transmit-receive packet mode scheme

T. Ishizaki, H. Nakamura, K. Fujii and Y. Takeda. "Novel configuration of a SAW-dielectric antenna duplexer for Personal Digital Cellular (PDC) phone system with simultaneously transmit-receive packet mode scheme." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 471-474 vol.1.

A new antenna duplexer has been successfully developed. It is used for Personal Digital Cellular (PDC) handset with simultaneously transmit-receive packet mode scheme. The features of a SAW filter and a dielectric filter are cleverly utilized to create an Rx filter of the duplexer. An excellent attenuation performance and a small size are realized, which characteristics never any conventional filter can achieve. The newly developed filter is widely used in PDC handsets.

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Design and fabrication of square shaped ceramic resonator filter, for NRD guide integrated circuit at 60GHz

F. Kuroki, H. Shimoi, M. Yamaguchi, Y. Minamitani and T. Yoneyama. "Design and fabrication of square shaped ceramic resonator filter, for NRD guide integrated circuit at 60GHz." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 475-478 vol.1.

Cylindrical ceramic resonators with TE/sub 0n/spl delta// resonant modes are usually used at centimeter frequencies due to their low loss natures. However they have a difficulty in making wide-band band-pass filters in the millimeter-wave region because of the poor coupling factors between the resonators and input/output waveguides. Having this fact in mind, we propose the use of square shaped ceramic resonators. From the theoretical and experimental investigations, it is confirmed that the coupling factor of the square shaped ceramic resonator with EH/sub 12/spl delta// resonant mode is larger than that of the cylindrical one.

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Mixed-resonance compact in-line pseudo-elliptic filters

U. Rosenberg, S. Amari and J. Bornemann. "Mixed-resonance compact in-line pseudo-elliptic filters." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 479-482 vol.1.

The paper presents a new class of compact in-line pseudo-elliptic filters which are based on combining waveguide cavities and resonant irises. Two different configurations, which allow precise control of the direct couplings between the different resonator types, are introduced. Two different 3-pole filters have been designed to demonstrate the feasibility of the principle. The first filter combines a resonant iris and two TE/sub 101/ mode cavities while the second one utilizes two TM/sub 110/ mode cavities and one resonant iris. The latter has been realized and its response measured. Excellent agreement between computed and measured responses is achieved.

Abstracts

Two movable plate nitride loaded MEMS variable capacitor

M. Bakri-Kassem and R.R. Mansour. "Two movable plate nitride loaded MEMS variable capacitor." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 483-486 vol.1.

A MEMS variable capacitor having two movable plates loaded with a Nitride layer is proposed. A trench in the silicon substrate underneath the capacitor is used to decrease the parasitic capacitance. The use of an insulation dielectric layer on the bottom plate of the MEMS capacitor increases the capacitor's tuning range and eliminates stiction. The tuning range was measured and found to be 280% at 1 GHz. The achievable tuning range far exceeds that of the traditional parallel plate MEMS variable capacitors. The proposed MEMS variable capacitor is built using the MetalMUMPs process.

Abstracts

A 12GHz lumped-element hybrid fabricated on a micromachined dielectric-air-metal (DAM) cavity

T. Nishino, Y. Yoshida, Y. Suehiro, S.-S. Lee, K. Miyaguchi, T. Fukami, H. Oh-Hashi and O. Ishida. "A 12GHz lumped-element hybrid fabricated on a micromachined dielectric-air-metal (DAM) cavity." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 487-490 vol.1.

A novel lumped-element hybrid is presented. The hybrid is disposed on a newly developed dielectric-air-metal (DAM) cavity, which consists of an SiN membrane above a metallized 30-um-deep cavity made by a micromachining process. This process enables to make every component be worked from one-side of a silicon (Si) substrate, and to leave back-side as a part of a package. This is indispensable to realize a very thin MEMS-packaged-device consisting of two wafers bonded. Also, patterned metal grounds can provide all kinds of lumped elements. Among those, series inductors are investigated in detail. A hybrid with series inductors and shunt capacitors is fabricated. Good agreement between the measured and simulated results was obtained to validate this structure for fabrication of micro-size microwave components on an Si substrate.

Abstracts

Micro-bias-tees using micromachined flip-chip inductors

P.J. Bell, V.M. Bright and Z. Popovic. "Micro-bias-tees using micromachined flip-chip inductors." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 491-494 vol.1.

In order to reduce the circuit area required by bias-tees in active circuits, an approach using a micromachined suspended inductor is presented in this paper. The inductor is fabricated using a commercial silicon micromachining process and then integrated with a microwave circuit using flip-chip assembly. Suspending the inductor above the substrate greatly reduces the parasitic capacitances associated with the substrate. The inductor has a measured self-resonant frequency of 18 GHz. A tethered approach allows "pre-releasing" of the structure, which makes integration possible on any substrate. 4-mm/sup 2/ bias-tees on both alumina and TMM6 substrates are presented in this work with comparable performance to commercially available bias-tees, but with a significant reduction in circuit area.

Abstracts

Dielectric fluid immersed MEMS tunable capacitors

D.T. McCormick, Zhihong Li and N. Tien. "Dielectric fluid immersed MEMS tunable capacitors." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 495-498 vol.1.

Enhancement of MEMS tunable capacitors using dielectric fluids is reported. Micromachined tunable capacitors were tested and characterized in air and in mineral oil with a relative permittivity (/spl epsi//sub r/) of 2.29. In oil the capacitors exhibit a factor of 2.2 to 2.29 increase in the initial capacitance as well as the achievable tuning range. The theoretical electrical and mechanical performance enhancements have been verified for capacitors with self-resonant frequencies of 18.3GHz in air. The high frequency testing device exhibited a capacitance of 344fF at 5GHz with a Q-factor of 72 in air, and a capacitance of 799fF with a Q-factor of 40 in oil. In addition, the devices immersed in oil have increased, tunable damping and a significantly higher breakdown voltage.

Abstracts

A MEMS shunt switch on a dielectric membrane

J. Nithianandam. "A MEMS shunt switch on a dielectric membrane." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 499-502 vol.1.

This paper proposes a MEMS capacitance shunt switch based on a microwave transition from a coplanar waveguide on a dielectric membrane to a coplanar waveguide on silicon. Finite element electromagnetic simulations with HFSS show a maximum insertion loss of 1.25 dB and a maximum isolation of 60 dB for the MEMS switch.

Abstracts

A 25 watt RF MEM-tuned VHF bandpass filter

C.A. Hall, R.C. Luetzelschwab, R.D. Streeter and J.H. Vanpatten. "A 25 watt RF MEM-tuned VHF bandpass filter." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 503-506 vol.1.

A VHF RF bandpass filter capable of a 25 watt input power, tuned through the use of Microelectromechanical (MEM) microrelays, is presented. The calculated filter through-put loss is less than 1 dB at any frequency of operation. The filter tunes a 3:1 frequency range using 14 frequency steps. The performance of a newly developed MEM microrelay for high power RF use is discussed. The development of the microrelay model and the use of a CAE tool in the filter development are presented.

Abstracts

High density RF MIM capacitors using high-/spl kappa/ AlTaO/sub x/ dielectrics

C.H. Huang, M.Y. Yang, A. Chin, Chunxiang Zhu, M.F. Li and Dim-Lee Kwong. "High density RF MIM capacitors using high-/spl kappa/ AlTaO/sub x/ dielectrics." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 507-510 vol.1.

Very high capacitance density of 10 fF//spl mu/m/sup 2/ is measured using high-/spl kappa/ AlTaO/sub x/, with small capacitance reduction of 5% from 10 KHz to 30 GHz, low loss tangent < 0.03, and process compatible with existing VLSI back-end integration. Small voltage dependence of capacitance < 600 ppm, mathematical derived from S-parameters, is obtained at 1 GHz, which ensures this MIM capacitor useful for high precision circuits operated at RF regime.

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Coalesced single-input single-output dual-band filter

Chi-Ho Chang, Hsien-Shun Wu, Jay Yang and C.-K.C. Tzuang. "Coalesced single-input single-output dual-band filter." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 511-514 vol.1.

An experimental proof-of-concept two-terminal single-input and single-output (SISO) 1.7GHz/4.1GHz dual-band filter is presented. It incorporates the so-call frequency-selective resonators that are composite in structure, cascading a microstrip and microstrip on a two-dimensional periodical surface or the so-called PBG (photonic bandgap) ground plane. The composite resonators add additional degrees of freedom for controlling the relative positions of the passband center frequencies. Thus making the dual-band filters, which essential share one common layout. Measured and theoretical filter characteristics for such coalesced dual-band filter agree excellently, validating the proposed concepts.

Abstracts

A miniaturized 2.4 GHz band multi-layer bandpass filter using capacitively loaded /spl lambda//4 slow-wave resonator

Hee-Seok Song and Young-Shin Lee. "A miniaturized 2.4 GHz band multi-layer bandpass filter using capacitively loaded /spl lambda//4 slow-wave resonator." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 515-518 vol.1.

In this paper, we proposed new multi-layer /spl lambda//4 slow-wave resonator, which is composed of a strip-line and loading capacitance. Due to the slow-wave effect of the proposed resonator, it is possible to design and fabricate a compact bandpass filter with a wide upper stopband. Using LTCC multi-layer technology, we designed and fabricated a 2.4 GHz ISM-band bandpass filter with a wide upper stopband and a size of 2.0 mm/spl times/1.2mm/spl times/0.8mm.

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Abstracts

A novel design method for improvement of narrow band-pass planar filter response

G. Prigent, E. Rius, F. Le Pennec, S. Le Maguer and C. Quendo. "A novel design method for improvement of narrow band-pass planar filter response." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 519-522 vol.1.

This paper discusses a method used to design a planar band-pass filter in the Ku band frequency range for a given satellite application. In order to fit a hardened specification, a filter topology, based on dual behavior resonators (DBRs), is used. In association with this topology, we propose an automated design procedure that combines both circuit and full-wave simulations. It is based on a statistical sensitivity study performed by DOE analysis. After development of the base filter, the out-of-band rejection is improved using topological modifications in order to favor transmission zeros occurrence.

Abstracts

Bandwidth and central frequency control on tunable bandpass filter by using MEMS cantilevers

E. Fourn, C. Quendo, E. Rius, A. Pothier, P. Blondy, C. Champeaux, J.C. Orlianges, A. Catherinot, G. Tanne, C. Person and F. Huret. "Bandwidth and central frequency control on tunable bandpass filter by using MEMS cantilevers." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 523-526 vol.1.

This paper deals with a tunable bandpass filter topology which controls independently and simultaneously both the central frequency and bandwidth. This tunable filter results from the association of MEMS cantilevers, used as variable capacitors, with an original passive topology. The latter is based on dual behavior resonators (DBRs), each of them is constituted of low- and high-frequency open-ended stubs. The associated filter electrical response is characterized by tunable frequency transmission zeros. A millimeter bandpass filter with central frequency and relative bandwidth tunability of about 10 and 75%, respectively, is presented.

Abstracts

Design of multilayer spiral inductor resonator filter and diplexer for system-in-a-package

Gye-An Lee, M. Megahed and F. De Flaviis. "Design of multilayer spiral inductor resonator filter and diplexer for system-in-a-package." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 527-530 vol.1.

A compact L-shaped multilayer spiral inductor resonator filter and diplexer using inductor type resonators are proposed. The design is based on the self-resonant frequency of the spiral inductors and electromagnetic coupling between the resonators. The filter was built, and measurement results show good agreement with the simulation data. A multilayer structure can be used to significantly reduce the footprint and enhance the electromagnetic coupling effects between the resonators. The center frequency and bandwidth of the inductor resonator filter can be directly optimized by the physical arrangement of resonators. Finally, this new filter topology is applied to the design of a diplexer.

Abstracts

Improvement of characteristics using cross patch in the LTCC filter

J. Hayashi and Y. Nikawa. "Improvement of characteristics using cross patch in the LTCC filter." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 531-534 vol.1.

A TE/sub 10/ mode dielectric LTCC (low temperature co-fired ceramic) filter using a cross patch is proposed. The LTCC filter is designed as a lumped circuit without a cross patch. The filter is designed by lumped elements and converted to an LTCC filter. The characteristics of the filter are simulated by finite element methods (FEM). The center frequency of the filter is 6 GHz; and the bandwidth is 500 MHz. The simulated results of the filter are compared with the experimental ones and agree well. An LTCC filter, using the same design procedure, is applied to one using a cross patch. This cross patch is useful for making the attenuation poles. It works as the TEM transmission in the LTCC filter. As a result, it realizes an attenuation pole. An LTCC filter using a cross patch is designed at a center frequency of 25 GHz.

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An elliptic low-pass filter with shorted cross-over and broadside-coupled microstrip lines

Ning Yang, Zhi Ning Chen, Yun Yi Wang and M.Y.W. Chia. "An elliptic low-pass filter with shorted cross-over and broadside-coupled microstrip lines." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 535-538 vol.1.

An S-band two-layer elliptic type microstrip lowpass filter (LPF) is presented. This filter employs an open-ended cross-over and broadside-coupled microstrip lines with shorting vias to obtain the transmission zeros near the passband. An LPF has been fabricated and measured; simulation and measurement results prove validity of the proposed structure.

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Modified microstrip filters improving the suppression performance of harmonic signals

B.S. Kim, J.W. Lee and M.S. Song. "Modified microstrip filters improving the suppression performance of harmonic signals." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 539-542 vol.1.

In this paper, a new parallel-coupled-line microstrip BPF (Band-pass Filter) improving the suppression performance of 2/sup nd/ harmonic signals is described. Using the consecutive patterns in a coupled-line, the desired passband performance is improved and harmonic passband signal is diminished. Recalculation of design parameters(space-gap between lines, line widths and lengths) of conventional filters is not required because, after using the conventional design methodology for parallel-coupled-line BPF, new filters can be easily realized by inserting periodic patterns in coupled-line. To evaluate the validity of this novel technique, order-3 Butterworth BPF centered at 2.5 GHz with a 10% FBW (Fractional Bandwidth) and order-5 Chebyshev BPF centered at 10 GHz with it 15% FBW were used. When five and three square grooves are used, over 30 dB suppression at 2/sup nd/ harmonic is achieved in simulation and experiment.

Abstracts

New parallel /spl lambda//2-microstrip line filters with transmission zeros at finite frequencies

S. Amari, G. Tadeson, J. Cihlar and U. Rosenberg. "New parallel /spl lambda//2-microstrip line filters with transmission zeros at finite frequencies." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 543-546 vol.1.

The paper presents a new class of /spl lambda//2-microstrip line filters with transmission zeros at finite frequencies. The filters take advantage of the difference between the propagation constants of the even and odd modes of two symmetric coupled microstrip lines to generate the transmission zeros in addition to the reflection zeros of the passband. A simple model is used to show that the transmission zeros are not due to cross-coupling of nonadjacent resonators but rather to internal anti-resonances in the structure. The results obtained from a full-wave solution using a commercial software package are in good agreement with those of the model. Examples of filters with transmission zeros in the lower or upper stop-bands are presented.

Abstracts

Harmonic balance algorithm to model nonlinear effects in HTS filters subject to CDMA signals

J. Mateu, C. Collado and J.M. O'Callaghan. "Harmonic balance algorithm to model nonlinear effects in HTS filters subject to CDMA signals." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 547-550 vol.1.

We discuss an harmonic balance algorithm to analyze High Temperature Superconducting (HTS) circuits subject to wideband signals, such as the ones used in CDMA wireless systems. Undersampling is used to discretize and down-convert the bandpass signal resulting from the weak HTS nonlinearities, and this has to be taken into account when performing time-domain calculations of the nonlinear effects. We present an overview of the algorithm and describe an example to verify the software developed. We also discuss a tentative performance assessment of an HTS preselect filter in a UMTS base station receiver.

Abstracts

Superconducting microstrip wide band filter for radio astronomy

Yuanzhi Li, M.J. Lancaster, F. Huang and N. Roddis. "Superconducting microstrip wide band filter for radio astronomy." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 551-554 vol.1.

A ninth order wide-band bandpass filter is presented for radio astronomy applications. The filter, for Jodrell Bank Radio Observatory, is designed to have a fractional bandwidth of 26.14% and a center frequency of 1.53 GHz. It uses both straight and hairpin resonators in order to achieve the wide bandwidth. In addition, the filter is integrated with two spur-fine notch filters for second harmonic suppression. Good agreement between simulated and experimental results is obtained.

Abstracts

A low-power 435-MHz SOI CMOS LNA and mixer

E. Zencir, N.S. Dogan and E. Arvas. "A low-power 435-MHz SOI CMOS LNA and mixer." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 555-558 vol.1.

A low-power 435-MHz single-ended low-noise amplifier and a double-balanced mixer was implemented in a 0.35-/spl mu/m Silicon On Insulator (SOI) CMOS process. The single-ended LNA has a measured noise figure of 2.91 dB, and the mixer has an input third-order intercept point of +20 dBm. Total power dissipation of the LNA and mixer is 24 mW from a 2.5-V supply. This is the first LNA-mixer pair implemented at 435 MHz using an SOI CMOS process.

Abstracts

A new scaleable low frequency noise model for field-effect transistors used in resistive mixers

M. Margraf and G. Boeck. "A new scaleable low frequency noise model for field-effect transistors used in resistive mixers." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 559-562 vol.1.

A new scaleable low-frequency noise model for cold-FETs (U/sub ds/ /spl ap/ 0 V) is proposed. The model was tested using the Fujitsu HEMT FHC40LG in resistive mixer circuits where low-frequency noise (1/f-noise and generation-recombination noise) occurs due to the self-mixing process. Describing the noise of the FET channel as resistance fluctuations the model explains the existence of noise in absence of a DC current. A method for implementing resistance noise in common CAE programs is also shown. The model yields excellent-agreement with simulation results.

Abstracts

A compact direct detection receiver for L-band STAR radiometry

L. van Nieuwstadt, R. De Roo, D. Boprie, R. Rizor, P. Hansen, A.W. England, Hanh Pham and Boon Lim. "A compact direct detection receiver for L-band STAR radiometry." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 563-566 vol.1.

An L-band total power receiver for use in a synthetic thinned array radiometer (STAR) is described. The total power architecture of a radiometer receiver requires special considerations to control gain fluctuations due to small temperature drifts. The STAR application requires consistent passband and stable phase between receivers. The design presented incorporates direct detection to eliminate distributed local oscillators for phase stability, distributed ceramic interference reject filters for passband consistency and temperature compensating attenuators for gain stability. The receiver is packaged in a unique "winged-hex" shape to enable close packaging with the STAR antennas and to facilitate thermal management. The resulting low cost, compact receiver is made from COTS components.

Abstracts

Architecture and interconnect technologies for a novel conformal active phased array radar module

M. Schreiner, H. Leier, W. Menzel and H.-P. Feldle. "Architecture and interconnect technologies for a novel conformal active phased array radar module." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 567-570 vol.1.

Highly integrated transmit/receive modules are key components for modern active phased array radar systems. This paper describes architecture and related interconnect technologies for a novel transmit/receive module with integrated radiating element and circulator for X-band applications. It allows the realization of future planar or conformal active antenna arrays with low installation depth as well as high maintainability performance.

Abstracts

High gain wideband compact microstrip antenna with quasi-planar surface mount horn

A.A. Rahman, A.K. Verma and A.S. Omar. "High gain wideband compact microstrip antenna with quasi-planar surface mount horn." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 571-574 vol.1.

We report a new compact square microstrip antenna with a surface mounted quasi-planar horn. The horn is made of plastic sheet and painted with silver epoxy. The horn improves the gain of the patch by 3-4.5 dB without adversely affecting bandwidth which is 2.3-9%.. Also the horn improves the isolation between array elements by 10 dB. The total thickness of antenna, including the horn, is only 6.94 mm.

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Simulation of the performance of smart antennas in the reverse link of CDMA system

S. Durrani and M.E. Bialkowski. "Simulation of the performance of smart antennas in the reverse link of CDMA system." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 575-578 vol.1.

Spatial filtering, using adaptive or smart antennas, has emerged as a promising technique for improvement of spectral efficiency of future wireless communications systems, especially with regard to the reverse data transmission link. In this paper we present simulation results obtained for the reverse link of CDMA system with smart antenna technologies assuming perfect adaptation. Comparisons, in terms of BER performance, for different numbers of active users and a varying number of elements in an adaptive linear array are presented. The impact of different channel profiles on mean BER is also assessed.

Abstracts

A broadband beamformer for millimeter-wave systems using sub-band sampling

Seong-Sik Jeon, Ji-Yong Park, Yuanxun Wang and T. Itoh. "A broadband beamformer for millimeter-wave systems using sub-band sampling." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 579-582 vol.1.

In this paper, a broadband beamforming system for millimeter-waive systems is proposed. DOA is estimated by sampling only part of signal spectrum, thus the beamformer system does not require high speed sampling rate of A/Ds. In addition, an I/Q vector attenuation scheme was used for the IF weighting process. For the weighting process, a balanced structure of a reflection type variable attenuator was used in order to obtain a linear phase response within 500 MHz bandwidth at IF of 2.75 GHz.

Abstracts

Components of a highly integrated DBF terminal antenna for mobile Ka-band satellite communications

L.C. Stange, H. Pawlak, A. Dreher, S. Holzwarth, A.F. Jacob, O. Litschke and M. Thiel. "Components of a highly integrated DBF terminal antenna for mobile Ka-band satellite communications." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 583-586 vol.1.

In this paper several components for a highly integrated digital beamforming (DBF) antenna array for Ka-band satellite systems are presented. The general concept of array construction based on a modular approach is introduced and the construction of a constituent array module discussed. Following this outline, different components, designed and tested to later be incorporated into the array module, are treated with the focus set on the Ka-band receiver and transmitter frontends.

Abstracts

Radiation characteristics of microstrip dipole antennas over a high-impedance metamaterial surface made of Hilbert inclusions

J. McVay, A. Hoorfar and N. Engheta. "Radiation characteristics of microstrip dipole antennas over a high-impedance metamaterial surface made of Hilbert inclusions." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 587-590 vol.1.

We analyze numerically the radiation characteristics of center-fed microstrip short dipoles and half-wave dipoles near a high-impedance surface made of Hilbert shape flat inclusions. We study the input impedance, pattern and gain of such radiating structures. We show that the radiation resistance of a microstrip dipole increases noticeably at certain frequencies near the resonant frequency of the Hilbert surface. Moreover, antenna gain enhancement at certain frequencies is observed for all dipole sizes we have analyzed.

Abstracts

An efficient approach for characterizing power combining dividing network of distributed phased array antenna

J. Abdulnour and Ke Wu. "An efficient approach for characterizing power combining dividing network of distributed phased array antenna." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 591-594 vol.1.

An approach that mixes numerical and analytical techniques is proposed for modeling the circuit discontinuities and the power-dividing networks that feed the T/R modules in Synthetic Aperture Radar (SAR). This approach is based on a combination of mode matching and boundary integral techniques, and suitable for modeling a wide range of N-port microwave networks made with waveguide, coaxial and microstrip components. While it offers the possibility of handling complex shaped junctions, it converges much faster than other numerical methods implemented in commercial software package such as FEM, FD, MoM and others.

Abstracts

A new 94 GHz collision avoidance radar sensor using six-port phase frequency discriminator

E. Moldovan, S.O. Tatu, T. Gaman, Ke Wu and R.G. Bosisio. "A new 94 GHz collision avoidance radar sensor using six-port phase frequency discriminator." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 595-598 vol.1.

A new prototype of collision avoidance radar sensor at 94 GHz is proposed. The receiver front-end module is realized using a six-port phase/frequency discriminator (SPD). The SPD is composed of four 90/spl deg/ hybrid couplers fabricated in metal blocks using a computer numerically controlled (CNC) milling machine. System simulations to obtain the relative speed of the target and the distance to the target using a SPD model based on 90/spl deg/ hybrid coupler measurement results, are presented. Statistical evaluations of the proposed radar sensor performances are also discussed.

Abstracts

Retro-directive noise correlation radar with extremely low acquisition time

S. Gupta and E.R. Brown. "Retro-directive noise correlation radar with extremely low acquisition time." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 599-602 vol.1.

A new retro-directive antenna based search radar system has been introduced. The suggested system uses a novel noise correlation technique. Simulation and analytical results show an order of magnitude improvement in the acquisition time of the radar when compared to a phased array antenna based radar system with the same specifications, except transmit power. To the best of knowledge of the authors, no radar of a comparable acquisition time has been designed to date. The power versus acquisition time tradeoff has been compared with the phased array radar for evaluating the performance of the system. The radar system is self-tracking due to retro-directivity of the antenna array, and is much easier to implement, as it does not require any phase shifters etc.

Abstracts

Wavelet-based impulse reconstruction in UWB-radar

K. Pourvoyeur, A. Stelzer, G. Ossberger, T. Buchegger and M. Pichler. "Wavelet-based impulse reconstruction in UWB-radar." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 603-606 vol.1.

In this paper we present a technique for evaluating shape and position of an ultra wideband pulse in noisy data, based on the continuous wavelet transformation. By using a complex extension for both the signal and the mother wavelet, the received impulse can be completely characterized by only four parameters, without the necessity of exact knowledge of the pulse shape. With this novel approach, the impulse shape is characterized by the angle information of the complex wavelet transform. This allows e.g. the reduction of the amount of data for further processing.

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A novel signal processing technique for vehicle detection radar

Sang Jin Park, Tae Yong Kim, Sung Min Kang and Kyung Heon Koo. "A novel signal processing technique for vehicle detection radar." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 607-610 vol.1.

We have developed a 24 GHz side-looking vehicle detection radar. A novel signal processing algorithm is developed for speed measurement and size classification of vehicles in multiple lanes. The system has a fixed antenna and FMCW processing module. This paper presents the background theory of operation and shows some measured data using the algorithm.

Abstracts

Integrated radar and communications based on chirped spread-spectrum techniques

M. Roberton and E.R. Brown. "Integrated radar and communications based on chirped spread-spectrum techniques." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 611-614 vol.1.

Linear frequency modulated (LFM) signals and the associated pulse compression techniques are attractive in applications where highly secure and robust communication is needed. This paper investigates the novel integration of radar and communications utilizing LFM waveforms. The simulations suggest that the performance of the communications-receiver deviates at most 2 dB from the theoretical probability of bit error for /spl pi//4-differential phase shift keying. The simulated radar receiver-operating characteristics for false-alarm probabilities between 10/sup -2/ and 10/sup -4/ also compares very well with the theoretical limits for a coherent system.

Abstracts

A Ka-band class F MMIC amplifier design utilizing adaptable knowledge-based neural network modeling techniques

M.A. Reece, C. White, J. Penn, B. Davis, M. Bayne, Jr., N. Richardson, W. Thompson II and L. Walker. "A Ka-band class F MMIC amplifier design utilizing adaptable knowledge-based neural network modeling techniques." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 615-618 vol.1.

This paper describes the first implementation of an adaptable knowledge-based neural network (AKBNN) model in a high efficiency class F MMIC (monolithic microwave integrated circuit) amplifier design at Ka-band in a 0.25 /spl mu/m GaAs PHEMT technology. A single-stage amplifier based upon the AKBNN model employed shows comparable results to measured performance of a gain of 7.5 dB, a PAE of 35%, and an output power of 17 dBm.

Abstracts

Giga-bit class ultra high speed signal wireless distribution by using NRD guide technology at 60GHz

F. Kuroki, M. Yamaguchi, T. Araki, H. Sato and T. Yoneyama. "Giga-bit class ultra high speed signal wireless distribution by using NRD guide technology at 60GHz." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 619-622 vol.1.

A giga-bit class ultra high speed data distribution has been successfully demonstrated at 60GHz by using the nonradiative dielectric waveguide (NRD guide) technologies. An emphasis is placed on a high speed performance of an ASK modulator and a stability of a Gunn oscillator. By assembling these circuit components, ultra high speed NRD guide transmitter and receiver have been fabricated, and it was confirmed that these NRD guide front ends have great advantage of high speed operation capacity beyond 1Gb/s. Moreover, an SDI (Serial/Digital Interface) signal with a bit rate of 1.48 Gb/s was distributed successfully to drive a high resolution HDTV display at 60GHz.

Abstracts

3D indoor micro location using a stereoscopic microwave phase sensitive device

A. Benlarbi-Dela and J.C. Cousin. "3D indoor micro location using a stereoscopic microwave phase sensitive device." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 623-626 vol.1.

The knowledge of the spatial coordinates of an object is an inestimable information required for many applications in many fields. This information is highly needed in the telecommunication field and particularly, in the emerging context of connected objects. In this area, the environment awareness enhanced by the location based adaptability is the key to success to ensure energy efficient pervasive communication. High data rate wireless communication may also benefit from the location information by using modulation in the spatial domain, in addition to modulation in frequency, time or code domain. To access the spatial domain, a microwave interferometric location system (MILS), leading to a-two dimensional (2D) location, has been developed. The combination of this phase sensitive device with a stereoscopic measurement allows a precise 3 dimensional (3D) indoor location. Tested, indoor and outdoor, at a frequency compatible with Bluetooth applications, this system point out the feasibility of such approach.

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Adaptive feedback interference cancellation system (AF-ICS)

S.J. Kim, J.Y. Lee, J.C. Lee, J.H. Kim, B. Lee and N.Y. Kim. "Adaptive feedback interference cancellation system (AF-ICS)." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): 627-630 vol.1.

In this paper, the adaptive feedback interference cancellation system(AF-ICS) is suggested in order to cancel the feedback signal in the wireless communication system with the same frequency. AF-ICS prevents the oscillation of the receiver system and maintains the maximum output power of the power amplifier by the reduction of time-varying feedback signal. The cancellation ratio and the error ratio of the adaptive detector are achieved as simulation result of 40/spl sim/44 dB and the performance index (cancellation ratio and error ratio) of the adaptive detector is 13/spl sim/15 dB in the system implementation. AF-ICS improves total channel power about 4.11 dBm under CDMA-3FA and 90 dB feedback loss.

Abstracts

Fully integrated sigma-delta synthesizer suitable for "indirect VCO modulation" in 2.5G application (2003 Vol. I [MWSYM])

B. Bisanti, S. Cipriani, L. Carpineto, F. Coppola, E. Duvivier, N. Mouralis, D. Ercole, G. Puccio, V. Roussel and S. Cercelaru. "Fully integrated sigma-delta synthesizer suitable for "indirect VCO modulation" in 2.5G application (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A1-A4 vol.1.

A fully integrated /spl Sigma//spl Delta/ fractional synthesizer (included VCO, Loop Filter, Xtal oscillator negative impedance) is implemented in a 0.4 /spl mu/m, 45 GHz (SiGe) BiCMOS. The measured close in phase noise is -106 dBc/Hz at 900 MHz using 26 MHz comparison frequency and frequency resolution less than 5Hz is achieved. The VCO's inductors are not integrated in order to test the PLL performance on different frequency ranges. Using a 200 kHz closed loop bandwidth the level of the tones generated, when critical channels are synthesized, exceed the GSM transmitter specifications without applying any dithering technique. The very low close in phase noise and low level of tone generation, make it suitable for "indirect GMSK VCO modulation" application.

Abstracts

An antenna switch MMIC using E/D mode p-HEMT for GSM/DCS/PCS/WCDMA bands application (2003 Vol. I [MWSYM])

H. Tosaka, T. Fujii, K. Miyakoshi, K. Ikenaka and M. Takahashi. "An antenna switch MMIC using E/D mode p-HEMT for GSM/DCS/PCS/WCDMA bands application (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A5-A8 vol.1.

A monolithic antenna switch IC using enhancement and depletion (E/D) - mode AlGaAs/InGaAs pseudomorphic high electron mobility transistors (p-HEMTs) has been developed for GSM/DCS/PCS/WCDMA band digital mobile communication systems. This antenna switch MMIC achieves a low insertion loss and small chip size using a single pole double throw (SPDT) switch for GSM and single pole 4 throw (SP4T) switch for other band configurations, as well as internal logic circuits with an E/D mode p-HEMTs process. This MMIC achieves an insertion loss of 0.21dB at 915MHz and 0.53dB at 1785MHz. The isolation to the RX ports is more than 30 dB, and the input power at 0.1 dB compression is over 36 dBm at +2.7 V operation.

Abstracts

New results on MMIC six-port's used in Ka band direct conversion receivers (2003 Vol. I [MWSYM])

S.O. Tatu, E. Moldovan, B. Gailon, Ke Wu and R.G. Bosisio. "New results on MMIC six-port's used in Ka band direct conversion receivers (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A9-A12 vol.1.

New results obtained on two Ka Band Monolithic Microwave Integrated Circuit (MMIC) six-port junction circuits realized in GaAs PHEMT technology at TriQuint Texas Foundry are presented in this paper. Comparative results of simulated and measured S parameters are shown for both designs. The proposed MMIC six-port circuit is used to realize the QPSK demodulator of a Ka band direct conversion receiver.

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Design and analysis of on-chip symmetric parallel-plate coupled-line balun for silicon RF integrated circuits (2003 Vol. I [MWSYM])

H.Y.D. Yang and J.A. Castaneda. "Design and analysis of on-chip symmetric parallel-plate coupled-line balun for silicon RF integrated circuits (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A13-A16 vol.1.

In this paper, we present the design and analysis of an on-chip transformer balun for silicon RFIC. High-performance on-chip transformer baluns for low-noise amplifiers and power amplifiers on multi-layer radio-frequency integrated circuits are constructed. Single-end primary and differential secondary are constructed on different dielectric surface planes. The metal windings of the primary and secondary are in parallel to form coupled lines. Both the primary and the secondary are designed symmetrically for differential operation. Additional layer interfaces and vias are used to provide bridges to assure the geometric symmetry. Examples of designs with test results are discussed.

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Analysis and verification on side effect of anti-backlash delay in phase-frequency detector (2003 Vol. I [MWSYM])

Xiaopin Zhang. "Analysis and verification on side effect of anti-backlash delay in phase-frequency detector (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A17-A20 vol.1.

The side effect of the anti-backlash delay in a digital phase-frequency detector is analyzed. It is shown that the frequency tracking ability of the detector is decreased by the delay, so that the lock-in transition time will increase. Furthermore, it is shown that the side effect is mainly caused by the delay to the front edge of the reset pulse. Both computer simulation and experimental verification shows the analysis is correct. The work gives an insight of the detector's working principle and will be useful for its design.

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A CMOS voltage-to-frequency linearizing preprocessor for parallel plate RF MEMS varactors (2003 Vol. I [MWSYM])

M.S. McCorquodale, Mei Kim Ding and R.B. Brown. "A CMOS voltage-to-frequency linearizing preprocessor for parallel plate RF MEMS varactors (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A21-A24 vol.1.

A generalized parallel plate radio frequency microelectromechanical systems (MEMS) varactor is presented and studied. Its application in an RF oscillator is described and the nonlinear relationship between tuning voltage and realized output frequency is derived. A low power CMOS integrated circuit is proposed to linearize the response. The circuit consumes at most 100/spl mu/W of power while linearizing the voltage-to-frequency response to a correlation coefficient (R/sup 2/) of 0.9988. The described circuit and theory can be employed in any application where the nonlinear response associated with parallel plate RF MEMS varactors must be compensated.

Abstracts

Third generation wireless signal profiling (2003 Vol. I [MWSYM])

Chi Yung Ho, T.K.K. Lam and V.N. Tran. "Third generation wireless signal profiling (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A25-A28 vol.1.

This paper is about third generation, PCS and other cellular signal profiling in a built-up area such as Melbourne CBD. The purpose of this investigation is to determine the variation of the signal strength between a transmitter, 1218-BV Lockable Oscillator 900-2000MHz General Radio, mounted on top of a RMIT University building and a portable receiver, Protek 3201, covering the streets below the transmitter. It is divided into sectors and the points of data collection are marked in steps of 10 meter. The transmission paths between the transmitter and receiver can be varied from direct Line-of-Sight to a fully blocked by a tree or a building. 3G systems require site-specific propagation modeling due to the high speed signal such as video-conferencing and video streaming. They require reliable and continuous service. Signal profiling is essential for service reliability.

Abstracts

Characterization and modeling of size effect on the performances of 0.10 /spl mu/m RF MOSFETs for SOC applications (2003 Vol. I [MWSYM])

Yo-Sheng Lin, Hsin-Yuan Tu, Hong-Wei Chiu and Shey-Shi Lu. "Characterization and modeling of size effect on the performances of 0.10 /spl mu/m RF MOSFETs for SOC applications (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A29-A32 vol.1.

In this paper, we demonstrate the size effect on the DC and RF performances of 0.10 /spl mu/m RF MOSFETs for SOC applications. Our results show that for RF MOSFETs, the input impedance can be represented by a series RC circuit at low frequencies and a "shifted" parallel RC circuit at high frequencies. In addition, the output impedance can be represented by a "shifted" series RC circuit at low frequencies and a "shifted" parallel RC Circuit at high frequencies. The appearance of the kink phenomenon of scattering parameters S/sub 11/ and S/sub 22/ in a Smith chart is caused by this inherent ambivalent characteristic of the input and output impedances. It was found that an increase of device's width (or g/sub m/) enhances the kink effect of S/sub 11/ and S/sub 22/. The present study enables RF engineers to understand the behaviors of S-parameters more deeply, and hence are helpful for them to create a fully scalable CMOS model for SOC applications.

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Design and modeling of a high-Q on-chip hairpin inductor for RFIC applications (2003 Vol. I [MWSYM])

Wan Ni, Xiaojuen Yuan, Y.V. Tretiakov, R. Groves and L.E. Larson. "Design and modeling of a high-Q on-chip hairpin inductor for RFIC applications (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A33-A36 vol.1.

The design and modeling of a high Q hairpin inductor is presented. The inductor is designed and fabricated using the thick top-level metal (4um thickness, 14um away from the substrate) in an IBM 0.5um SiGe BiCMOS process to provide very high peak Q, approaching 27 from 2 to 4GHz, specifically for integrated voltage-controlled-oscillator (VCO) applications. A broadband lumped-element model is also developed for this structure. The modeling methodology is verified using commercial field solvers (IE3D and ADS Momentum) and hardware measured data, the results show that the derived model is correlates with the E-M simulation data.

Abstracts

Design techniques to combat process, temperature and supply variations in Bluetooth RFIC (2003 Vol. I [MWSYM])

Y.T. Tee, Y.H. Seng, L.P. Boon, T.K. Hung, S. Tachi, K.S. Ling, T. Murakami, S.J. Hui, L.C. Tiong, T.L. Choon, W.W. Kheng, X.Q. Jun, L.C. Meng, L.S. Hwi, X. Wei and A. Toh. "Design techniques to combat process, temperature and supply variations in Bluetooth RFIC (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A37-A40 vol.1.

A fully integrated Bluetooth RF transceiver with sensitivity up to -85 dBm with /spl plusmn/2 dB process variation has been achieved. The sensitivity only varies /spl plusmn/1 dB from 2.7 to 3.3V and /spl plusmn/1.5 dB from -40 to +90/spl deg/C. This RFIC is fabricated using a 0.35/spl mu/m CMOS process and can withstand a maximum input power of +5 dBm for 0.1% BER.

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Wideband CMOS integrated RF combiner for LINC transmitters (2003 Vol. I [MWSYM])

S. Hamedi-Hagh and C.A.T. Salama. "Wideband CMOS integrated RF combiner for LINC transmitters (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A41-A44 vol.1.

The design of a novel wideband RF signal combiner suitable for LINC transmitters in CMOS technologies is presented in this paper. Compared to the conventional narrowband design, the wideband architecture achieves a small reflection coefficient (less than 0.3) suitable for wideband spread spectrum multi-user mobile systems. A 0.18 /spl mu/m CMOS wideband signal combiner, designed to add two 8GHz signals and deliver 1.5W to the antenna from 1V class F power amplifiers, is presented and compared to a narrowband design.

Abstracts

Second order nonlinearity analysis of Gilbert mixer (2003 Vol. I [MWSYM])

Sanghoon Kang and Bumman Kim. "Second order nonlinearity analysis of Gilbert mixer (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A45-A48 vol.1.

Second order nonlinearity of Gilbert mixer is analyzed. The harmonic generations at each part of the mixer are analyzed and are combined to predict the over-all mixer behavior. We include non-ideal tail current source and nonlinear current gain of BJT, which are neglected in previous works but have significant effects.

Abstracts

Improving the isolation of GPS receivers for integration with wireless communication systems (2003 Vol. I [MWSYM])

S. Spiegel, A. Thiel, S. Nussbaumer, I. Kovacs and M. Durler. "Improving the isolation of GPS receivers for integration with wireless communication systems (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A49-A52 vol.1.

The impact of the inter-system and the intra-system isolations on the performance of GPS receivers is analyzed. The grounding, shielding and de-coupling structures were optimized to minimize the level of intra-system system interference in the receiver. By reducing the intra-system interference, high sensitivity and high immunity to jamming signals were simultaneously achieved. The sensitivity value below the -141dBm and CW power level of 4 dBm, 2 dBm and 2 dBm in the DCS1800, IS-95 and WCDMA frequency ranges respectively for 3 dB degradation of the carrier to noise ratio were obtained.

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An improved but reliable model for MESFET parasitic capacitance extraction (2003 Vol. I [MWSYM])

B.L. Ooi and J.Y. Ma. "An improved but reliable model for MESFET parasitic capacitance extraction (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A53-A56 vol.1.

The conventional parasitic capacitance extraction always produces bias-dependent C/sub pd/, even though from the underlying physics, the parasitic capacitance is known to be bias-independent. In this paper, an improved model is thus proposed to evaluate the parasitic capacitances of a GaAs MESFET from the cold-FET S-parameters measurement. The resulting C/sub pd/ is found to be independent of V/sub gs/ when V/sub gs/<V/sub p/. In our approach, model parameters can be uniquely determined by using only two sets of cold-FET S-parameters under different V/sub gs/ biasing condition.

Abstracts

Straightforward transient and noise analysis for /spl Sigma//spl Delta/ PLL-based synthesizers of multiple feedback and feedforward structures (2003 Vol. I [MWSYM])

K.S.H. Tsang and T.S. Ng. "Straightforward transient and noise analysis for /spl Sigma//spl Delta/ PLL-based synthesizers of multiple feedback and feedforward structures (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A57-A60 vol.1.

This paper presents a noise analysis model, which allows basic phase noise calculations of a /spl Sigma//spl Delta/ PLL fractional-N synthesizer. Calculation results on various /spl Sigma//spl Delta/ orders of multiple architectures, feedback and feedforward, and on transient processes, which provides quick visualization of the design methods used to minimize the required settling-time, are presented.

Abstracts

RF circuit design in reliability (2003 Vol. I [MWSYM])

Enjun Xiao and J.S. Yuan. "RF circuit design in reliability (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A61-A64 vol.1.

A methodology for designing reliable RF circuits is proposed. A model to predict hot carrier and soft breakdown effects on CMOS device parameters in RF circuits is developed. Hot carrier and soft breakdown effects are evaluated experimentally with 0.16 /spl mu/m CMOS technology. Device stress measurement and SpectreRF simulation are conducted to evaluate the impact of hot carrier and soft breakdown effects on RF circuits such as low noise amplifier and voltage-controlled oscillator performance. Two design techniques to build reliable RF circuits are proposed and verified.

Abstracts

Piecewise continuous linear interpolation of the sine function for direct digital frequency synthesis (2003 Vol. I [MWSYM])

J.M.P. Langlois and D. Al-Khalili. "Piecewise continuous linear interpolation of the sine function for direct digital frequency synthesis (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A65-A68 vol.1.

This paper discusses the design of Direct Digital Frequency Synthesizers (DDFS) based on the linear interpolation of the sine function. The problem of approximating the sine function within a desired error bound is specifically considered. The use of linear segments is favorable for hardware implementation because of the low processing complexity requirements. A relation between the minimum number of linear segments, the resolution with which segment slopes are expressed, and the achievable precision is derived. Tradeoffs between memory storage requirements and computational complexity are identified, and architectural and implementation issues are discussed. Example designs achieving; 8, 10 and 12 bits of amplitude resolution with 59, 77 and 86 dBc of Spurious Free Dynamic Range (SFDR) are presented.

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An integrated wideband-IF-receiver architecture for mobile terminals (2003 Vol. I [MWSYM])

R. Richter and H.-J. Jentschel. "An integrated wideband-IF-receiver architecture for mobile terminals (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A69-A72 vol.1.

A wideband-IF receiver architecture is described for use in mobile terminals capable of receiving multiple standards' like GSM, UMTS, DECT, etc. The architecture uses a single down-conversion and digitizes the wanted signal at high intermediate frequencies. The wideband nature of the architecture ensures a great adaptability to various mobile standards. It denotes a step in the direction of a fully reconfigurable software radio due to the shift of the ADC to higher frequencies. The paper is focused on the realization of the analog part of the receiver.

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Multiple-chip module design optimizations using a novel layout parameterization technique (2003 Vol. I [MWSYM])

Chun-Wen Huang, G.S. Dow, Jianwen Bao, S. Kuran and J. Sercu. "Multiple-chip module design optimizations using a novel layout parameterization technique (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A73-A76 vol.1.

A novel layout parameterization technique for multi-chip module design optimizations is presented. This technique is based on a quasi-static method of moments and multi-dimensional interpolation, which can reduce a 12-minute electromagnetic layout simulation to 5.3 seconds. Excellent CDMA power amplifier (PA) module performance is achieved based on this technique.

Abstracts

High-performance three-dimensional on-chip inductors in SOI CMOS technology for monolithic RF circuit applications (2003 Vol. I [MWSYM])

Jonghae Kim, J.-O. Plouchart, N. Zamdmer, N. Fong, Liang-Hung Lu, Yue Tan, K.A. Jenkins, M. Sherony, R. Groves, M. Kumar and A. Ray. "High-performance three-dimensional on-chip inductors in SOI CMOS technology for monolithic RF circuit applications (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A77-A80 vol.1.

This paper presents high-Q and high-inductance-density on-chip inductors fabricated on high-resistivity substrate (HRS) using a 0.12 /spl mu/m SOI CMOS technology with 8 copper metal layers. A peak Q of 52 is obtained at 5 GHz for a 0.6 nH STP (Single-turn, multiple metal levels in Parallel) inductor. An inductance density of 5302 fH//spl mu/m/sup 2/ is obtained for a 42 nH MTS (Multi-turn, multiple metal layers in Series) inductor.

Abstracts

Non-ideality analysis of clock-jitter suppressing sampler for wideband /spl Sigma//spl Delta/ analog-to-digital converters (2003 Vol. I [MWSYM])

A. Strak and H. Tenhunen. "Non-ideality analysis of clock-jitter suppressing sampler for wideband /spl Sigma//spl Delta/ analog-to-digital converters (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A81-A84 vol.1.

As CMOS processes evolve into smaller and smaller feature sizes, the ability to clock circuits at higher rates and the need of integrating analog and digital systems on a single chip arises. This makes it suitable to use a wideband /spl Sigma//spl Delta/ Analog-to-Digital Converter (ADC), due to its high digital content and robustness against circuit imperfections, as part of a front end for a 3/sup rd/ or 4/sup th/ generation mobile communications system. One type of EA that would be appropriate for such an application is suggested by Rusu and Tenhunen (2002). However, wideband operation sets tough jitter constraints on the clock since the oversampling ratio (OSR) is lower than for traditional /spl Sigma//spl Delta/ ADCs. Previously, we have proposed a sampling circuit topology which helps to reduce the effects of non-uniform sampling by averaging. This topology's jitter suppressing properties are based on certain assumptions which, in reality, are non-ideal. This paper describes an analysis of those nonidealities and their impact on the topology's jitter suppressing features on a circuit level.

Abstracts

Symmetric 3D passive components for RF ICs application (2003 Vol. I [MWSYM])

Wei-Zen Chen and Wen-Hui Chen. "Symmetric 3D passive components for RF ICs application (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A85-A88 vol.1.

This paper proposes novel 3-D symmetric RF passive components, including inductors, transformers, and baluns. Layout areas of these components are drastically reduced by means of stacked structure while the symmetry of input and output ports is also maintained. The area saving of a 3-D inductor is up 70%. The 1:1 transformer shows less than 0.1 % inductance mismatch in a 18 GHz range, and K is up to 0.87 at 17 GHz. The 3-D balun manifests less than 0.8 dB gain mismatch from 5.25 GHz to 6 GHz and phase error is about 4/spl deg/ at 5.25 GHz according to measurement results. All the components are fabricated in a 0.18 /spl mu/m standard CMOS process.

Abstracts

Monolithic supply modulated RF power amplifier and DC-DC power converter IC (2003 Vol. I [MWSYM])

S. Abedinpour, K. Deligoz, J. Desai, M. Figiel and S. Kiaei. "Monolithic supply modulated RF power amplifier and DC-DC power converter IC (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A89-A92 vol.1.

Mobile communication systems require highly efficient, linear, and integrated power amplifiers. This paper reports the results of a monolithic envelope following system implemented in a 0.18 /spl mu/m SiGe BiCMOS process technology. The monolithic envelope following system consists of a synchronous buck DC-DC converter, which is integrated with and provides the power supply for a 900 MHz power amplifier while tracking the envelope of the RF input signal.

Abstracts

Toroidal inductors for integrated radio frequency and microwave circuits (2003 Vol. I [MWSYM])

J. Suryanarayanan, W.Y. Liu, J. Nath, B.N. Johnson, S. Mohammadi, L.P.B. Katehi and M.B. Steer. "Toroidal inductors for integrated radio frequency and microwave circuits (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A93-A96 vol.1.

A toroidal inductor has been developed that confines flux and eliminates eddy currents. A printed circuit and micromachined RFIC-compatible implementations of the inductor are presented.

Abstracts

CMOS-compatible RF-MEMS tunable capacitors (2003 Vol. I [MWSYM])

A. Oz and G.K. Fedder. "CMOS-compatible RF-MEMS tunable capacitors (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A97-A100 vol.1.

New CMOS-MEMS tunable capacitors have been designed, fabricated and tested. Large-tuning range and high quality factor, Q, are achieved. The structures were made from the CMOS interconnect stack using a maskless CMOS micromachining process. Our tunable capacitor designs can be classified into two categories based on their tuning schemes as gap&area tuning and gap-only tuning. The capacitors with gap&area tuning were fabricated using Austria Microsystems (AMS) 0.6 /spl mu/m and Agilent 0.5 /spl mu/m CMOS processes. These devices have a measured nominal capacitance of 209 fF and a measured Q of 28 at 1.5 GHz. The capacitance change is measured from 209 fF to 294 fF within a 24 V control voltage, and 72.4 mW power at 1.5 GHz. The capacitors with gap-only tuning were fabricated in the TSMC 0.35 /spl mu/m CMOS process and have larger tuning range and more power efficiency than the 1st generation designs. For these new designs, 3.52 to 1 tuning range has been measured with tuning from 42 fF to 148 fF within a 12 V control voltage and 34 mW power and Q of 52 at 1.5 GHz. The tuning mechanism uses electro-thermal actuation. The essential differences between this work and prior work are the CMOS compatibility and more area efficiency at several gigahertz.

Abstracts

The performance comparison of CMOS vs bipolar VCO in SiGe BiCMOS technology (2003 Vol. I [MWSYM])

D. Wang and Xudong Wang. "The performance comparison of CMOS vs bipolar VCO in SiGe BiCMOS technology (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A101-A104 vol.1.

Two 2.3 GHz VCO monolithic ICs using CMOS and bipolar topology, respectively, for WCDMA transmitter applications, are designed and fabricated in IBM 0.25 /spl mu/m SiGe BiCMOS technology. The design trade-offs of each design topology are discussed. The results indicated that the CMOS version has better phase noise, is more power efficient, but is more sensitive to temperature and process than that of its bipolar counterpart.

Abstracts

A high isolation CMFB downconversion micromixer (2003 Vol. I [MWSYM])

C.C. Meng, S.K. Xu, T.H. Wu, M.H. Chao and G.W. Huang. "A high isolation CMFB downconversion micromixer (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A105-A108 vol.1.

CMOS deep N-well technology can eliminate body effects of NMOS transistors and improve LO-IF and LO-RF isolation in a Gilbert micromixer. A 37 dB LO-IF and 38 dB LO-RF isolation downconversion micromixer with 19 dB conversion gain, IP1/sub dB/ = -19.5 dBm and IIP/sub 3/ = -12.5 dBm when RF = 2.4 GHz and LO = 2.25 GHz is demonstrated in this paper by using 0.18 /spl mu/m deep N-well CMOS technology. The input return loss and output return loss are better than 15 dB for frequencies up to 6 GHz. On the other hand, a downconversion micromixer without deep n-well has almost identical power performance but achieves only 20 dB LO-IF isolation and 21 dB LO-RF isolation even if two kinds of mixers are fabricated in adjacent areas of the same wafer. The downconversion micromixer used here has intrinsically single-to-differential input stage and active differential PMOS loads to increase IF differential gain while CMFB is used to stabilize bias points. An IF differential amplifier converts differential output into a single-ended output. Finally, an off-chip rat-race coupler provides balanced LO signals to facilitate isolation measurement.

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The design of 5 GHz voltage controlled ring oscillator using source capacitively coupled current amplifier (2003 Vol. I [MWSYM])

Rui Tao and M. Berroth. "The design of 5 GHz voltage controlled ring oscillator using source capacitively coupled current amplifier (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A109-A112 vol.1.

A 5 GHz voltage controlled ring-oscillator (VCO) has been designed using 0.18 /spl mu/m CMOS technology. Source Capacitively Coupled Current Amplifier (SC3A) is adopted to realize this VCO. Because of the band-pass characteristic of the SC3A, this VCO exhibits the low noise performance with a large tuning range. It can operate from 4.3 GHz up to 6.1 GHz with a phase noise of about -85 dBc/Hz at 1 MHz frequency offset. For the 2 V supply voltage, the power consumption is about 80 mW.

Abstracts

Reducing phase noise by proper sizing of MOSFETs in LC tuned VCOs (2003 Vol. I [MWSYM])

Ye-Ming Li and J.A. Connelly. "Reducing phase noise by proper sizing of MOSFETs in LC tuned VCOs (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A113-A116 vol.1.

This work identifies the relationships between the sizes of the oscillator's core MOSFETs and the phase noise in the 1/f/sup 2/ region. Three packaged 1 GHz VCOs with the same LC tank circuit, but different gate lengths were designed and fabricated in a standard digital 0.6 /spl mu/m CMOS technology. The minimum gate length (L/sub min/) of the core MOSFETs does not result in the minimum phase noise. Instead, the minimum phase noise occurs when the gate length is L/sub opt/, and L/sub opt/ = /spl eta/ /spl middot/ L/sub min/ where /spl eta/ is a parameter that depends upon fabrication process and bias current. From measured results, the phase noise can be further decreased by 2 dBc/Hz at 600 kHz offset from 1 GHz center frequency by using the optimal sizes of the core MOSFETs.

Abstracts

Single-ended differential amplifier and mixer circuits utilizing complementary RF characteristics of both NMOS and PMOS (2003 Vol. I [MWSYM])

Ilku Nam, Bonkee Kim and Kwyro Lee. "Single-ended differential amplifier and mixer circuits utilizing complementary RF characteristics of both NMOS and PMOS (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A117-A120 vol.1.

Design and fabrication results for single-ended differential circuit topologies that utilize the complementary RF characteristic of both NMOS and PMOS are reported. The complementary CMOS parallel push-pull amplifier gives an order of magnitude improvement in IP/sub 2/ at similar power consumption, and single-balanced complementary resistive mixer that functions effectively as double-balanced circuit, improves by a similar order of magnitude in IP/sub 2/, LO-to-IF and LO-to-RF isolations than NMOS counterparts.

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A Widlar-bandgap based intermediate-frequency voltage-controlled oscillator for GSM/DCS transceiver Ics (2003 Vol. I [MWSYM])

A. Dec, K. Suyama, Y. Kimura and T. Ichinose. "A Widlar-bandgap based intermediate-frequency voltage-controlled oscillator for GSM/DCS transceiver Ics (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A121-A124 vol.1.

This paper presents an intermediate-frequency voltage-controlled oscillator using a Widlar-bandgap for stable operation over supply and temperature variations without degrading the phase noise performance. The design is fabricated in a 0.35 /spl mu/m SOI BiCMOS and is packaged in a QFN24 plastic package. The VCO operates at 1 GHz with a tuning range of 250 MHz and achieves a phase noise of -113 dBc/Hz at 400 kHz offset from the carrier. The VCO core and buffer consume 4 mA and 11 mA from a 2.7 V power supply, respectively. The IF-VCO is suitable for GSM/DCS transceiver IC applications.

Abstracts

A 110 MHz 84 dB CMOS programmable gain amplifier with RSSI (2003 Vol. I [MWSYM])

Chun-Pang Wu and Hen-Wai Tsao. "A 110 MHz 84 dB CMOS programmable gain amplifier with RSSI (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A125-A128 vol.1.

This paper describes a CMOS programmable gain amplifier that maintains a 3 dB bandwidth greater than 110 MHz and can provide 84 dB gain control range in 1dB steps. The PGA can also The operated in a low power mode with 3 dB bandwidth greater than 71 MHz. Integrated with this PGA is a CMOS successive logarithmic detecting amplifier with a /spl plusmn/0.7dB logarithmic accuracy over 80 dB dynamic range. It achieves a sensitivity of -83 dBm. The amplifier consumes 13 mA from a single 3 V supply in high power mode. The chip area including pads occupies 1.5/spl times/ 1.5 mm/sup 2/.

Abstracts

BPSK to ASK converter for RF digital communications

J.M. Lopez-Villegas, J.G. Macias, J. Cabanillas, J.J. Sieiro, J.A. Osorio, J. Samitier, J. Bausells, J. Montserrat and E. Cabruja. "BPSK to ASK converter for RF digital communications." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A129-A132 vol.1.

This work presents a new circuit for the conversion of Binary Phase Shift Keying signals (BPSK) into Amplitude Shift Keying signals (ASK). The basic principles of the conversion method are the super harmonic injection of oscillator circuits and interference phenomena. The first one is used to synchronize the oscillators while the second is used to generate an amplitude interference pattern that reproduces the original phase modulation. When combined with an envelope detector, the proposed circuit allows the coherent demodulation of BPSK signals without the need of a carrier recovery system. Two prototypes of the converter have been implemented. The first one is a hybrid version working in the 300-400 MHz frequency range. The second has been implemented using Multi Chip Module (MCM) technology, and is intended for working in the range of 1.8-2.0 GHz. The time response of the converter to phase changes of the input signal is about 100 ns for the hybrid version and scales down to about 15 ns for the MCM version, giving upper limits for the modulation rate of about 5 Mbit/s and 30 Mbit/s, respectively.

Abstracts

A 5.3 GHz phase shift tuned I/Q LC oscillator with 1.1 GHz tuning range (2003 Vol. I [MWSYM])

J. van der Tang and A. van Roermund. "A 5.3 GHz phase shift tuned I/Q LC oscillator with 1.1 GHz tuning range (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A133-A136 vol.1.

In this paper phase shift tuning of a 5.3 GHz quadrature LC oscillator is investigated. By varying the phase shift of the circuits that couple two LC oscillator stages, a 1.1 GHz: tuning range is achieved. Dependency of tuning range and phase noise on the quality factor of the LC resonators is explored on the behavioral level. Expressions are given for the tuning range and an effective quality factor, as a function of the resonator quality, its phase shift and its resonance frequency. The oscillator is realized in a mainstream 30 GHz f/sub T/ BiCMOS process and dissipates 45 mW (nominal) with 2.7 V supply voltage. The dependency of the tuning range on the resonator quality is measured by varying the quality factor of a varactor incorporated in the LC resonators of the I/Q oscillator. Measured /spl Lscr/(2 MHz) is -108 dBc/Hz at 5.6 GHz.

Abstracts

A multilayer active hybrid-ring using ground-slot coupling technique (2003 Vol. I [MWSYM])

S.C. Hui, Ban-Leong Ooi, M.S. Leong and P.S. Kooi. "A multilayer active hybrid-ring using ground-slot coupling technique (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A137-A140 vol.1.

A ground-slot coupling technique is applied to design a novel multilayer active hybrid-ring power divider. The prototype consists of three ground slots to couple the signal between circuit layers, and two single-stage HEMT amplifiers to boost the coupled signal. It is tested at C-band with 40% -3dB bandwidth. At 5 GHz center frequency, it has 8 dB small-signal gain and 10 dBm output P1 dB.

Abstracts

A packaged 2.3 GHz SiGe VCO with parallel-branch inductors (2003 Vol. I [MWSYM])

Ja-Yol Lee, Dongwoo Suh, Sang-Heung Lee, Seung-Yun Lee, Chan-Woo Park, Sang Hoon Kim, Kyu-Hwan Shim, Jin-Young Kang, Kyoung-Ik Cho and Seung Hyeub Oh. "A packaged 2.3 GHz SiGe VCO with parallel-branch inductors (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A141-A144 vol.1.

In this paper, a 2.3 GHz VCO with parallel-branch inductors was designed and fabricated using a 0.8-/spl mu/m SiGe HBT process technology. Their Q-factors were higher than those of the conventional inductors. A good phase noise of -122 dBc/Hz was measured at 4 MHz offset frequency, and harmonics were suppressed by -28 dBc. The manufactured VCO core consumed 3.7 mA at 2 V supply voltage, and the VCO occupied 1.8 mm /spl times/ 1.2 mm chip area.

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A low power wideband 2.6GHz CMOS injection-locked ring oscillator prescaler (2003 Vol. I [MWSYM])

R. Dehghani and S.M. Atarodi. "A low power wideband 2.6GHz CMOS injection-locked ring oscillator prescaler (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A145-A148 vol.1.

A high speed and low power prescaler based on an injection-locked ring oscillator is presented. The proposed prescaler uses adaptive biasing to increase the locking range and to eliminate the sensitivity of the locking phenomena to temperature and process variation. The designed circuit can be used in a fractional-N frequency synthesizer. The prescaler operates properly in a temperature range of -20/spl deg/C to +100/spl deg/C and input frequency range from 2.2 GHz to 2.6 GHz in all process corners while its maximum power dissipation is 2 mW at a supply voltage of 1.5 V.

Abstracts

Gate oxide breakdown on low noise and power amplifier performance (2003 Vol. I [MWSYM])

Hong Yang, W. Smith and J.S. Yuan. "Gate oxide breakdown on low noise and power amplifier performance (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A149-A152 vol.1.

This paper, for the first time, studies the influence that nMOSFET gate oxide breakdown (BD) has on the performance of CMOS low noise amplifiers (LNA) and power amplifiers (PA) using an equivalent RF circuit model. Cascode LNAs are found to be more reliable than common source LNAs in terms of gate oxide reliability. It is shown for a class-E PA, oxide breakdown effects lead to an increase in the switching transistor's "on" voltage, which, in turn leads to substantial decreases in the output power and drain efficiency.

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A fully integrated, single-chip handset power amplifier in SiGe BiCMOS for W-CDMA applications (2003 Vol. I [MWSYM])

I. Rippke, J. Duster and K. Kornegay. "A fully integrated, single-chip handset power amplifier in SiGe BiCMOS for W-CDMA applications (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A153-A156 vol.1.

A fully integrated, single-chip power amplifier has been designed to meet the requirements of W-CDMA mobile handsets. The circuit was designed in IBM's 47 GHz f/sub T/ SiGe BiCMOS process with all passive components and matching circuits included on-chip. The design achieves 24 dBm output power with 30% PAE and excellent linearity. The power amplifier draws 42 mA of quiescent current from a 3.3 V source. The fabricated circuit occupies a die area of 1.8 mm/spl times/1.25 mm, offering at least 10x improvement in chip/board area over current designs, allowing for increased levels of transmitter integration.

Abstracts

Ku-band low noise amplifier with using short-stub ESD protection (2003 Vol. I [MWSYM])

Chang-Kun Park, Min-Gun Kim, Chung-Han Kim and Songcheol Hong. "Ku-band low noise amplifier with using short-stub ESD protection (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A157-A160 vol.1.

A Ku-band ESD-protected low noise amplifier is designed using 0.15um pHEMT process. The input ESD protection is implemented with short-circuited stub. Since a short-circuited stub is used as an ESD protection as well as a matching element, there are no additional components and parasitic components associated with ESD protection. This endures 4400V (ESD tester limit) HBM test signal. The LNA has the noise figure of 1.24 dB and 24.5 dB gain at the frequency of 11.7-12.75 GHz.

Abstracts

A SiGe active sub-harmonic 5mA front-end for 5-6 GHz direct-conversion receiver applications (2003 Vol. I [MWSYM])

R. Svitek and S. Raman. "A SiGe active sub-harmonic 5mA front-end for 5-6 GHz direct-conversion receiver applications (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A161-A164 vol.1.

This paper describes the design and measurement of a fabricated SiGe RF front-end for use in direct-conversion receivers for the Unlicensed National Information Infrastructure (U-NII) bands. The front-end is composed of an LNA, I and Q x2 sub-harmonic mixers (SHMs), and an LO conditioning chain. The receiver is completely differential and is designed for operation from a 3.3 V supply. The current consumption is /spl sim/6 mA for the LNA and /spl sim/5 mA for each mixer. The I/Q mixer pair alone (front-end without LNA) demonstrates /spl sim/8-10 dB gain and an IIP2 of /spl sim/+29 dBm in the lower U-NII bands. Measured receiver performance (with LNA) shows 18-20 dB conversion gain in the lower two U-NII bands, -16 dBm input compression point, and > 10 dB return loss across all three U-NII bands.

Abstracts

High-speed, spurious-free sequential phase frequency detector and dual-modulus prescalers for RF frequency synthesis (2003 Vol. I [MWSYM])

M. Sie, G. Cibiel, T. Tournier, R. Plana and J. Graffeuil. "High-speed, spurious-free sequential phase frequency detector and dual-modulus prescalers for RF frequency synthesis (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A165-A168 vol.1.

Original integrated 22-GHz dual-modulus static frequency dividers (4/5) realized in a Silicon Germanium BiCMOS technology dedicated for high volume production are-presented. They operate at low bias voltage (3.3 V) and provide balanced output signals on 50 ohm loads. An optimized digital tri-state phase/frequency detector (PFD) is also reported. A new proposed architecture and original logic approach translate into excellent spurious immunity and high-speed detection: the proposed structure has the advantage to cancel the spurious which are present whatever the state of the comparator. Such features make these versatile circuits blocks essential for low noise, high-frequency PLL systems.

Abstracts

5-6 GHz SiGe VCO with tunable polyphase output for analog image rejection and I/Q mismatch compensation (2003 Vol. I [MWSYM])

D.I. Sanderson and S. Raman. "5-6 GHz SiGe VCO with tunable polyphase output for analog image rejection and I/Q mismatch compensation (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A169-A172 vol.1.

Image rejection and demodulation quality are adversely affected by in-phase and quadrature (I/Q) channel phase mismatch. This paper presents a 5-6 GHz Silicon Germanium (SiGe) voltage controlled oscillator (VCO) and integrated polyphase filter with I/Q phase imbalance compensation. The design of the VCO is discussed, including considerations for high inductor quality factor (Q) and low VCO phase noise. From a 2.5 V supply, the VCO core consumes 3 mA. The simulated phase noise at 1 MHz from the carrier is -114.6 dBc/Hz. The I/Q imbalance of the polyphase splitter is tunable by means of series output varactors. The polyphase network design can compensate for /spl plusmn/4/spl deg/ I/Q phase imbalance, which could provide approximately 15 dB improvement in image rejection in a Weaver architecture receiver.

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A high power DPDT MMIC switch for broadband wireless applications (2003 Vol. I [MWSYM])

Zeji Gu, D. Johnson, S. Belletete and D. Fryklund. "A high power DPDT MMIC switch for broadband wireless applications (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A173-A176 vol.1.

A new type of dual-pole double-throw (DPDT) antenna switch IC for broadband wireless applications has been developed. The IC exhibits a low insertion loss of 0.9 dB up to 5.0 GHz and 1.1 dB at 6 GHz, high power handling with P1dB about 34.5 dBm with a control voltage of 0/3 V and high linearity with input IP3 about 53 dBm.

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Single-ended amplifier that substantially improves PAE and ultra-broadband performance (2003 Vol. I [MWSYM])

B.S. Virdee and A.S. Virdee. "Single-ended amplifier that substantially improves PAE and ultra-broadband performance (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A177-A179 vol.1.

A single ended amplifier with a simple reactive matching is shown to provide stable operation with substantially improved amplifier power-added efficiency (PAE) (>30%) across an ultra-broadband frequency range (2-18 GHz). The amplifier employs a Double Pseudomorphic High Electron Mobility Transistor (DPHEMT) power device.

Abstracts

A pseudo-concurrent 0.18 /spl mu/m multi-band CMOS LNA (2003 Vol. I [MWSYM])

S.H.M. Lavasani, B. Chaudhuri and S. Kiaei. "A pseudo-concurrent 0.18 /spl mu/m multi-band CMOS LNA (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A181-A184 vol.1.

A novel multi-band LNA, which can switch between standards GSM800MHz/GSM1.8GHz or GSM800MHz/WCDMA2.1GHz, is presented. The LNA provides 22.4 dB gain at 800 MHz and 14.1 dB at 1.8 GHz. The device selects between GSM1.8GHz/WCDMA2.1GHz by means of a simple PMOS switch. The LNA is fabricated in 0.18 /spl mu/m technology using only CMOS transistors. Post-layout simulation results indicate a noise figure below 1.6 dB in all bands while drawing 8.5 mA from a 1.8 V power supply. To save die area, the input matching circuit is partially off-chip.

Abstracts

A novel IP3 boosting technique using feedforward distortion cancellation method for 5 GHz CMOS LNA (2003 Vol. I [MWSYM])

Min Lin, Yongming Li and Hongyi Chen. "A novel IP3 boosting technique using feedforward distortion cancellation method for 5 GHz CMOS LNA (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A185-A188 vol.1.

Low noise amplifier (LNA) in many wireless and wireline communication systems must have low noise, sufficient gain and high linearity performance. This paper presents a novel IP3 boosting technique using the Feedforward Distortion Cancellation (FDC) method. Through this technique, the IIP3 of LNA can be boosted from +5dBm, which is reported in most public literature to date, to +21dBm, which is firstly reported here, without any noise and gain degradation. In addition, the noise figure can be reduced by about 0.4 dB and the gain increased by 0.4 dB due to the additional gain path.

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Advanced design of broadband distributed amplifier using a SiGe BiCMOS technology (2003 Vol. I [MWSYM])

Gye-An Lee, Hyunseok Ko and F. De Flaviis. "Advanced design of broadband distributed amplifier using a SiGe BiCMOS technology (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A189-A192 vol.1.

In this paper, we present the design of an integrated distributed amplifier for optical communication applications using SiGe BiCMOS technology. The design of some of the passive devices of the circuit has been achieved from full-wave electromagnetic simulation and a novel equivalent circuit. We considered discontinuity effects to reduce parasitics at high frequency. The designed SiGe BiCMOS amplifier exhibits an available power gain of 7 dB from 0.5 GHz to 22 GHz. The accurate electromagnetic consideration can be applied to System-On-Chip (SoC) application in order to reduce parasitics.

Abstracts

Cancellation of third order intermodulation currents in a two-stages amplifier topology (2003 Vol. I [MWSYM])

S. Dardenne, C. Duvanaud, F. Robin, F. Huin, J.-M. Paillot and R. Allam. "Cancellation of third order intermodulation currents in a two-stages amplifier topology (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A193-A196 vol.1.

This paper gives a detailed description of a linearization technique using a two-stage amplifier. The first stage is used to generate third order intermodulation products (IMD3), which will be added to the input signal of the second stage in order to cancel the IMD3 at its output. The technique effectively improves the linearity of the system. To investigate the effect of IMD3 injection, analytical calculations of the drain currents for the fundamental frequencies f/sub 1/ and f/sub 2/ and for the third order intermodulation currents 2f/sub 1/-f/sub 2/ and 2f/sub 1/-f/sub 1/ are established without and with injection of intermodulation components at the input of the power stage. To evaluate the improvement provided by the proposed technique, a two-tone test at carrier frequency of 900 MHz is performed with a GaAs MESFET. The test procedure is described and measurements show a great improvement of IMD3. A carrier to third intermodulation ratio C/I3 of 55 dBc was achieved for a 19 dBm output power, compared with 25 dBc achieved without the first stage.

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Neutralized differential amplifiers using mixed-mode S-parameters (2003 Vol. I [MWSYM])

B. Stengel and B. Thompson. "Neutralized differential amplifiers using mixed-mode S-parameters (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A197-A200 vol.1.

Distributed amplifiers offer very broadband operation, with the promise of a single all-band wireless solution. However, there are a number of distributed amplifier specific issues that have blocked practical implementation in a portable product. One of these is potential instability exacerbated by 20:1 antenna load impedance variation over a very broad frequency range of interest. This paper provides a neutralized differential amplifier implementation supported by mixed-mode S-parameters technology that offers a broadband stability solution for distributed amplifier application. Measurement results of a single section differential amplifier are included using Motorola's CDR1 BiCMOS technology.

Abstracts

Accurate power control technique for handset PA modules with integrated directional couplers (2003 Vol. I [MWSYM])

J. Madic, P. Bretchko, Shuyun Zhang, R. Shumovich and R. McMorrow. "Accurate power control technique for handset PA modules with integrated directional couplers (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A201-A204 vol.1.

This paper describes an accurate power control technique for handset PA modules (PAMs) with internal closed loop control. Our design approach is the first to include two integrated directional couplers in a handset RF PAM. It significantly improves power control accuracy over load variations. Directivity of the integrated couplers is also proved to be critical for establishing accurate power control over phase variations at high values of load VSWR. With our unique design we achieved directivity as high as 14.3 dB. When the load VSWR is equal to 6:1, we demonstrated that our design reduces output power variation to +/-1.2 dB. Under the same conditions, we measured two other major commercial modules that are not utilizing integrated directional couplers. They exhibited an output power variation of 5.5 dB.

Abstracts

A fully integrated 5.2 GHz GaInP/GaAs HBT upconversion micromixer with output LC current combiner and oscillator (2003 Vol. I [MWSYM])

C.C. Meng, S.K. Hsu, A.S. Peng, S.Y. Wen and G.W. Huang. "A fully integrated 5.2 GHz GaInP/GaAs HBT upconversion micromixer with output LC current combiner and oscillator (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): A205-A208 vol.1.

A 5.2 GHz upconversion micromixer with output LC current combiner and integrated oscillator is demonstrated in 2 /spl mu/m GaInP/GaAs HBT technology in this paper. The micromixer has a single-ended input and a passive LC current combiner is used to convert the mixer differential output into a single-ended output. A cross-coupled LC oscillator with oscillation frequency of 4.3 GHz and a cascode buffer amplifier are also integrated in the same chip. The die size is 1 mm/sup 2/. The fully integrated upconversion micromixer has a conversion gain of -2.5 dB, OP/sub 1dB/ of -12.5 dBm and 40 dB RF-IF isolation when the input IF=0.9 GHz and thus the output RF=5.2 GHz. The IF input return loss is better than 25 dB for frequencies up to 6 GHz while RF output return loss is better than 12 dB for frequencies from 5.15 GHz to 5.35 GHz.

Abstracts

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"Index of Authors (2003 Vol. I [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 1.3 (2003 Vol. I [MWSYM]): xxxv-xliii.

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Front Cover (2003 Vol. II [MWSYM])

"Front Cover (2003 Vol. II [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): -.

The following topics are dealt with: modeling techniques for microwave CAD; passive components; high power amplifiers; frequency conversion and control; millimeter wave monolithic IC technologies; microwave photonic devices; neural networks and fuzzy logic; negative refractive index materials; high power transistor technology; amplifiers and control circuits; microwave photonic systems; frequency-domain CAD techniques; high power amplifier linearization; ultra-wideband communications; radar; biological effects and medical applications; ferrite and control devices; RFIC; non-linear device modeling; leakage effects on planar structures; power amplifiers and devices for wireless applications; microwave oscillators; terahertz technology; behavioral modeling for nonlinear microwave components; guided wave structures; power amplifiers for C to Q band application; millimeter wave signal sources; millimeter wave generation and amplification; cavity filters and multiplexers; transmission lines; time-domain methods; linear modeling; system level packaging; software radio; planar technologies for filters and multiplexers; waveguide structures, discontinuities and transitions; ICs for optical communication; microwave filter synthesis; RF-MEMS phase shifters and micromachined inductors; high speed sampling circuits; advanced array techniques; semiconductor technology for wireless systems; low noise components based on Si, GaAs, and InP technologies; planar and periodic filters; nonlinear measurement techniques; beamsteering and beamforming arrays; RF power amplifiers; active and tunable filters; MEMS techniques for tunable filters and resonators; microwave measurement techniques; metamaterials; smart antennas; spatial power combining; superconducting and planar filters; MEMS components; microwave and millimeter-wave sensors; frequency domain techniques; ferroelectrics and acoustic devices; millimeter-wave transceivers and sources.

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Technical Program Schedule (2003 Vol. II [MWSYM])

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Abstracts

Large-signal HBT model with improved collector transit time formulation for GaAs and InP technologies

M. Iwamoto, D.E. Root, J.B. Scott, A. Cognata, P.M. Asbeck, B. Hughes and D.C. D'Avanzo. "Large-signal HBT model with improved collector transit time formulation for GaAs and InP technologies." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 635-638 vol.2.

An analytical large-signal HBT model which accurately accounts for the intricate bias dependence of collector delay in devices fabricated in both GaAs and InP material systems is described. The strongly bias dependent collector delay function accounts for the variation of electron velocity with electric field of the collector, which has consequences for both the electron transit time and capacitance. It is shown that the new formulation significantly improves the prediction of the bias dependence of f/sub t/. As a result, simulations over a very wide range of operating conditions match measured data on a wide variety of devices. Distortion predictions are improved since the derivatives of the bias dependent delay are more accurately modeled. This new model is extracted on medium and high breakdown GaAs HBTs, and also on InP DHBTs. Simulation results are verified with comparisons to S-parameter and large-signal measurements.

Abstracts

The thermal gain effect in GaAs-based HBT's

W.R. Curtice, V.M. Hietala, E. Gebara and J. Laskar. "The thermal gain effect in GaAs-based HBT's." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 639-641 vol.2.

The existence of increased, low frequency gain in GaAs HBT amplifiers is shown to be due to temperature modulation by the input signal. Device data is presented and the effect is reproduced using an electrothermal HBT model. The effect may be important in many broadband, bipolar device applications.

Abstracts

CMOS large signal model for CAD

I. Angelov, M. Fernhdal, F. Ingvarson, H. Zirath and H.O. Vickes. "CMOS large signal model for CAD." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 643-646 vol.2.

A compact large-signal model for high frequency CMOS transistors is proposed and experimentally evaluated with DC, S-parameter power spectrum measurements and load pull measurements. Very good correspondences between measurements on 100 nm CMOS FETs (f/sub T/ = 140 GHz, f/sub max/ =100 GHz) and simulations were achieved. Due to the low number of model parameters and the careful selection of model equations, the model exhibits excellent convergence behavior, a property important for successful nonlinear circuit simulation of RF circuits.

Abstracts

Implementation of NQS effects in large-signal BJT models

S.V. Cherepko and J.C.M. Hwang. "Implementation of NQS effects in large-signal BJT models." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 647-650 vol.2.

Large-signal implementation of non-quasistatic (NQS) effects in bipolar transistors is reviewed. An approach strategy is proposed that allows bilateral translation between small- and large-signal equivalent circuits. The approach is illustrated by translating simple small-signal equations commonly used in BJT modeling, as well as more complicated ones proposed in the literature. The present approach extends the state of art by considering arbitrary bias dependence of small-signal time constants.

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Modeling emitter breakdown in GaAs-based HBTs

M. Rudolph, F. Schnieder and W. Heinrich. "Modeling emitter breakdown in GaAs-based HBTs." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 651-654 vol.2.

Emitter breakdown is commonly ignored in compact HBT models. However, it can have a significant impact on the HBT power performance. The aim of this paper is to present a compact model that accounts for the effect. It is validated by load-pull measurements and applied to investigate the electro-thermal interaction in multi-finger HBTs.

Abstracts

Non-linear modelling of microwave PIN diode switches for harmonic and intermodulation distortion simulation

V. Cojocaru and F. Sischka. "Non-linear modelling of microwave PIN diode switches for harmonic and intermodulation distortion simulation." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 655-658 vol.2.

The paper presents for the first time a practical and relatively simple non-linear modeling solution for /spl mu/-wave PIN diodes for use in harmonic balance (HB) circuit simulators. It enables very good prediction performance of the very important harmonic and intermodulation characteristics of these devices when used in typical /spl mu/-wave switching applications. Accurate harmonic distortion measurements have been performed on a number of commercial surface mount PIN diodes, over a wide range of relevant bias conditions and RF power levels. Parasitic elements are first extracted from microwave S-parameter data. Separate non-linear circuit models are then used for the ON and OFF states of the PIN diodes, and these are directly optimized on the measured harmonic distortion data using a dedicated modeling platform developed within a commercial modeling software tool. The new models have been implemented and tested in a popular harmonic balance circuit simulator with very good results. The modeling solution described here can be also applied to other active devices for similar large-signal modeling problems.

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Leaky mode missing from EM simulators for planar circuits

M. Tsuji and H. Shigesawa. "Leaky mode missing from EM simulators for planar circuits." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 661-664 vol.2.

Most commercial EM simulators offer us solutions satisfactorily only for the purely bound mode at low frequencies. If we continue to seek modal solutions at high frequencies above a critical frequency, the existing modes become leaky modes. Indeed, they are meaningful only mathematically, but they influence strongly the performance of MIC and MMIC under a right condition. Therefore, this paper discusses whether a commercial EM simulator is practically useful for designing transmission lines and circuits in millimeter-wave range.

Abstracts

Fundamental properties of radiation from a leaky mode excited on a planar transmission line (2003 Vol. II [MWSYM])

W.L. Langston, J.T. Williams and D.R. Jackson. "Fundamental properties of radiation from a leaky mode excited on a planar transmission line (2003 Vol. II [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 665-668 vol.2.

A normalized leaky-mode radiation field that is applicable to a leaky mode excited by a source on any printed-circuit structure is derived. The general properties of the leaky-mode radiation field are examined in detail for a variety of phase and attenuation constants as well as distances from the source. The results provide a general view of leaky-mode radiation properties independent of the type of planar transmission line that supports such a mode.

Abstracts

Simple far-field model for lateral leakage in printed transmission lines

A.H. Kamel and A.S. Omar. "Simple far-field model for lateral leakage in printed transmission lines." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 669-672 vol.2.

A simple far-field phased-line model for the lateral leakage (e.g. the surface-wave one) in printed transmission lines is presented. It is based on replacing the guiding strip(s) and/or guiding slot(s) by a phased line radiating in the background structure (usually a simple dielectric-slab guide or a partially filled parallel plate waveguide). Both full-line (infinitely extended) and half-line (semi-infinite) structures are considered. The model predicts the impossibility of real (bounded) modes that are faster than the corresponding background mode (into which leakage can take place) in both full-line and half-line structures. On the other hand, complex (leaky-wave) modes are shown to behave properly (improperly) outside their sector of definition in half-line (full-line) structures. Far-field distributions for a number of cases are given for the sake of illustration.

Abstracts

New interesting leakage behavior on microstrip lines with a slot on a ground plane

M. Tsuji and H. Shigesawa. "New interesting leakage behavior on microstrip lines with a slot on a ground plane." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 673-676 vol.2.

We have proposed here a new structure of a microstrip line in which the dominant-mode leaks above some critical frequency or all frequencies. This structure has a slot on the ground plane and also has dielectric multilayers under it. The appropriate combination between dielectric layers produces the leakage into the multi-layers. This means that the leaky field does not leak into the substrate of the microstrip line and so we can get the lossy uniform microstrip line above the critical frequency without affecting the surrounding circuit. We present here the dependence of the structural parameters of the proposed guide on the leakage properties.

Abstracts

Modes on the standard and inverted conductor-backed slotline

J. Zehentner, J. Machac, J. Mrkvica and C. Tuzi. "Modes on the standard and inverted conductor-backed slotline." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 677-680 vol.2.

This paper recalls modes which can propagate on the conductor-backed slotline. The characteristic of the dominant mode on the CBSL is documented. The ICBSL is a modification of the CBSL placed in a dielectric with permittivity higher than the substrate permittivity. The modes on this line, including the interesting dominant leaky mode, are presented.

Abstracts

Non-orthogonality relations between complex-hybrid-modes: an application for the leaky-wave analysis of a laterally-shielded top-open suspended microstrip line

J.L. Gomez Tornero and A. Alvarez Melcon. "Non-orthogonality relations between complex-hybrid-modes: an application for the leaky-wave analysis of a laterally-shielded top-open suspended microstrip line." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 681-684 vol.2.

In this contribution, the orthogonality relations between complex modes are investigated to demonstrate the coupling effect which exists between TE/sup z/ and TM/sup z/ hybrid modes when power storage, loss or leakage is presented in the longitudinal direction of a transmission line. As an example, the Parallel Plate Waveguide (PPW) modes are used to study a laterally-shielded top-open microstrip line (LShMSW). The study of leaky-waves is a very interesting application of the novel orthogonality relations derived in this paper. This study is carried out using the correct and incorrect orthogonality formulations, and a comparison of results is made to check the validity of the proposed technique.

Abstracts

Doherty amplifier with DSP control to improve performance in CDMA operation

Yu Zhao, M. Iwamoto, L.E. Larson and P.M. Asbeck. "Doherty amplifier with DSP control to improve performance in CDMA operation." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 687-690 vol.2.

A power amplifier for CDMA applications which consists of a Doherty amplifier and a digital signal processing (DSP) controller is presented. DSP is used to dynamically adjust the gate bias of the auxiliary (peaking) amplifier at the rate of the signal envelope to obtain gain flatness (i.e. AM-AM distortion correction). Furthermore, DSP is used as a digital predistortor to improve the overall linearity by adjusting the phase at baseband (i.e. AM-PM distortion correction). The 840 MHz Doherty amplifier is realized with two commercially available MESFETs in a hybrid circuit, and the DSP is implemented externally with a board controlled by a personal computer. It is shown that by utilizing these DSP techniques, the overall linearity and efficiency characteristics of the Doherty amplifier can be significantly improved.

Abstracts

Demonstration of on-chip appended power amplifier for improved efficiency at low power region

Hyun-Min Park, Sang-Hoon Cheon, Jae-Woo Park and Songcheol Hong. "Demonstration of on-chip appended power amplifier for improved efficiency at low power region." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 691-694 vol.2.

A new power amplifier topology which can achieve improved efficiency at power backoff region is demonstrated in this paper. In this topology, the output stage of the amplifier is appended with a secondary transistor in a parallel way through a 3-port interstage matching circuit and an impedance transforming network. By careful selection of the ratio of device active area, this appended transistor achieves earlier saturation at lower output power level than the output transistor, which is a basic requirement in achieving high efficiency. The power amplifier has been realized with InGaP/GaAs HBT technology and showed efficiency improvement of 81% at output power of 16.7 dBm. The proposed topology enables one-chip integration, hence is very attractive for portable communication terminals.

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Abstracts

A fully integrated 4.8-6 GHz power amplifier with on-chip output balun in 38 GHz-f/sub T/ Si-bipolar

W. Bakalski, W. Simburger, R. Thuringer, H.-D. Wohlmuth and A.L. Scholtz. "A fully integrated 4.8-6 GHz power amplifier with on-chip output balun in 38 GHz-f/sub T/ Si-bipolar." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 695-698 vol.2.

A fully integrated radio frequency power amplifier for 4.8-6 GHz has been realized in a 38 GHz-f/sub T/, 0.25 /spl mu/m-Si-BiCMOS technology. The balanced 2-stage push-pull power amplifier uses two on-chip transformers as input balun and for interstage matching and an LC-type output balun with planar inductors. With this output network no external elements are required. At 1.2 V, 1.5 V, 2 V supply voltages output powers of 17 dBm, 18.9 dBm, 20.7 dBm are achieved at 5.8 GHz. The small-signal gain is 23 dB.

Abstracts

A high performance RF power amplifier with protection against load mismatches

A. Scuderi, F. Carrara, A. Castorina and G. Palmisano. "A high performance RF power amplifier with protection against load mismatches." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 699-702 vol.2.

A high performance power amplifier is presented which includes a protection circuitry against load impedance variations. Load mismatches produce peak voltages on the power transistor collector that give rise to breakdown conditions and hence to permanent faults. The protection circuitry is based on a feedback loop that acts on the amplifier gain to limit the overdrive of the output transistor. A monolithic power amplifier for 1.8-GHz DCS-PCS applications was integrated in a silicon bipolar technology with a 4.3-V breakdown voltage. The amplifier delivers a 33-dBm output power with 51% power-added efficiency and 33-dB gain at a nominal 3-V supply voltage. Standing wave ratio was tested up to 20:1 for all phases with a supply voltage up to 3.8 V without damage to the device.

Abstracts

Enhancement-mode power heterojunction FET utilizing re-grown p/sup +/-GaAs gate with negligible off-state leakage current

Y. Bito, T. Ishigaki, H. Shimawaki and Y. Nashimoto. "Enhancement-mode power heterojunction FET utilizing re-grown p/sup +/-GaAs gate with negligible off-state leakage current." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 703-706 vol.2.

An enhancement-mode power heterojunction FET utilizing a re-grown p/sup +/-GaAs gate (p/sup +/-gate HJFET) was developed for cellular applications. The p/sup +/-gate HJFET exhibited a high maximum drain current of 400 mA/mm and a gate forward turn-on voltage of 1.15 V with threshold voltage (V/sub T/) of +0.5 V. A small V/sub T/ standard deviation of 20 mV was obtained. The 32 mm gate width device has an extremely low off-state leakage current of 0.02 /spl mu/A at drain-to-source voltage (V/sub ds/) of 3.0 V and gate-to-source voltage of 0.0 V and at RT. Under single 3.2 V operation, the 32 mm device delivered 35 dBm output power, 11.9 dB associated gain and 73% power added efficiency at 950 MHz. Even operated at V/sub ds/ of 1.0 V, the device exhibited a high PAE of 70%. The developed p/sup +/-gate HJFET is promising for no drain bias switches and single voltage operation power amplifiers.

Abstracts

High efficiency 28V class AB InGaP/GaAs HBT MMIC amplifier with integrated bias circuit

N.L. Wang, C. Dunnrowicz, X. Chen, W. Ma, H.F. Chau, X. Sun, Y. Chen, B. Lin, I.L. Lo, C.H. Huang and M.H.T. Yang. "High efficiency 28V class AB InGaP/GaAs HBT MMIC amplifier with integrated bias circuit." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 707-710 vol.2.

InGaP/GaAs HBTs have demonstrated excellent lifetime and linearity performance for 3 to 10 V operation. This is very attractive for infrastructure applications. However, the low voltage is a drawback in this application where 28 V is a common voltage used. In this effort, a high voltage InGaP/GaAs HBT is developed for 28 V operation. The safe operation area is carefully designed, allowing the device to function in class A mode. A thermal resistance of 30/spl deg/C/W for a 1 W HBT design is measured using the V/sub be/ method. 4 W CW power with 71% efficiency is measured from this 1 W design, with a junction temperature rise of 49/spl deg/C. The integrated temperature compensated bias circuit provides <9% quiescent current change over base plate temperatures from -40 to +85/spl deg/C. Two tone and CDMA2000 linearity is also characterized. Initial WLR (wafer level reliability) results indicate that it has a similar lifetime to the standard InGaP/GaAs HBT.

Abstracts

A composite-collector InGaP/GaAs HBT with high ruggedness for GSM power amplifiers

T. Niwa, T. Ishigaki, H. Shimawaki and Y. Nashimoto. "A composite-collector InGaP/GaAs HBT with high ruggedness for GSM power amplifiers." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 711-714 vol.2.

This paper reports on an InGaP/GaAs HBT with a GaAs/InGaP composite collector for a GSM power amplifier. The GaAs/InGaP composite collector enables the device to pass a ruggedness test with SWR=10:1 at V/sub CE/ >5 V, keeping the total collector thickness of around 900 nm and with a high power added efficiency (PAE). The load-pull measurement results for multi-cell HBTs with total emitter size of 7200 /spl mu/m/sup 2/ reveals a PAE of 74% at Pout=35 dBm and V/sub CE/=3.5 V for the composite collector.

Abstracts

A 2GHz voltage tunable FBAR oscillator

A.P.S. Khanna, E. Gane and T. Chong. "A 2GHz voltage tunable FBAR oscillator." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 717-720 vol.2.

This paper describes the design and measured performance of a low-noise varactor tuned oscillator based on a film bulk acoustic resonator (FBAR) at 2 GHz. Using varactor tuning, this oscillator demonstrated a 2.5 MHz frequency tuning range at 1985 MHz with a phase noise of -112 dBc/Hz at 10 kHz from the carrier. This represents the first example of a low noise Si-bipolar FBAR tunable oscillator.

Abstracts

Performance comparison of 5GHz VCOs integrated by CMOS compatible high Q MEMS inductors

Eun-Chul Park, Sang-Hyun Baek, Taek-Sang Song, Jun-Bo Yoon and Euisik Yoon. "Performance comparison of 5GHz VCOs integrated by CMOS compatible high Q MEMS inductors." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 721-724 vol.2.

In this paper, we report the performance comparison of 5 GHz CMOS VCOs fabricated by 0.18 /spl mu/m six-metal mixed-mode RF CMOS processes with respect to the same VCOs integrated with high Q MEMS inductors. The CMOS inductors implemented by a top-level 2 /spl mu/m-thick Al/Cu metal layer typically show Q factors of about 10, while the MEMS inductors can give much higher Q factors over 25. Differential CMOS VCO circuits have been optimally designed for the respective Q factors of both CMOS and MEMS inductors. Phase noise has been measured and compared for the fabricated VCOs, demonstrating that the VCOs with MEMS inductors can give better phase noise by more than 7 dB in the offset frequency range from 30 kHz to 3 MHz.

Abstracts

A 19 GHz low phase noise HFET VCO MMIC

T. Matsuzuka, K. Kawakami, Y. Aihara, T. Ishikawa, M. Komaru and Y. Matsuda. "A 19 GHz low phase noise HFET VCO MMIC." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 725-728 vol.2.

A 19 GHz extremely low phase noise voltage controlled oscillator (VCO) MMIC is presented. To reduce the phase noise of the VCO, a heterostructure field effect transistor (HFET) is used as the active device, because its low frequency noise properties are superior to that of high electron mobility transistors (HEMT). This VCO showed a typical phase noise of -120 dBc/Hz at 1 MHz offset from the carrier. This performance is better than other VCOs operating above 10 GHz. The measured tuning range is 400 MHz and output power is 2 dBm. The fabricated MMIC chip size is 2.7 mm/spl times/1.4 mm.

Abstracts

A low noise 9.95/10.66 GHz PLO for optical applications

X. Gao, M. Koechlin, C. Lyons, J. Chiesa, G. Guven and P. Katzin. "A low noise 9.95/10.66 GHz PLO for optical applications." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 729-732 vol.2.

A 9.95/10.66 GHz monolithic low noise phase-locked oscillator (PLO) implemented in an InGaP HBT technology is presented. It consists of a voltage-controlled oscillator (VCO), a digital phase frequency detector (PFD) and digital frequency dividers. The reference frequency input can be in two ranges, 155 to 167 MHz (divided by 32 selected) or 620 to 668 MHz (divided by 8 selected). Two auxiliary outputs at 4.975/5.33 and 2.4875/2.665 GHz are provided. A PLO phase noise of -122 dBc/Hz is achieved at 10 kHz offset. The phase jitter is 20.3 fs rms in 10 kHz to 10 MHz. The MMIC dissipates 1.5 W with two power supplies, +3 V for the VCO and +5 V for the rest of the circuitry.

Abstracts

A 1-V 2.4-GHz PLL synthesizer with a fully differential prescaler and a low-off-leakage charge pump

A. Yamagishi, M. Ugajin and T. Tsukahara. "A 1-V 2.4-GHz PLL synthesizer with a fully differential prescaler and a low-off-leakage charge pump." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 733-736 vol.2.

A 1 V 2.4 GHz-band fully monolithic PLL synthesizer was fabricated using 0.2 /spl mu/m CMOS/SOI process technology. It includes a voltage controlled oscillator (VCO) and a 3 GHz fully differential dual-modulus prescaler on a chip. A low-off-leakage-current charge pump is used for open-loop FSK modulation. When the PLL is in open loop mode, the frequency drift of the output is lower than 2.5 Hz//spl mu/sec. The output phase noise is -104 dBc/Hz at 1 MHz offset frequency. The power consumption of the PLL-IC core is 17 mW at 1 V supply voltage.

Abstracts

Microfabrication of 3D terahertz circuitry

C.M. Mann, P. de Maagt, G. McBride, F. van de Water, D. Castiglione, A. McCalden, L. Deias, J. O'Neill, A. Laisne, J.T. Vallinas, I. Ederra, D. Haskett, D. Jenkins, A. Zinn, M. Ferlet and R. Edeson. "Microfabrication of 3D terahertz circuitry." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 739-742 vol.2.

Advances in micro-fabrication techniques combined with accurate simulation tools has provided the means for the realisation of complex terahertz circuitry. Silicon micro-machining provides the way forward to fabricate accurate rugged structures. Multi-level deep reactive ion etching can be used to replace traditional machining methods achieving smaller feature size, improved surface finish and greater freedom in circuit layout. Photonic Bandgap waveguides enable three dimensional arrangements of active devices antennae and filters, and removes the requirement for metallisation of adjoining surfaces. This paper describes some of the state of the art terahertz circuit design and realisation using these techniques.

Abstracts

Terahertz quantum cascade lasers

G. Davies and E. Linfield. "Terahertz quantum cascade lasers." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 743-746 vol.2.

Quantum cascade lasers operating at far-infrared (terahertz) frequencies have now been demonstrated. We review the fabrication, operation, and performance of these lasers, and indicate recent results in which devices have been developed to operate continuous wave, at temperatures greater than 77 K, emit at frequencies down to 3.5 THz, and produce tens of milli-Watts of power. These results are an encouraging step towards a widely applicable solid-state terahertz source, and the development of terahertz photonics.

Abstracts

A planar-diode frequency tripler at 1.9THz

A. Maestrini, J. Ward, J. Gill, G. Chattopadhyay, F. Maiwald, K. Ellis, H. Javadi and I. Mehdi. "A planar-diode frequency tripler at 1.9THz." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 747-750 vol.2.

A fix-tuned 1.9 THz frequency tripler utilizing membrane based GaAs Schottky diodes has been designed and fabricated. The chips are three microns thick with no supporting frame. One micron thick beam leads are used to ground the diodes and to hold the circuit in a split-waveguide block. Both unbalanced and balanced designs have been considered. Preliminary tests at room temperature indicate that the balanced tripler covers the band 1780-1900GHz with output power around 0.5/spl mu/W when pumped with 3mW. Up to 1.5/spl mu/W at 1810 GHz was measured when the input power was increased to 5mW.

Abstracts

A 1.5 THz Hot-Electron Bolometer mixer operated by a planar diode based local oscillator

C.-Y.E. Tong, D. Meledin, D. Loudkov, R. Blundell, N. Erickson, J. Kawamura, I. Mehdi and G. Gol'tsman. "A 1.5 THz Hot-Electron Bolometer mixer operated by a planar diode based local oscillator." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 751-754 vol.2.

We have developed a 1.5 THz superconducting NbN Hot-Electron Bolometer mixer. It is operated by an all-solid-state Local Oscillator comprising of a cascade of 4 planar doublers following an MMIC based W-band power amplifier. The threshold available pump power is estimated to be 1 /spl mu/W.

Abstracts

Realization of a 150 GHz to 450 GHz tripler circuit based on a thin dielectric HMDS-N-membrane

K. Duwe and J. Muller. "Realization of a 150 GHz to 450 GHz tripler circuit based on a thin dielectric HMDS-N-membrane." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 755-757 vol.2.

The realization of a 150 GHz to 450 GHz tripler circuit based on a thin dielectric HMDS-N membrane is described. The design requires an integration of a GaAs-based heterostructure barrier varactor on a passive feeding structure based on a thin dielectric membrane, which is realized by thermocompression bonding. First measurements show sufficient output power and efficiencies.

Abstracts

A 5 element 450 GHz HBV frequency tripler

B. Schumann, M. Hoft, M. Saglam, H.L. Hartnagel and R. Judaschke. "A 5 element 450 GHz HBV frequency tripler." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 759-762 vol.2.

A five-element frequency tripler at 450 GHz in a spatial power dividing/combining circuitry has been investigated. The individual triplers are realized with 4 AlGaAs/GaAs-heterostructure barriers bonded onto a membrane-supported coplanar circuit. Dual-offset reflectors together with dielectric phase gratings are applied to achieve efficient power transfer to/from the active devices. The single-element triplers have a maximum output power of 1.05 mW at 451.8 GHz (efficiency: 1.3%). The unsaturated 5-element frequency tripler generates a maximum output power of 2.01 mW at 451.5 GHz.

Abstracts

Terahertz-frequency remote-sensing of biological warfare agents

D.L. Woolard, E.R. Brown, A.C. Samuels, J.O. Jensen, T. Globus, B. Gelmont and M. Wolski. "Terahertz-frequency remote-sensing of biological warfare agents." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 763-766 vol.2.

This paper presents a detailed assessment of terahertz-frequency spectroscopy as a technique for the remote detection of biological warfare agents. Design studies are presented for a differential-absorption-radar (DAR) approach that utilizes the spectral signatures of Bacillus (B.) subtillus spores within the terahertz (THz) regime as the detection mechanism. The signature data used in these studies is taken from laboratory measurements performed on uniform thin films of B. Subtillus spores and the system performance is assessed for both incoherent and coherent detector modalities. These studies consider DAR remote sensing of biological (bin) clouds at significant ranges (i.e., 1 km) and include the effects of realistic atmospheric conditions. A high-level remote-sensor design is used to estimate the probabilities of detection (p/sub d/) and false-alarm (p/sub fa/) associated with this general technique. These studies suggest useful remote-detection performance can be achieved (i.e., p/sub d/ > 0.9 & p/sub ra/ 10/sup -4/ for bio-cloud densities <10/sup 3/ cm/sup -3/) at 1 km ranges if the THz signature information remains predictably stable under varying atmospheric conditions (e.g., changes in humidity, spore activity state, etc). Furthermore, a realistic bio-agent airframe attack scenario is utilized to demonstrate standoff detection of bio-clouds with /spl sim/100% confidence while outside the threat-level concentrations. All together, these results demonstrate that standoff detection of bio-agents is feasible for threat-level concentrations in practical battlefield environments at sufficient ranges to provide for early warning.

Abstracts

A novel behavorial model of power amplifier based on a dynamic envelope gain approach for the system level simulation and design

C. Maziere, T. Reveyrand, S. Mons, D. Barataud, J.M. Nebus, R. Quere, A. Mallet, L. Lapierre and J. Sombrin. "A novel behavorial model of power amplifier based on a dynamic envelope gain approach for the system level simulation and design." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 769-772 vol.2.

This paper presents a novel and non quasi static behavioral (black box) model of power amplifiers. It takes into account nonlinear memory effects for an accurate prediction of signal distortions and power budget in communication systems. The model topology and the model extraction procedure are described. The model proposed in this paper can be derived either from envelope simulation results of a PA circuit design or from time domain envelope measurements of a PA driven by modulated stimuli. Examples of new measurements (i.e. : dynamic AM/AM conversion characteristics) highlight nonlinear memory of SSPAs. The behavioral model proposed is very well suited for an efficient implementation in system level software packages because it consists of an extension of the complex envelope gain function. The proposed complex gain which depends on the input envelope and its first time derivatives provides a great enhancement as compared to the memoryless static complex gain derived from classical AM/AM and AM/PM conversion characteristics.

Abstracts

Characterization and modeling of intermodulation distortion asymmetry in HBT using large-signal model

Hyun-Min Park and Songcheol Hong. "Characterization and modeling of intermodulation distortion asymmetry in HBT using large-signal model." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 773-776 vol.2.

Asymmetrical behaviors of intermodulation distortion (IMD) in microwave active devices are often observed when the terminating impedance at baseband frequency contains a reactive component. This phenomenon sometimes induces misunderstanding of distortion performance unless the baseband impedance effects are properly accounted for. The distortion asymmetry appears in not only small-signal regime but also large-signal regime. Therefore, a unified approach which can predict IMD asymmetry over a broad range of output power levels is in critical demand. In this context, the usefulness of nonlinear large-signal model is addressed when predicting IMD asymmetries. Extensive measurement results are compared to simulation results to demonstrate the usefulness. Moreover, the origin of distortion asymmetry is discussed with time-domain envelope simulation.

Abstracts

Extraction of conversion matrices for P-HEMTs based on vectorial large-signal measurements

A. Cidronali, K.C. Gupta, J. Jargon, K.A. Remley, D. DeGroot and G. Manes. "Extraction of conversion matrices for P-HEMTs based on vectorial large-signal measurements." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 777-780 vol.2.

We introduce a new technique which allows us to measure the admittance conversion matrix of a two port device, using a large-signal vector network analyzer. This method is applied to extract the conversion matrix of a 0.25 um PHEMT, driven by a 4.8 GHz signal, at different power levels, using an intermediate frequency of 600 MHz. A discussion of the up- and down-conversion is provided.

Abstracts

Implication of baseband impedance and bias for FET amplifier linearization

J. Brinkhoff and A.E. Parker. "Implication of baseband impedance and bias for FET amplifier linearization." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 781-784 vol.2.

Baseband impedance can have a positive or negative effect on the intermodulation of microwave circuits. Concise formulae are shown to be useful to a designer to select intelligently a FET and its bias on the basis of the impact of baseband impedance on intermodulation. Memoryless predistortion techniques are shown to be effective over wide bandwidths at a suitable bias.

Abstracts

An efficient Volterra-based behavioral model for wideband RF power amplifiers

A. Zhu, M. Wren and T.J. Brazil. "An efficient Volterra-based behavioral model for wideband RF power amplifiers." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 787-790 vol.2.

Efficient and accurate behavioral modeling of RF power amplifiers with memory effects becomes of critical importance in the system-level analysis and design of wide band digital communication systems. In this paper, we present a novel Volterra-based behavioral model implemented through a bank of parallel FIR filters, the coefficients of which may be readily extracted from time-domain measurement or circuit envelope simulation. This model can reproduce the nonlinear distortion of power amplifiers with memory effects excited by wideband modulated signals with better accuracy compared to conventional quasi-memoryless models.

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Abstracts

The behavioral modeling of microwave/RF ICs using non-linear time series analysis

J. Wood and D.E. Root. "The behavioral modeling of microwave/RF ICs using non-linear time series analysis." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 791-794 vol.2.

A new and powerful, systematic approach for creating nonlinear behavioral models of microwave/RF ICs is presented. The methodology incorporates several techniques from nonlinear dynamics, system identification, and computational geometry to produce models that are an effective compromise between complexity and accuracy, and efficiency and speed of simulation. The models are constructed from large-signal microwave measurements in the time domain, or from simulation, and are implemented in a commercial nonlinear microwave simulator. We illustrate the technique by creating a cascadable, transportable model of a microwave IC amplifier that predicts accurately the DC, large signal, harmonic distortion, inter-modulation, and small-signal S-parameter behavior.

Abstracts

Measurement based modeling of power amplifiers for reliable design of modern communication systems

A. Soury, E. Ngoya, J.-M. Nebus and T. Reveyrand. "Measurement based modeling of power amplifiers for reliable design of modern communication systems." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 795-798 vol.2.

The characterization and the modeling of nonlinear memory effects are, nowadays, an integral part of the design process of modern communication systems. Notably, the nonlinear long term memory effects occurring in solid state devices impact considerably system performances. Recently, a new method to characterize and integrate low frequency memory effects in nonlinear behavioral models of SSPAs has been presented. This paper presents a detailed mathematical study and a measurement based extraction principle of the proposed behavioral model. Calibrated time-domain envelope measurements are used for the model extraction and verification procedures. The extraction technique is illustrated by the modeling of a L-Band HFET amplifier.

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Abstracts

Behavioral modeling of RF power amplifiers considering IMD and spectral regrowth asymmetries

H. Ku and J.S. Kenney. "Behavioral modeling of RF power amplifiers considering IMD and spectral regrowth asymmetries." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 799-802 vol.2.

This paper proposes a new behavioral model to treat asymmetries between lower and upper intermodulation products and spectral regrowth in nonlinear power amplifiers (PAs). Asymmetric intermodulation distortion (IMD) phenomena has been attributed to long time constant envelope memory effects within the PA, and is known to be a limiting factor in predistortion linearization systems. The model developed in this paper is based on the previously developed memory polynomial model. The contribution made in this paper was to augment the memory polynomial model to include a weighted delay tap function that significantly reduces the parameter space required for accurate model identification. Using measured IMD from a 2.1 GHz 170 W PEP LDMOS PA, the coefficients of the 100 tap memory polynomial were extracted. The model is validated by comparing the measured and predicted results when the PA is excited by a two-tone signal with tone spacing extending from 10kHz to 5MHz. The proposed model reduces rms error up to 36% when compared to a conventional unit sample delay memory polynomial model.

Abstracts

Time domain characterization of power amplifiers with memory effects

P. Draxler, I. Langmore, T.P. Hung and P.M. Asbeck. "Time domain characterization of power amplifiers with memory effects." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 803-806 vol.2.

Memory effects in power amplifier nonlinearity are frequently an impediment to amplifier linearization. In this paper, memory effects in a cellular phone power amplifier are characterized via time domain measurements, with waveforms including steps, triangular waveforms and CDMA signals. Memory effects found with different waveforms are shown to be consistent, and in agreement with measurements made with sinusoids in two-tone tests. The results are analyzed by considering gain modulation by a parameter varying at the baseband frequency in response to the signal envelope. For pseudorandom input signals, such as for CDMA, cross-correlation of gain residues with the signal envelope yields an impulse response associated with the memory effects.

Abstracts

An accurate analytical representation of the continuous spectrum excited on multilayer stripline structures in spectral-gap regions

P. Baccarelli, P. Burghignoli, F. Frezza, A. Galli, G. Lovat and S. Paulotto. "An accurate analytical representation of the continuous spectrum excited on multilayer stripline structures in spectral-gap regions." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 809-812 vol.2.

In this work, an approximate asymptotic closed-form representation is derived for the continuous-spectrum current excited by a delta-gap source in a multilayer stripline. The proposed representation is accurate also very close to the source and is valid inside the low-frequency spectral-gap region of the dominant leaky mode supported by this structure, where the main contribution to the continuous-spectrum current is given by the residual-wave current. Numerical results which confirm the accuracy and numerical efficiency of the proposed approach are provided at different frequencies.

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Abstracts

High frequency crosstalk between two microstrip lines

J. Bernal, F. Mesa, R. Rodriguez-Berral and D.R. Jackson. "High frequency crosstalk between two microstrip lines." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 813-816 vol.2.

The high-frequency crosstalk current induced on a microstrip line due to coupling from an adjacent line with a source is examined. The full-wave analysis includes the effects of leaky-mode excitation and discontinuity radiation from the source.

Abstracts

Coupled mode analysis of multi-conductor transmission lines including backward coupling

Dengpeng Chen, Zhongxiang Shen and Zhenhai Shao. "Coupled mode analysis of multi-conductor transmission lines including backward coupling." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 817-820 vol.2.

The non-orthogonal coupled mode theory is extended to the analysis of multi-conductor transmission lines by including the backward wave coupling. Scattering parameters can be obtained directly from the coupled mode analysis. The eigenmode field and current are calculated using the finite difference time domain (FDTD) method, which can provide a wide band solution through a single simulation. Numerical results for the case of two identical coupled lines are presented and compared with those from ADS Momentum.

Abstracts

Wave propagation characteristics of a reactively loaded microstrip

K.M. Noujeim. "Wave propagation characteristics of a reactively loaded microstrip." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 821-824 vol.2.

The characteristics of wave propagation along a reactively loaded microstrip operating in its first higher-order mode are investigated by means of the transverse-resonance and two-dimensional finite-difference time-domain techniques. It is found that the phase velocity along the microstrip and the cutoff frequency of its first higher-order mode are functions of the reactive-load value. These effects are used to design fixed-frequency continuously beam-steerable leaky-wave antennas, and antennas with a continuously adjustable operating frequency range.

Abstracts

Fractal two-dimensional electromagnetic band-gap structures

F. Frezza, L. Pajewski and G. Schettini. "Fractal two-dimensional electromagnetic band-gap structures." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 825-828 vol.2.

Fractal two-dimensional Electromagnetic Band-Gap (EBG) materials are proposed and studied by means of a full-wave method developed for diffraction gratings. Such a technique allows us to characterize, in a rapidly convergent way, the transmission and reflection properties of periodic fractal structures with an arbitrary geometry in the unit cell. Both polarization cases can be treated. In particular, two different fractal EBG materials are considered. Numerical results are reported for the transmission efficiency as a function of the frequency. Typical effects due to the fractal geometry are observed, like multi-band behavior and enlargement of stop-bands.

Abstracts

Properties of spatial harmonics selection in pseudoperiodic waveguides

V.A. Solntsev. "Properties of spatial harmonics selection in pseudoperiodic waveguides." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 829-832 vol.2.

The selection spatial harmonics in pseudoperiodic waveguides depending on frequency is studied. The selection method is based on the coordinated variation of the step and phase distribution of elements along the waveguide, which provides the constant phase velocity of one spatial harmonic and destroys other spatial harmonics. The possibility of application of a pseudoperiodic folded waveguide for the creation of powerful broadband TWTs is indicated.

Abstracts

Ferrite-loaded waveguides-a perturbation theory approach

R. Pietig and Meng Cao. "Ferrite-loaded waveguides-a perturbation theory approach." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 833-836 vol.2.

We have developed a perturbation theory for ferrite-loaded waveguides. The perturbation operator is chosen as the deviation of the relative permeability matrix from unity. The method allows a systematic calculation of the propagation constant as well as the perturbed modes to any desired order. It can be used for any direction of the bias field and also for inhomogeneous bias fields as long as the translation invariance along the waveguide is kept. We apply our method to ferrite-loaded waveguides with a bias field in the propagation direction. For the completely filled case, first order expressions for the propagation constant are obtained and the coupling behaviour of TE, TM and TEM modes is discussed. Furthermore we study the scattering of TEM modes in partially filled waveguides and obtain the S-matrix for the ferrite coupled line in the first order.

Abstracts

Closed-form formula for frequency dependent bonding pad characterization

Xiangyin Zeng, M. Abdulla and Qing-Lun Chen. "Closed-form formula for frequency dependent bonding pad characterization." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 837-840 vol.2.

It is well known that on-die bonding pad capacitance and conductance is quite frequency-dependent due to the existence of lossy substrate. This paper describes a very simple yet accurate method to determine them. The pad capacitance is divided into two parts, the parallel plate capacitance and the fringing capacitance. By taking the bonding pad as a transmission line four times, we can determine the fringing capacitances along the four edges. Closed-form formulas for all the capacitances are available. The conductance can then be determined from the capacitance. The results show good agreement with the full wave simulation results, which justifies the validity of our modeling.

Abstracts

2 and 4 watt Ka-band GaAs PHEMT power amplifier MMICs

F.Y. Colomb and A. Platzker. "2 and 4 watt Ka-band GaAs PHEMT power amplifier MMICs." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 843-846 vol.2.

The design and performance of power amplifiers for Ka-band applications is presented. A three-stage amplifier demonstrated 22 dB small signal gain from 26.5 GHz to 31.5 GHz and saturated output power of 4W with 28% power added efficiency from 28 GHz to 31 GHz. Record power density of 670 mW per mm of device output periphery was achieved. The amplifiers were fabricated on a selective double-recess 0.2 /spl mu/m GaAs power pHEMT process.

Abstracts

A balanced 2 watt compact PHEMT power amplifier MMIC for Ka-band applications

Shuoqi Chen, E. Reese and Keon-Shik Kong. "A balanced 2 watt compact PHEMT power amplifier MMIC for Ka-band applications." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 847-850 vol.2.

A balanced form, compact power amplifier MMIC operating at Ka-band was designed and developed using TriQuint's 3MI 0.25/spl mu/m gate length pHEMT technology. This balanced three-stage power amplifier, with chip size of 6.16mm/sup 2/ (2.8/spl times/2.2mm), on 100/spl mu/m GaAs substrate achieved 32.8dBm (1.9Watt) P/sub 1dB/ output power and saturated output power above 2 Watts with higher small signal gain than 18dB at 30GHz. This chip provides a high power and low cost benchmark solution for Ka-band radio market.

Abstracts

A high power density, 6W MMIC for Ku/K-Band applications

T. Shimura, T. Satoh, Y. Hasegawa and J. Fukaya. "A high power density, 6W MMIC for Ku/K-Band applications." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 851-854 vol.2.

A Ku/K-Band very small size MMIC high power amplifier (HPA) providing 6W of CW output power, 23dB of gain and 30% power added efficiency for application in the Ku/K-Band is presented. It is produced on a low cost, commercially available 0.25um pHEMT process. This MMIC is composed of three stage pHEMT and chip size is 3.5 /spl times/ 3.0 mm/sup 2/. The HPA achieved 570 mW output power per 1 mm/sup 2/ die area. This value is the highest power density at Ku/K/Ka-Band reported to date.

Abstracts

X-band GaInP HBT 10 W high power amplifier including on-chip bias control circuit

Z. Ouarch. "X-band GaInP HBT 10 W high power amplifier including on-chip bias control circuit." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 855-858 vol.2.

A monolithic two stage high power amplifier (HPA) has been developed for X band applications. This amplifier is fabricated on UMS commercially available GaInP/GaAs HBT process. The MMIC HPA provides about 10 W output power from 8.4 to 10.4 GHz with a mean power added efficiency of about 35 % and a mean small signal gain of 16 dB. The HPA was also validated in a wide temperature range (-30 - +80/spl deg/C) from small to large input signal and for extensive frequencies. The most significant feature of the new HPA is the use of on-chip bias control circuit allowing a linear control of collector current independently of the temperature.

Abstracts

E-PHEMT, single supply, power amplifier for Ku band applications

K. Fujii and H. Morkner. "E-PHEMT, single supply, power amplifier for Ku band applications." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 859-862 vol.2.

The development of enhancement mode PHEMT (E-PHEMT), single supply, 10.5 to 18GHz wide band power amplifier MMICs is described. The amplifier was designed with prematching techniques utilizing a 0.5/spl mu/m GaAs E-PHEMT production process. The designed power amplifier exhibit 13 dB of small signal gain, 26.5dBm 1dB gain compression output power at 16 GHz. This MMIC was fabricated in Agilent's advanced E-PHEMT process and have been demonstrated in fully production capability.

Abstracts

An 18-71 GHz multi-band and high gain GaAs MMIC medium power amplifier for millimeter-wave applications

Pei-Si Wu, Tian-Wei Huang and Huei Wang. "An 18-71 GHz multi-band and high gain GaAs MMIC medium power amplifier for millimeter-wave applications." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 863-866 vol.2.

This paper presents the design and measurement results of a broadband high gain MMIC medium power amplifier. The proposed 18-71 GHz multiband amplifier provides a single chip solution for all 28 GHz, 38 GHz, and 60 GHz millimeter-wave applications with a chip size of 2.5 mm /spl times/ 1 mm. The high gain performance of more than 20 dB from 41-63 GHz has been attained. It provides at least 16 dBm of maximum output power from 19-57 GHz. This amplifier consists of one distributed stage for broadband design and cascaded single-ended stages for medium power output. This chip demonstrates the highest frequency application using this combined topology compared with all previously published results. The circuit was fabricated with a 0.15-/spl mu/m gate-length GaAs-based HEMT MMIC technology.

Abstracts

A low quiescent current 3.3V operation linear MMIC power amplifier for 5 GHz WLAN applications

J.H. Kim, Y.S. Noh and C.S. Park. "A low quiescent current 3.3V operation linear MMIC power amplifier for 5 GHz WLAN applications." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 867-870 vol.2.

We report a 5 GHz linear InGaP/GaAs HBT monolithic microwave integrated circuit (MMIC) power amplifier for wireless LAN applications. The three-stage power amplifier operates with 103 mA - low quiescent current of Class AB mode using active bias circuit under a single supply of +3.3V A total current of 196(194) mA is consumed with an output power of 18 dBm and PAE (power-added efficiency) of 9.7% at 5.25(5.15) GHz. The power amplifier exhibits a power gain of 19.6 (17.8/18.5) dB, 1-dB compression point (P/sub 1/dB) of 26(25/25) dBm, and PAE of 27.8(25.4/20) % at 5.25(5.15/5.85) GHz. Measured third-order IMD(intermodulation distortion) is less than -25 dBc at 3 dB back-off and less than -30 dBc at 5 dB back-off from P/sub 1/dB for the frequency range between 5.15 and 5.85 GHz.

Abstracts

A 5 GHz high efficiency and low distortion InGaP/GaAs HBT power amplifier MMIC

K. Fujita, K. Shirakawa, N. Takahashi, Y. Liu, T. Oka, M. Yamashita, K. Sakuno, H. Kawamura, M. Hasegawa, H. Koh, K. Kagoshima, H. Kijima and H. Sato. "A 5 GHz high efficiency and low distortion InGaP/GaAs HBT power amplifier MMIC." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 871-874 vol.2.

An InGaP/GaAs two-stage HBT power amplifier for 5 GHz Wireless-LAN applications was developed. By using a self-aligned base contact formation process and an external base region side etching process, a high gain HBT was realized. A small-sized via hole fabrication process was developed. The gain of multi-finger HBT was improved by locating via holes between each finger. Linearity was also improved by developing a new variable negative feedback circuit. A power amplifier MMIC utilizing this technology was fabricated, and 19.7 dBm output power, 22 dB gain, 22.5% power-added-efficiency (PAE), 5.0% error vector magnitude (EVM) were obtained at 54 Mbps transmission under a supply voltage of 3.3 V. These state of the art data represent the highest PAE reported for a the power amplifier MMIC in the 5 GHz Wireless-LAN application.

Abstracts

A monolithic integrated 150 GHz SiGe HBT push-push VCO with simultaneous differential V-band output

Y. Baeyens and Y.K. Chen. "A monolithic integrated 150 GHz SiGe HBT push-push VCO with simultaneous differential V-band output." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 877-880 vol.2.

A fully integrated push-push voltage controlled oscillator (VCO) with simultaneous differential fundamental output is realized using an advanced 0.13/spl mu/m SiGe HBT process. A maximum oscillation frequency of 155 GHz, up to -5 dBm output power at 150 GHz and 30 GHz wide tuning range is achieved. The measured phase-noise in the linear tuning range is around -85 dBc/Hz at 1 MHz offset from carrier. Up to +3 dBm output power and 6 dB lower phase noise is obtained at each of the fundamental frequency differential ports. For a similar but fixed frequency oscillator, -2 dBm output power and a low phase noise of less than -90 dBc/Hz is measured at 1 MHz from the 140 GHz carrier.

Abstracts

A V-band single-chip MMIC oscillator array using a 4-port microstrip patch antenna

Wooyeol Choi, Changyul Cheon and Youngwoo Kwon. "A V-band single-chip MMIC oscillator array using a 4-port microstrip patch antenna." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 881-884 vol.2.

In this paper, a V-band strongly-coupled single-chip MMIC oscillator array is presented. To reduce the MMIC chip size and increase the output power of the millimeter-wave source module, the output powers of the four oscillators are combined in a single chip using a four-port patch antenna. A parallel combination of the two pairs of the oscillators operating in a push-pull mode was implemented using a single four-port patch antenna. When measured in a closed over-sized waveguide, the circuit showed the output power of 3.8dBm at 60.626GHz. The measured radiation pattern of the active antennas array in free space shows broadside pattern with low cross-polarization level, verifying that the current profile on the antenna closely follows that of the ideal push-pull mode. The proposed active antenna approach is a promising candidate for a low-cost source module at mm-waves.

Abstracts

A 60 GHz InGaP/GaAs HBT push-push MMIC VCO

Jeong-Geun Kim, Dong-Hyun Baek, Sang-Hoon Jeon, Jae-Woo Park and Songcheol Hong. "A 60 GHz InGaP/GaAs HBT push-push MMIC VCO." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 885-888 vol.2.

A fully integrated 60 GHz push-push voltage controlled oscillator (VCO) is presented. The VCO is realized using a commercially available InGsP/GsAs heterojunction bipolar transistor (HBT) technology with an f/sub T/ of 60 GHz and an f/sub MAX/ of 110 GHz. To generate negative resistance, common base inductive feedback topology is used. Push-push configuration is employed to achieve high oscillation frequency of V-band. The presented push-push VCO provides the oscillation frequency of 60 GHz. This is very close to the predicted oscillation frequency owing to the EM simulation of the microstrip line resonator and inductor. The peak output power is -4 dBm. The phase noise is -93 dBc/Hz at 1 MHz offset frequency of the push-push signal of 60 GHz and -102 dBc/Hz for the fundamental frequency of 30 GHz. The wide frequency tuning range is achieved about 1.6 GHz. The small chip of 0.90 /spl times/ 0.87 mm/sup 2/ is also achieved with the layout consideration.

Abstracts

A Ka-band quadruple-push oscillator

H. Xiao, T. Tanaka and M. Aikawa. "A Ka-band quadruple-push oscillator." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 889-892 vol.2.

In this paper, a quadruple-push oscillator is proposed for the first time. The quadruple-push oscillator consists of four identical sub-circuits and a microstrip ring resonator. By using the ring resonator as common resonator, the four identical sub-circuits oscillate in the same fundamental frequency f/sub 0/, and the fundamental oscillating signal of each sub-circuit has a phase difference of 90/spl deg/, 180/spl deg/ and 270/spl deg/ to that of the others. Therefore, the undesired fundamental signals (f/sub 0/), the second harmonic signals (2f/sub 0/), the third harmonic signals (3f/sub 0/) and so on can be suppressed in principle and the desired fourth harmonic signal (4f/sub 0/) is obtained when all the signals are combined. A Ka-band quadruple-push oscillator was designed and fabricated. The measured output power of the desired fourth harmonic signal (4f/sub 0/) was +1.67 dBm at the frequency of 35.8 GHz. The measured suppression of the undesired signals of the fundamental signal (f/sub 0/), the second harmonic signal (2f/sub 0/), the third harmonic signal (3f/sub 0/) and the fifth harmonic signal (5f/sub 0/) were -18.0 dBc, -17.9 dBc, -17.8 dBc and -35.5 dBc, respectively. The measured phase noise performance at 35.8 GHz was -104.0 dBc/Hz at an offset frequency of 1 MHz.

Abstracts

Fast and accurate ramp generation with a PLL-stabilized 24-GHz SiGe VCO for FMCW and FSCW applications

A. Stelzer, K. Ettinger, J. Hoftberger, J. Fenk and R. Weigel. "Fast and accurate ramp generation with a PLL-stabilized 24-GHz SiGe VCO for FMCW and FSCW applications." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 893-896 vol.2.

In Microwave sensor systems the application of linear frequency modulation schemes as well as frequency stepping is commonly used. In this paper we describe the generation of fast and highly accurate frequency ramps by means of a fractional-N-PLL stabilized integrated 24-GHz voltage controlled SiGe oscillator, which are a prerequisite for high achievable measurement accuracies. Linearity measurements with phase evaluation on fabricated devices have shown an RF-phase deviation of less than 1.5 rad for a linear frequency sweep with a bandwidth of 250 MHz at 24.5 GHz and a sweep duration of 250 /spl mu/s.

Abstracts

A low cost fixed tuned F-band HBV frequency tripler

A.O. Olsen, M. Ingvarson and J. Stake. "A low cost fixed tuned F-band HBV frequency tripler." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 899-902 vol.2.

We present a novel fixed tuned heterostructure barrier varactor diode (HBV) tripler. This new multiplier consists of a microstrip section, which provides the critical impedance matching, and the diode, connected to microstrip to waveguide transitions at each end. The circuit is inserted in the E-plane of a waveguide mount, and both the input (Q-band) and the output (F-band) waveguide to microstrip transitions are realized using antipodal finlines. A peak efficiency of 4.2% with a 3% 3-dB bandwidth at 3/spl times/42.6 GHz for an input power of 13 dBm has been measured.

Abstracts

Low phase-noise monolithic GaInP/GaAs-HBT VCO for 77 GHz

F. Lenk, M. Schott, J. Hilsenbeck, J. Wurfl and W. Heinrich. "Low phase-noise monolithic GaInP/GaAs-HBT VCO for 77 GHz." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 903-906 vol.2.

Coplanar W-band push-push VCO MMICs using GaInP/GaAs HBTs are presented. One circuit operates at 77 GHz with phase noise of -92 dBc/Hz at 1 MHz offset. To our knowledge this is the first fully monolithic W-band VCO with phase noise better than -90 dBc/Hz. A second version with two varactor diodes yields an almost threefold relative tuning bandwidth.

Abstracts

Theoretical and experimental comparison of optimized doping profiles for high-performance InP Gunn devices at 220-500 GHz

R. Kamoua and H. Eisele. "Theoretical and experimental comparison of optimized doping profiles for high-performance InP Gunn devices at 220-500 GHz." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 907-910 vol.2.

Different types of doping profiles are investigated theoretically and experimentally for their potential of improving the performance of InP Gunn devices at J-band (220-325 GHz) frequencies and above. As initial experimental results, devices with an optimized graded doping profile generated output power levels approximately twice the previous state-of-the-art values at 280-300 GHz. Simulations identified a fiat doping profile with a notch at the cathode as even more promising. For example, an RF output power of 50 mW at 240 GHz is predicted for this profile compared to 42 mW at 240 GHz from an optimized graded doping profile.

Abstracts

High conversion gain V-band quadruple subharmonic mixer using cascode structure

Dan An, Sung Chan Kim, Woo Suk Sul, Hyo Jong Han, Han Shin Lee, Won Young Uhm, Hyung Moo Park, Sam Dong Kim, Dong Hoon Shin and Jin Koo Rhee. "High conversion gain V-band quadruple subharmonic mixer using cascode structure." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 911-914 vol.2.

In this paper, we present V-band high conversion gain quadruple subharmonic mixers adopting the cascode structure. The subharmonic mixers were successfully integrated by using 0.1 /spl mu/m GaAs PHEMTs and the coplanar waveguide structures. We show that the highest conversion gain of 3.4 dB thus far at a LO power of 13 dBm from the fabricated mixers. The millimeter-wave subharmonic mixer also ensure a high degree of isolation showing -53.6 dB in the LO-to-IF and -46.2 dB in the LO-to-RF, respectively, at a frequency of 14.5 GHz. The high conversion gain achieved in this work is the first report among the millimeter-wave monolithic IC subharmonic mixers.

Abstracts

Integrated power amplifier for 60 GHz wireless applications

M. Varonen, M. Karkkainen, P. Kangaslahti and V. Porra. "Integrated power amplifier for 60 GHz wireless applications." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 915-918 vol.2.

This paper presents an integrated power amplifier for the 60 GHz frequency range. The amplifier was fabricated with a commercially available 0.15 /spl mu/m gate length pseudomorphic HEMT process. The output stage consists of two 6/spl times/35 /spl mu/m PHEMTs, forming a total output periphery of 420 /spl mu/m. The MMIC amplifier was simulated, fabricated and measured both on-wafer and in a split block package. The amplifier was characterized using linear and nonlinear methods. The odd mode stability was carefully analyzed. Large-signal scattering parameters were measured with on-wafer probes. The measured gain was 13.4 dB and 1 dB output compression point was at +17 dBm power level using 3.0 V supply voltage. The AM/AM and AM/PM characteristics were extracted from the large-signal S-parameter results. Finally, the amplifier chip was mounted in a split block package, which has WR-15 wave guide input and output interface. The measured results show 12.5 dB small-signal gain and better than 8 dB return losses in input and output for the packaged amplifier chip.

Abstracts

75 GHz 80 mW InP DHBT power amplifier

Yun Wei, M. Urteaga, Z. Griffith, D. Scott, Shouxuan Xie, V. Paidi, N. Parthasarathy and M. Rodwell. "75 GHz 80 mW InP DHBT power amplifier." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 919-921 vol.2.

We report a 75 GHz MMIC power amplifier in InP/InGaAs/InP DHBT transferred-substrate technology. The amplifier has 256 /spl mu/m/sup 2/ total emitter area and exhibits a power gain of 5.5 dB at 75 GHz and a saturated output power of 19 dBm (80mW) under 1-dB gain compression. The DHBT employed by the amplifier has a lightly doped InP emitter epitaxial layer between the emitter and the emitter cap layer as a distributed ballast resistance to improve thermal stability. To our knowledge, this is the highest reported output power for a W-band HBT power amplifier.

Abstracts

A 0.1 - 50 GHz SiGe HBT distributed amplifier employing constant-k m-derived sections

J. Aguirre and C. Plett. "A 0.1 - 50 GHz SiGe HBT distributed amplifier employing constant-k m-derived sections." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 923-926 vol.2.

This paper describes a single-ended three-stage SiGe HBT distributed amplifier employing constant-k, m-derived filter sections in the output artificial transmission line. The distributed amplifier exhibits a measured passband of 100 MHz to 50 GHz, has a small die size (1.0 /spl times/ 1.1 mm/sup 2/) and low power consumption (125 mW). This amplifier is suitable for use in communication systems.

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Novel adaptive predistortion technique for cross coupled filters

Ming Yu, V. Dokas, Wai Cheung Tang and R. Cameron. "Novel adaptive predistortion technique for cross coupled filters." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 929-932 vol.2.

This paper presents a novel adaptive predistortion technique for general cross-coupled microwave/RF filters with improved insertion loss and group delay equalization. The method enables many potential applications of an almost abandoned technique, especially using a lower Q design to emulate the performance of a higher Q filter. A 10-4-4 coaxial filter was built to verify the validity of the new method. The technique should lead to practical applications such as satellite transponder input multiplexers.

Abstracts

2GHz band quadruple mode dielectric resonator filter for cellular base station

J. Hattori, T. Wada, H. Kubo and Y. Ishikawa. "2GHz band quadruple mode dielectric resonator filter for cellular base station." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 933-936 vol.2.

This paper describes a novel 2GHz bandpass filter using a novel quadruple mode dielectric resonator for compact cellular base station. We propose small high Q dielectric resonator technique using TM/sub 11//spl delta/-x, TM/sub 11//spl delta/-y, TE/sub 01//spl delta/-x and TE/sub 01//spl delta/-y modes. It has very high unloaded Q factor value of about 15000 at 2GHz band. We have designed and manufactured a 4-pole band filter using this resonator. Insertion loss is very low of less than 0.23 dB and high attenuation of 90dB. Outer dimensions are 48 /spl times/ 48 /spl times/ 42 mm.

Abstracts

Analysis and design of three transmission zeros bandpass filter utilizing triple-mode dielectric loaded cubical cavity

Lye Heng Chua and D. Mirshekar-Syahkal. "Analysis and design of three transmission zeros bandpass filter utilizing triple-mode dielectric loaded cubical cavity." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 937-940 vol.2.

An equivalent circuit for the third-order triple-mode cross-coupled asymmetric response filter is proposed which includes the direct-coupling between the input and output ports. Based on this circuit, the existence of three transmission zeros for the filter is established through mathematical expressions derived for the computation of the zeros. To verify the accuracy of the theoretical transmission zeros, a triple-mode cross-coupled asymmetric response filter with a centre frequency at 1.705 GHz, is designed and implemented, using a dielectric loaded cubical cavity resonator. Very close agreement between the computed and measured results of the filter is achieved.

Abstracts

Metal-plated plastic waveguide filter using injection molding process

H. Asao, N. Yoneda, M. Mukuda, K. Yamasaki, O. Kamohara, Y. Yoshino and K. Henmi. "Metal-plated plastic waveguide filter using injection molding process." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 941-944 vol.2.

A metal-plated plastic waveguide filter for Ka-band wireless Internet access systems is presented. As the filter is made using a plastic injection-molding process, the influence of indispensable draft angle on the waveguide walls was precisely considered in the design. By merging this design technique with the high-accuracy molding technique, no electrical tuning was necessary. It also realized the mass-productivity and cost reduction of Ka-band waveguide components.

Abstracts

Inductive iris band-pass filter integrating floating inserts for pseudo-elliptic response

C. Guguen and D.L.H. Tong. "Inductive iris band-pass filter integrating floating inserts for pseudo-elliptic response." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 945-948 vol.2.

This paper presents a new type of pseudo-elliptic filter. It consists of the insertion in the waveguide of floating printed elements that generate transmission zeros. The design method is described first then the performance of one filter in the 30 GHz band as well as its realization mode is presented.

Abstracts

Compact E-plane and ridge waveguide filters/diplexers with pseudo-elliptic response

E. Ofli, R. Vahldieck and S. Amari. "Compact E-plane and ridge waveguide filters/diplexers with pseudo-elliptic response." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 949-952 vol.2.

A new class of low-cost and mass-producible filters based on cross-coupled resonators or highly dispersive stubs are introduced. The filters exhibit pseudo-elliptic transfer functions with steep attenuation slopes. They are based on E-plane and ridged waveguide technology and are well suited for millimeter-wave application. Metallic inserts are used not only to determine the filter response but also to separate the folded filter sections and to control the coupling coefficient of the cross-coupled resonators. The designed filters and diplexers are highly compact and much shorter than traditional E-plane filters. At the same time, the ease of manufacturing, known from typical E-plane filters, is preserved.

Abstracts

Compact ridged waveguide filters with improved stopband performance

G. Goussetis and D. Budimir. "Compact ridged waveguide filters with improved stopband performance." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 953-956 vol.2.

A novel ridged waveguide bandpass filter configuration is proposed. The proposed filter has comparable size to standard E-plane filters while having suppressed spurious resonance. Compactness is achieved by taking advantage of the properties of slow waves in half wavelength resonators, while spurious behaviour suppression is achieved by means of an integrated lowpass structure. Periodicity is readily imposed by cascading ridge waveguides with rectangular waveguides. The structure is simple and compatible with E-plane technology. Numerical and experimental results are presented to validate the argument.

Abstracts

Minimization of passive circuits losses realized on low resistivity silicon using micro-machining techniques and thick polymer layers

F. Bouchriha, K. Grenier, D. Dubuc, P. Pons, R. Plana and J. Graffeuil. "Minimization of passive circuits losses realized on low resistivity silicon using micro-machining techniques and thick polymer layers." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 959-962 vol.2.

In this paper, a novel technological solution using both silicon surface micromachining and thick polymer layer deposition on low resistivity silicon substrate (20 /spl Omega//cm) has been investigated. The proposed structure achieves both a low attenuation level and a high quality factor. The silicon etching into the coplanar slots leads indeed to a noticeable decrease of the losses, whereas filling the gaps with the polymer BCB avoids a degradation of the effective permittivity.

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Low RF loss and noise of transmission lines on Si substrates using an improved ion implantation process

K.T. Chan, A. Chin, S.P. McAlister, C.Y. Chang, C. Tseng, V. Liang, J.K. Chen, S.C. Chien, D.S. Duh and W.J. Lin. "Low RF loss and noise of transmission lines on Si substrates using an improved ion implantation process." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 963-966 vol.2.

Very low power loss /spl les/0.6 dB at 110 GHz and noise of <0.25 dB at 18 GHz have been measured on transmission lines fabricated on Si substrates and implanted with protons. In contrast, a much worse power loss of 5 dB and higher noise of 2.5 dB were measured without implantation. This large improvement arises from the high resistivity by proton implantation, which was also done after forming the transmission lines and at a reduced energy of /spl sim/ 4 MeV for easier process integration into current VLSI technology.

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High-performance and area-efficient stacked transformers for RF CMOS integrated circuits

N. Fong, J.-O. Plouchart, N. Zamdmer, Jonghae Kim, K. Jenkins, C. Plett and G. Tarr. "High-performance and area-efficient stacked transformers for RF CMOS integrated circuits." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 967-970 vol.2.

A solenoid layout technique is used to increase the magnetic coupling between the coils in multi-level spiral transformers. Using this technique, transformers with the following performance are measured: (a) magnetic coupling with coupling factor k>0.95 and insertion loss s/sub 21/ better than 0.8 dB at 5 GHz; (b) self-resonant frequency f/sub res/>15 GHz with peak Q>10. The effect of high and low resistive substrates is discussed with measured results. Using this structure, the size of the transformer can be reduced from 50 to 400%.

Abstracts

Experimental analysis of reduced-sized coplanar waveguide transmission lines

G.E. Ponchak. "Experimental analysis of reduced-sized coplanar waveguide transmission lines." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 971-974 vol.2.

An experimental investigation of the use of capacitive loading of coplanar waveguides to reduce their line length, and thus, the size of monolithic microwave integrated circuits, is presented. The reduced sized coplanar waveguides are compared to unloaded transmission lines and to lumped element transmission line segments. The phase bandwidth, defined by 2 percent error in S/sub 21/, and the return loss bandwidth, defined by a return loss greater than 15 dB, of coplanar waveguides reduced from 0 to 90 percent are compared, and the insertion loss as a function of the size reduction is presented.

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Locally conformal cell for two-dimensional TLM

P.P.M. So and W.J.R. Hoefer. "Locally conformal cell for two-dimensional TLM." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 977-980 vol.2.

We propose a locally conformal TLM cell that requires no change in the scattering algorithm and eliminates the time step constraint imposed by graded meshing. It also circumvents the need for time and space interpolations required by multi- and sub-gridding schemes. Simulation results confirm the accuracy and versatility of the approach.

Abstracts

Finite element time domain method using Laguerre polynomials

Young-Seek Chung, T.K. Sarkar, S. Llorento-Romano and M. Salarzar-Palma. "Finite element time domain method using Laguerre polynomials." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 981-984 vol.2.

In this work, we present a numerical method to obtain an unconditionally stable solution for the finite element method in time domain (FETD) for two-dimensional TE/sub z/ case. Our method does not utilize the customary marching-on in time solution method often used to solve a hyperbolic partial differential equation. Instead we solve the time domain wave equation by expressing the transient behaviors in terms of weighted Laguerre polynomials. By using these causal orthonormal basis functions for the temporal variation, the three derivatives can be handled analytically. To verify our method, we apply it to two-dimensional parallel plate waveguide and compare the result to that of the conventional FETD using the Newmark-Beta method.

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Finite-volume time-domain (FVTD) method and its application to the analysis of hemispherical dielectric-resonator antennas

D. Baumann, C. Fumeaux, P. Leuchtmann and R. Vahldieck. "Finite-volume time-domain (FVTD) method and its application to the analysis of hemispherical dielectric-resonator antennas." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 985-988 vol.2.

In this paper, the finite-volume time-domain (FVTD) method is refined and applied to analyze a probe-fed hemispherical dielectric resonator antenna (DRA). To improve the applicability of the FVTD method to microwave problems, a new scheme is introduced taking advantage of the method's inherent flux separation into incoming and outgoing waves. A 3D simulation is performed using an unstructured tetrahedral mesh permitting precise modeling of curved surfaces and fine structures. The obtained results are compared to those from other methods.

Abstracts

Electromagnetic-wave effects on closely packed microwave transistors using a fast time-domain simulation approach

Y.A. Hussein, S.M. El-Ghazaly and S.M. Goodnick. "Electromagnetic-wave effects on closely packed microwave transistors using a fast time-domain simulation approach." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 989-992 vol.2.

We present a new time-domain modeling technique to study the effect of electromagnetic-wave propagation on the performance of closely packed microwave transistors. The proposed approach solves the active device model that combines the transport physics, and Maxwell's equations on nonuniform self-adaptive grids, obtained by applying Daubechies wavelet transforms followed by thresholding. This allows forming fine and coarse grids in locations where variable solutions change rapidly and slowly, respectively. The developed technique is applied to full-wave simulate two closely packed millimeterwave transistors. Different numerical examples are presented; showing that accurate modeling of high-frequency devices should incorporate the effect of EM-wave propagation within and around the device. To our knowledge, this is the first time in literature to implement and report a wavelet-based technique for a fast full-wave physical simulation of more than one millimeter-wave transistor simultaneously.

Abstracts

Using of transmission line matrix method and mode matching approach for simulation of MMICs

D. Lukashevich, B. Broido and P. Russer. "Using of transmission line matrix method and mode matching approach for simulation of MMICs." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 993-996 vol.2.

The exact modelling of the properties of transmission line structures in microwave monolithic integrated circuits (MMICs) requires full-wave modelling of the electromagnetic field in the semiconductor and insulator regions as well as within the conductors. The transverse dimensions of the transmission structures at the frequency above 10 GHz are comparable to the skin depth. Therefore the accurate simulation of the electromagnetic field inside the conductors is necessary. In this paper we combine the transmission line matrix (TLM) and mode matching (MM) methods for full-wave analysis of transmission lines and discontinuities in MMICs.

Abstracts

Passive macromodels of microwave subnetworks characterized by measured/simulated data

D. Saraswat, R. Achar and M. Nakhla. "Passive macromodels of microwave subnetworks characterized by measured/simulated data." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 999-1002 vol.2.

Passive macromodeling of microwave components, high-speed packages and interconnect modules characterized by simulated/measured data has generated immense interest during the recent years. This paper presents an efficient algorithm for addressing the passivity of macromodels from simulated/measured data, based on a linear formulation. Also one of the critical issues involved in such macromodels is the passivity check and compensation. For this purpose, a new theorem and an efficient algorithm are presented. Examples are presented to demonstrate the validity and efficiency of the proposed algorithm.

Abstracts

EM-based surrogate modeling and design exploiting implicit, frequency and output space mappings

J.W. Bandler, Qingsha Cheng, D.H. Gebre-Mariam, K. Madsen, F. Pedersen and J. Sondergaard. "EM-based surrogate modeling and design exploiting implicit, frequency and output space mappings." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1003-1006 vol.2.

We present a significant improvement to the novel implicit space mapping (ISM) concept for EM-based microwave modeling and design. ISM calibrates a suitable coarse (surrogate) model against a fine model (full-wave EM simulation) by relaxing certain coarse model preassigned parameters. Based on an explanation of residual response misalignment, our new approach further fine-tunes the surrogate by exploiting an "output space" mapping (OSM). An accurate design of an HTS filter, easily implemented in Agilent ADS, emerges after only four EM simulations using ISM and OSM with sparse frequency sweeps. For the first time also, frequency space mapping is implemented in an ISM framework.

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Abstracts

A new scalable model for spiral inductors on lossy silicon substrate

D. Melendy and A. Weisshaar. "A new scalable model for spiral inductors on lossy silicon substrate." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1007-1010 vol.2.

A new scalable, predictive model for spiral inductors on lossy silicon substrates for radio-frequency integrated circuits (RFICs) is presented. The model is based on an enhanced Partial Element Equivalent Circuit (PEEC) approach. Eddy-current losses in the substrate are efficiently modeled using a complex image approach combined with available closed-form equations for partial inductance. The model further includes the conductor skin and proximity effects through discretization of the spiral segments. The resulting enhanced PEEC model is used to predict the performance of a typical 3.5 turn, 2.0 nH octagonal spiral inductor fabricated in a heavily-doped BiCMOS process. Comparison with measurements over a 100 MHz to 10 GHz frequency range demonstrates the excellent accuracy of the new modeling approach.

Abstracts

Wide-band distributed modeling of spiral inductors in RFICs

A. Watson, P. Francis, Kyuwoon Hwang and A. Weisshaar. "Wide-band distributed modeling of spiral inductors in RFICs." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1011-1014 vol.2.

A new wide-band model for planar spiral inductors on silicon substrate consisting of ideal lumped elements is presented. The equivalent circuit model captures the distributed behavior of the spiral for electrically large devices in particular with low self-resonant frequency. A fast, automated extraction procedure is developed for determining the circuit element values from two-port S-parameter data. The new modeling methodology is applied to extract a distributed model from the measured S-parameters of an electrically large 1.5-nH spiral. The extracted model shows excellent agreement with the measured data over a frequency range of 0.1 to 10 GHz.

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A novel modified-T equivalent circuit for modeling LTCC embedded inductors with a large bandwidth (2003 Vol. II [MWSYM])

T.S. Horng, J.M. Wu, L.Q. Yang and S.T. Fang. "A novel modified-T equivalent circuit for modeling LTCC embedded inductors with a large bandwidth (2003 Vol. II [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1015-1018 vol.2.

In this paper, a modified-T equivalent-circuit model for three-dimensional (3-D) spiral inductors embedded in a multilayer low-temperature cofired ceramic (LTCC) is first presented to achieve a remarkably large bandwidth. This model combines a core circuit, a five-element modified-T model, to include the effects of a transmission line with electrical length up to /spl pi/, and several resonators to consider the effects due to coil coupling and finite ground plane. It is emphasized that most of the elements in this equivalent-circuit model can be extracted directly from the measured S parameters. Compared to the conventional /spl Pi/-section model that is valid only up to the first self resonant frequency (SRF), this model includes more higher-order SRFs and results in a several times larger bandwidth.

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Determining the HBT base-collector elements directly from S-parameter data

E. Wasige. "Determining the HBT base-collector elements directly from S-parameter data." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1019-1022 vol.2.

This paper gives suitable analytic equations for direct extraction of the heterojunction bipolar transistor (HBT) series base resistance R/sub bi/ and base-collector capacitances (C/sub bci/ and C/sub bcx/), elements which determine the transistor maximum oscillation frequency f/sub max/. New expressions, one for R/sub bi/, and the other relating R/sub bi/ and C/sub bcx/ in terms of measured parameters have been developed. On this basis, direct extraction of the inner C/sub bci/ and outer C/sub bcx/ base-collector capacitances is possible, independently and robustly. All expressions are valid at each measured frequency, a useful feature in the control of extraction quality.

Abstracts

A new RF model for the accumulation-mode MOS varactor

Seong-Sik Song and Hyungcheol Shin. "A new RF model for the accumulation-mode MOS varactor." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1023-1026 vol.2.

This paper presents a new RF model of an accumulation-mode MOS varactor, which is composed of the physically meaningful parameters. This model can describe the characteristics of the device with simple equations valid in all operating regions. For easy integration into common circuit simulators, a single topology with the lumped elements derived from the device structure has been proposed. With directly extracted parameters based on the Z-parameter analysis on the equivalent circuit, excellent agreements between measured data and simulation results were obtained without any optimization steps in the frequency range up to 18 GHz, as well as the overall bias range.

Abstracts

A 100-GHz distributed amplifier in chip-size package

S. Masuda, K. Kobayashi, H. Kira, M. Kitajima, M. Takesue, Y. Kamiya and K. Joshin. "A 100-GHz distributed amplifier in chip-size package." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1029-1032 vol.2.

We developed a new millimeter-wave plastic chip size package (CSP) to operate up to 100 GHz by using a thin-film substrate. It has a flip-chip distributed amplifier with inverted microstrip lines that has a bandwidth of beyond 110 GHz. The CSP amplifier achieved a gain of 7.8 dB and a 3 dB bandwidth of 97 GHz, and operated up to 100 GHz as an amplifier. To our knowledge, this value is the highest operating frequency reported to date for a distributed amplifier sealed in a plastic CSP.

Abstracts

Wafer level integration of a 24 GHz and 34 GHz differential SiGe-MMIC oscillator with a loop antenna on a BCB membrane

P. Abele, J. Konle, D. Behammer, E. Sonmez, K.-B. Schad, A. Trasser and H. Schumacher. "Wafer level integration of a 24 GHz and 34 GHz differential SiGe-MMIC oscillator with a loop antenna on a BCB membrane." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1033-1036 vol.2.

The wafer level integration of a 24 GHz and 34 GHz SiGe-MMIC oscillator with buffer amplifier and a loop antenna on a BCB (Benzo Cyclo Butene) membrane is demonstrated. The phase noise of the non-integrated 24 GHz and 34 GHz oscillator is -104 dBc/Hz and -88 dBc/Hz at an offset frequency of 1 MHz and the output power was measured to be +1 dBm and -3 dBm, respectively. The radiated power of both integrated systems is determined based on measurements with a horn antenna and discussed.

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Single-package 5GHz WLAN RF module with embedded patch antenna and 20dBm power amplifier

J. Ryckaert, S. Brebels, B. Come, W. Diels, D. Hauspie, S. Stoukatch, K. Vaesen, W. De Raedt and S. Donnay. "Single-package 5GHz WLAN RF module with embedded patch antenna and 20dBm power amplifier." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1037-1040 vol.2.

The demanding requirements of emerging telecom standards compel designers to conceive transceivers that integrate building blocks designed in different technologies. Such heterogeneous systems, together with the need for miniaturization, require packaging and integration techniques more involved than all current reported work. By combining a thin-film technology on a glass substrate (MCM-D) with laminates for the ball grid array (BGA) package, we can integrate, in a single package, a 5 GHz WLAN RF module. The package includes a BiCMOS IC, a GaAs power amplifier (PA) with 20 dBm output compression, a GaAs TX/RX switch with 1 dB insertion loss, high-quality integrated RF filters and a patch antenna with more than 80% efficiency.

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Novel LTCC-/BGA-modules for highly integrated millimeter-wave transceivers (2003 Vol. II [MWSYM])

J. Heyen, T.V. Kerssenbrock, A. Chernyakov, P. Heide and A.F. Jacob. "Novel LTCC-/BGA-modules for highly integrated millimeter-wave transceivers (2003 Vol. II [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1041-1044 vol.2.

This paper demonstrates advanced packaging concepts for highly integrated encapsulated millimeter-wave modules. Millimeter-wave monolithic integrated circuits (MIMIC) are flip-chip mounted on top of a LTCC package (low temperature co-fired ceramic). This type of "smart package" can integrate all kinds of passive functions as well as compact interconnections between MIMIC and vertical feedthroughs. The bottom side of this package is connected via a standard ball grid array (BGA) to a low-cost laminate PCB serving as motherboard for multiple LTCC modules. Fabricated LTCC test structures and LTCC test packages provide good performance up to about 30 GHz.

Abstracts

Small-size 72-GHz-band transceiver modules utilizing IF self-heterodyne transmission technology

K. Maruhashi, K. Ohata, H. Shimawaki, Y. Shoji and H. Ogawa. "Small-size 72-GHz-band transceiver modules utilizing IF self-heterodyne transmission technology." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1045-1048 vol.2.

A 72 GHz-band transceiver is developed for millimeter-wave short-range wireless access systems. To eliminate an oscillator for the receiver and to avoid the degradation of the signal quality due to the phase noise of a transmitter oscillator, we employ a novel IF self-heterodyne transmission scheme. For multi-chip modules (MCMs), coplanar devices are mounted in multi-layer LTCC packages. At an IF frequency of 4.4 GHz and an RF frequency of 72.4 GHz, an output power of 6.6 dBm at 1 dB gain compression point is obtained for the transmitter. For two-tone RF signals of 71.8 and 72.4 GHz, the receiver provides an IF output power of -50 dBm at a total input power of -40 dBm. The total size of the transmitter, receiver and DC power supply/control boards is 89 mm/spl times/83 mm.

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Cognitive INFOSEC

J. Mitola, III. "Cognitive INFOSEC." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1051-1054 vol.2.

This paper characterizes technology challenges of Cognitive Information Security (INFOSEC). This far-term vision re-invents software radio as a "trusted" cognitive agent for the consumer or the military. Cognitive radio (CR) is software radio employing cognition technology to enhance information services for the user. Cognitive INFOSEC (CI) employs the cognition technology to achieve a high level of trust. Hardware needs for CI are substantially more demanding than for software radio. CI hardware includes non-RF sensors such as binaural audio, stereo video, biometrics and accelerometers. CR also needs multiband, multimode RF capabilities. This leads to interesting new microwave hardware design tradeoffs. Cognition sensors may share system on chip (SoC) subsystems with INFOSEC hardware, location-awareness sensors, and RF hardware in wearable formats. This paper provides far-term concepts of operations, suggesting new SoC tradeoffs and related technology challenges.

Abstracts

Sampling architectures [radio receivers]

E.M. Biebl. "Sampling architectures [radio receivers]." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1055-1058 vol.2.

In modern communication, sensor and signal processing systems digitization methods are gaining importance. They allow for building software configurable systems and provide better stability and reproducibility. The quest for new architectures in radio frequency front-ends is a clear consequence of the ever increasing number of different standards and the resulting task to provide a platform which covers as many standards as possible. The first part of this paper reviews multiband capable receiver architectures. These are limited to a few GHz yet. The second part proposes a novel architecture, which is capable of direct sampling of band-limited signals at frequencies beyond 10 GHz by means of an under-sampling technique.

Abstracts

Software defined radio receiver based on Six-Port technology

Xinyu Xu, Ke Wu and R.G. Bosisio. "Software defined radio receiver based on Six-Port technology." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1059-1062 vol.2.

Software Defined Radio (SDR) has been identified as one potential method to enhance the flexibility of wireless communication systems. In the past, the operating speed limitation of analog digital converter (ADC) and processing ability limitation of re-configurable chips for signal processing have slowed down the development of SDR for useful commercial application. With recent advances in the semi-conductor processing technology and the development of re-configurable devices such as digital signal processors (DSP) and field programmable gate arrays (FPGA), SDR has now become practical for use in system solutions including wireless LANs, audio and television broadcasting and interoperability between different radio services. In this paper, we describe the application of SDR based on Six-Port technology to provide multi-channel, multi-mode wireless digital receiver. The combination of SDR and Six-Port technology provides a great flexibility in system configuration, a significant reduction in system development cost, and also a high potential for software reuse.

Abstracts

An 8-GHz continuous-time /spl Sigma/-/spl Delta/ analog-digital converter in an InP-based DHBT technology (2003 Vol. II [MWSYM])

S. Krishnan, D. Scott, M. Urteaga, Z. Griffith, Yun Wei, M. Dahlstrom, N. Parthasarathy and M. Rodwell. "An 8-GHz continuous-time /spl Sigma/-/spl Delta/ analog-digital converter in an InP-based DHBT technology (2003 Vol. II [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1063-1065 vol.2.

An 8-GHz clock-rate second-order continuous-time /spl Sigma/-/spl Delta/ analog-digital converter achieves 57.4 dB, 51.7 dB and 40.2 dB SNR at signal sampling rates of 125 Ms/s, 250 Ms/s and 500 Ms/s, respectively. The ADC also achieves > 75 dBc of intermodulation suppression. The IC occupies a die area of 1.45mm/sup 2/, contains 76 transistors, and is fabricated in an InP-based HBT technology.

Abstracts

86 GHz static and 110 GHz dynamic frequency dividers in SiGe bipolar technology

H. Knapp, M. Wurzer, T.F. Meister, K. Aufinger, J. Bock, S. Boguth and H. Schafer. "86 GHz static and 110 GHz dynamic frequency dividers in SiGe bipolar technology." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1067-1070 vol.2.

We present static and dynamic frequency dividers manufactured in a 200 GHz f/sub T/ SiGe bipolar technology. The static divider has a divide ratio of 32 and operates up to 86.2 GHz. The dynamic divider is based on regenerative frequency division and has a divide ratio of two. It operates up to 110 GHz (limited by the measurement equipment). The power consumption of the static and dynamic frequency dividers is 900 mW and 310 mW, respectively.

Abstracts

Bandstop filter design using evanescent mode resonators

R.V. Snyder, Sanghoon Shin and K. Keck. "Bandstop filter design using evanescent mode resonators." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1073-1076 vol.2.

A new bandstop filter design is proposed using evanescent mode cavities consisting of short-circuited lengths of cylindrical waveguide operated below cutoff frequency. The proposed bandstop filter shows a very high Q bandstop response at lower frequencies, unavailable with a lumped element approach, and with smaller physical size than can be achieved with coaxial structures.

Abstracts

A new compact microstrip stacked-SIR bandpass filter with transmission zeros

E. Shih and Jen-Tsai Kuo. "A new compact microstrip stacked-SIR bandpass filter with transmission zeros." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1077-1080 vol.2.

This paper presents a new class of bandpass filters based on a stacked-SIR (stepped impedance resonators) configuration. By stacking multi-coupled SIR's, the longitudinal dimension of the resulting filter is not increased despite the increase of the filter order, so that the area of the whole filter is very compact. The use of SIR's assures that the filters have a wide upper stopband. In addition, with proper tapped input and output couplings, this new bandpass filter structure is capable of generating at least two transmission zeros. Of filters of orders 2 and 4, simulated responses show three transmission zeros in the stopband. Two third-order filters with transmission zeros purposely located at twice the center passband frequency (2f/sub 0/) are fabricated and measured to demonstrate the design.

Abstracts

Novel band-pass filter utilizing S-shaped slot line resonators

A. Deleniv, M. Gashinova, A. Eriksson and A. Khalabuhov. "Novel band-pass filter utilizing S-shaped slot line resonators." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1081-1084 vol.2.

A novel band-pass filter is designed and verified experimentally. The filter consists of five S-shaped slot-line resonators, which are aligned to form an array of coupled slots. The simulated filter pass-band is centered at 1.77 GHz with a 0.5% bandwidth and, with the exception of small frequency shift (20 MHz), shows rather good agreement with measured data. A high-temperature superconducting (YBCO) film on a 1 mm thick LaAlO/sub 3/ substrate is used to achieve low insertion loss (-0.6 dB at 77 K). The filter design is based on a full-wave model of coupled slots, which enables the possibility of quick and accurate circuit simulations using the duality principle.

Abstracts

An artificial dielectric material of huge permittivity with novel anisotropy and its application to a microwave BPF

I. Awai, H. Kubo, T. Iribe, D. Wakamiya and A. Sanada. "An artificial dielectric material of huge permittivity with novel anisotropy and its application to a microwave BPF." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1085-1088 vol.2.

Artificial dielectrics of very high equivalent permittivity are designed and fabricated by use of a patterned PCB printed circuit board. Rectangular metal patterns are etched out to attain as big a capacitance with each other as possible but as small a current as possible, which is important in order to realize large permittivity and small loss, respectively. Artificial dielectric disk resonators are created to excite the TE/sub 01/spl delta// mode selectively, aligning the rectangular metal patterns along the direction of the mode electric field lines. Thus, a miniaturized BPF with superior spurious characteristics is fabricated using three disk resonators.

Abstracts

SMD-type 42 GHz waveguide filter

T.J. Mueller. "SMD-type 42 GHz waveguide filter." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1089-1092 vol.2.

A novel concept for the transition between a microstrip line and a rectangular waveguide is presented and applied to a 42 GHz waveguide filter. Measurement results are presented which are in very good agreement to simulations. The waveguide is formed by soldering a U-shaped metallic filter part onto a RF-PCB (printed circuit board) using the board metalization as the last remaining waveguide wall. This technology is potentially enabling a fully automated SMD-assembly (surface mounted device) of waveguide components integrated into planar circuits.

Abstracts

An original topology of dual-band filter with transmission zeros

C. Quendo, E. Rius and C. Person. "An original topology of dual-band filter with transmission zeros." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1093-1096 vol.2.

This paper reports on a new topology of high-performance dual-band filters. This topology is derived from the Dual Behavior Resonator (DBR) filter. The resulting resonator is directly dual-band. It allows the control of two bandpasses separated by a transmission zero to ensure a high rejection level between them. Moreover, two other transmission zeros are located on either side of the two bandpasses. The possibilities offered by this structure are discussed and measurements are presented to validate the method.

Abstracts

Miniaturized synthetic rectangular waveguide

Hsien-Shun Wu and C.-K.C. Tzuang. "Miniaturized synthetic rectangular waveguide." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1099-1102 vol.2.

An artificially engineered, dielectric-filled rectangular waveguide is presented. Such a synthetic waveguide, made by a conventional printed-circuit board (PCB) process, consists of two-dimensional periodical arrays at the top and bottom surfaces and two metallic sidewalls. A synthetic waveguide of cross-section 8.0 mm by 0.609 mm, relative permittivity (/spl epsiv//sub r/) 3.38, shows a cutoff frequency at 4 GHz with normalized propagation constant asymptotically approaching 4.5 at frequencies much greater than the cutoff frequency. Rigorous measurements show that the extracted dispersion curves agree well with theoretical data, demonstrating the feasibility of size reduction of the synthetic rectangular waveguide, breaking the well-known limit of 1//spl radic/(/spl epsiv//sub r/) imposed on conventional rectangular waveguides. Measured data show that the slow-wave factor is 185% higher and cutoff frequency 61.9% lower when comparing the synthetic waveguide with a conventional waveguide of identical dimensions and material constant.

Abstracts

Substrate integrated slab waveguide (SISW) for wideband microwave applications

D. Deslandes, M. Bozzi, P. Arcioni and Ke Wu. "Substrate integrated slab waveguide (SISW) for wideband microwave applications." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1103-1106 vol.2.

A new slab waveguide integrated in planar form has been developed for wideband microwave applications. The guide is synthesized on a substrate by adding an air hole into an SIW (substrate integrated waveguide). Using these techniques, a substrate integrated slab waveguide (SISW) covering the X and Ku bands has been designed and measured. Wideband microstrip transitions are presented with S/sub 21/ lower than 0.75 dB and S/sub 11/ below -15 dB over the entire band. Propagation constant and quality factor measurements are also presented with a Q value of 308.

Abstracts

Investigation into broadband PBG using a butterfly-radial slot (BRS)

Boon Tiong Tan, Jong Jen Yu, Soon Joo Koh and Siou Teck Chew. "Investigation into broadband PBG using a butterfly-radial slot (BRS)." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1107-1110 vol.2.

A new Butterfly-Radial Slot (BRS) structure has been proposed for broadband PBG applications. The BRS assisted PBG demonstrates broad bandwidth of over 70% and rejection of at least 40 dB in the band of interest. A design ratio has been derived and five sets of PBG structures have been designed, simulated and fabricated. Experimental and simulated results are in good agreement.

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Abstracts

Analysis of stripline T-junction with rectangular cut based on eigenmode expansion method and Foster-type equivalent network

T. Takenaka, T. Hiraoka and Hsu Jui-Pang. "Analysis of stripline T-junction with rectangular cut based on eigenmode expansion method and Foster-type equivalent network." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1111-1114 vol.2.

A stripline T-junction with a rectangular cut at the symmetric center is analyzed based on a two dimensional (2-D) planar circuit model, mode theory and the derived Foster-type equivalent network. Wide-band frequency characteristics are calculated with cut-size as a parameter, which leads to a discussion about transmission vs bandwidth characteristics, the realized limit of characteristics and determination of the optimum cut.

Abstracts

New dielectric-covered waveguide-to-microstrip transitions for Ka-band transceivers

Kang Wook Kim, Chae-Ho Na and Dong-Sik Woo. "New dielectric-covered waveguide-to-microstrip transitions for Ka-band transceivers." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1115-1118 vol.2.

New dielectric-covered waveguide-to-microstrip transitions at Ka-band have been developed. These transitions are probe-type, but the dielectric material completely covers the waveguide opening in order to provide a moisture barrier and robustness. These transitions are also designed to be less sensitive to fabrication tolerances. The transition structures have been comprehensively analyzed using a 3-D EM software. The resonance phenomena caused by the waveguide-wall discontinuity have been removed by placing vias around the waveguide aperture. These transitions have also been fabricated and measured. The measured insertion loss of the transition is less than 0.4 dB and the return loss is about 15 dB over the entire Ka-band.

Abstracts

An adjoint variable method for time domain TLM with fixed structured grids

M.H. Bakr and N.K. Nikolova. "An adjoint variable method for time domain TLM with fixed structured grids." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1121-1124 vol.2.

We present a breakthrough algorithm for efficient estimation of objective function sensitivities for time-domain TLM with nondispersive boundaries. The original electromagnetic structure is simulated using TLM. An adjoint TLM simulation that runs backward in time is derived and solved. The sensitivities of the objective function with respect to all the designable parameters are estimated using only the original and adjoint simulations. Our approach is illustrated through estimating the sensitivities of an objective function with respect to the dimensions of a waveguide discontinuity.

Abstracts

Transmission line matrix method reduced order modeling

D. Lukashevich, A. Cangellaris and P. Russer. "Transmission line matrix method reduced order modeling." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1125-1128 vol.2.

The finite-difference time-domain (FDTD) method and the transmission line matrix (TLM) method allow the formulation of state-equation representations of the discretized electromagnetic field. These representations usually involve very large numbers of state variables. Reduced order modeling (ROM) of the investigated structure may yield considerable reduction of the computational effort and can be used to generate compact models of the electromagnetic system. While complexity reduction approaches based on moment matching techniques have been intensively studied in the case of FDTD, they have not yet been considered for TLM. In this paper, we apply Krylov subspace methods to TLM using the basic Arnoldi and non-symmetric Lanczos algorithms. It is shown that the inherent unitarity property of the TLM operator nevertheless implies an essential difference in comparison to former implementations for FDTD or circuit analysis. Simulation results for a rectangular cavity resonator using both TLM with and without ROM and a study of the convergence of the eigenvalues are presented here.

Abstracts

Performance of nonlinear dispersive APML in high-order FDTD schemes

M. Fujii, M.M. Tentzeris and P. Russer. "Performance of nonlinear dispersive APML in high-order FDTD schemes." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1129-1132 vol.2.

A consistent reformulation of the anisotropic perfectly matched layer (APML) absorbing boundary has been presented for general nonlinear dispersive media. The APML is then adopted in the high-order finite-difference-based schemes, and improved absorption has been achieved.

Abstracts

Efficient computation of thin-layer structures with the unconditionally stable ADI-FDTD method

Chenghao Yuan and Zhizhang Chen. "Efficient computation of thin-layer structures with the unconditionally stable ADI-FDTD method." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1133-1136 vol.2.

Efficient computation is a key consideration in computational electromagnetics, especially for complex VLSI structures that contain thin dielectric layers or electrically small objects. Due to the CFL stability condition, it is very inefficient to apply the conventional FDTD method to thin-layer structures because fine mesh (and therefore small time step) is required. In this paper, the unconditionally stable ADI-FDTD method is employed to circumvent the difficulty. With applications in computing effective dielectric constant (/spl epsiv//sub eff/) and characteristic impedance (Z/sub 0/) of cylindrical microstrip lines, it is shown that the computation time with the ADI-FDTD method is much shorter than that of the conventional FDTD method without sacrificing modeling accuracy.

Abstracts

Local stereoscopic field singularity models for FDTD analysis of guided wave problems

M. Celuch-Marcysiak. "Local stereoscopic field singularity models for FDTD analysis of guided wave problems." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1137-1140 vol.2.

New local FDTD field singularity models have been proposed. In an extension to previous local models, not only radial field variations but also the geometry of field lines and the curvature of Ampere/Faraday integration surfaces are taken into account. The method is shown to provide the same order of accuracy as previously published specialised higher-order algorithms. Yet, contrary to those methods, the gain in accuracy is achieved practically without any increase of the computing time of FDTD simulations.

Abstracts

FDTD modeling of transient microwave signals in dispersive and lossy bi-isotropic media

A. Grande, I. Barba, A.C.L. Cabeceira, J. Represa, P.P.M. So and W.J.R. Hoefer. "FDTD modeling of transient microwave signals in dispersive and lossy bi-isotropic media." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1141-1144 vol.2.

We present a novel Finite Difference Time Domain (FDTD) model of transient wave propagation in general dispersive bi-isotropic media with losses. The special properties of these materials may lead to new applications in microwave and millimeter-wave technology. While their frequency domain properties have been well described in the literature, their time domain behavior has only been modeled so far for special sub-classes and monochromatic time dependence. We have validated our method by first computing time-harmonic wave propagation through a bi-isotropic medium and comparing it with theoretical results. Agreement is typically better than one percent. Then we have computed transient field propagation in a general dispersive bi-isotropic medium.

Abstracts

Via arrays for grounding in multilayer packaging - frequency limits and design rules

T. Tischler, M. Rudolph, A. Kilk and W. Heinrich. "Via arrays for grounding in multilayer packaging - frequency limits and design rules." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1147-1150 vol.2.

Many packaging concepts use via arrays for grounding and to eliminate parasitic modes. Such arrays represent periodic structures and change their behavior beyond a certain frequency. Proper design of via geometry and pitch is necessary. For this purpose, electromagnetic simulation data and an equivalent circuit model are presented.

Abstracts

Multi-layer thin-film MCM-D for the realization of Q- and V-band functions

G. Carchon, S. Brebels, O. Vendier and W. De Raedt. "Multi-layer thin-film MCM-D for the realization of Q- and V-band functions." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1151-1154 vol.2.

We report on the mm-wave performance of a multi-layer thin-film MCM-D technology with integrated passive components. The standard 50 /spl Omega/ CPW line exhibits a loss of -0.2 dB/mm at 60 GHz. A single CPW bridge (bend) has a return loss superior to -32 dB (-27 dB) up to 50 GHz with an insertion loss of -0.04 dB (-0.06 dB) at 50 GHz. A 30 GHz bandpass filter has achieved an insertion loss of -2.5dB over a 8% bandwidth with a return loss of -20 dB. A Q-band Wilkinson power divider has a return loss better than -15 dB from 31-48 GHz, isolation below -20 dB with an insertion loss of -3.5 dB. A quadrature coupler has a return loss better than -15 dB up to 60 GHz with an amplitude balance of 0.5 dB over the 38-60 GHz band, isolation of 20 dB, phase balance of (90+/-2)/spl deg/ and insertion loss of -4 dB.

Abstracts

Liquid crystal polymer-based integrated passive development for RF applications

M.F. Davis, S.-W. Yoon, S. Pinel, K. Lim and J. Laskar. "Liquid crystal polymer-based integrated passive development for RF applications." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1155-1158 vol.2.

A Liquid Crystal Polymer (LCP) based multilayer packaging process is presented for RF/microwave applications. LCP is gaining increasing interest as a choice technology in the packaging community due to its superior thermal and electrical properties including low loss, low dielectric constant and low CTE characteristics. For the first time, we present a thorough study of the design, model, and measurement of integrated passives using LCP. A coplanar waveguide transmission line test structure demonstrates an insertion loss of 0.35 dB at 23 GHz and a return loss better than 15 dB to 30 GHz. Quality factors (Q) in excess of 70 and a self resonance frequency (SRF) to 29 GHz have been achieved. A bandpass filter implementation is also demonstrated to realize a c band module. Advantages of passive integration using built up LCPs as opposed to multilayer organics are discussed.

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Surface mountable liquid crystal polymer package with vertical via transition compensating wire inductance up to V-band

H. Kanno, H. Ogura and K. Takahashi. "Surface mountable liquid crystal polymer package with vertical via transition compensating wire inductance up to V-band." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1159-1162 vol.2.

A high performance V-band surface mountable packaging structure has been proposed and demonstrated. We enabled the use of liquid crystal polymer (LCP) as a low-cost SMT millimeter-wave package. This package employed the wire bonding technique as the RF interconnect, and the vertical via as the vertical signal transition, despite it being meant for application up to V-band. The optimized vertical transition structure consisting of the vertical via and high-impedance transmission lines (TRLs) was designed to form a low-pass impedance matching network compensating for the parasitic inductance of the bonding wire. The overall packaging structure, including a bond wire, a vertical via and a solder joint, achieved excellent RF characteristics and a low insertion loss of less than 0.6 dB at 65 GHz. The adoption of widely used conventional technology such as a general printed circuit board (PCB) wiring process and a low-cost plastic substrate makes it possible to realize cost-effective millimeter-wave equipment.

Abstracts

An alignment insensitive separable electromagnetic coupler for high speed digital multidrop bus applications (2003 Vol. II [MWSYM])

J.R. Benham, R. Amirtharajah, J. Critchlow, T. Simon and T.F. Knight, Jr.. "An alignment insensitive separable electromagnetic coupler for high speed digital multidrop bus applications (2003 Vol. II [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1163-1166 vol.2.

A separable electromagnetic coupler was designed, simulated, fabricated, and tested as part of a prototype eight module multidrop memory bus running at 1.6 Gb/s per differential pair. The coupler consists of broadside coupled traces, one on a rigid motherboard and the other on a flex circuit soldered to a daughter card. The zigzag geometry of the traces reduces variation in coupling coefficient due to horizontal and vertical misalignment of the coupler halves. Simulation and testing indicates that a target capacitive coupling coefficient of 0.34, which has been selected to balance signal transmission level requirements against motherboard impedance discontinuity effects, can be achieved with little variation over +/- 12 mil alignment tolerance.

Abstracts

40 GHz hot-via flip-chip interconnects

F.J. Schmuckle, A. Jentzsch, C. Gassler, P. Marschall, D. Geiger and W. Heinrich. "40 GHz hot-via flip-chip interconnects." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1167-1170 vol.2.

A hot-via flip-chip interconnect for the 40 GHz band is presented. The chip in-out cell includes on-wafer probing pads and is minimized with regard to size. An optimized design shows excellent performance with 10 GHz of bandwidth and -40 dB isolation. This demonstrates the potential of the hot-via approach in mm-wave applications.

Abstracts

A 100-Gbit/s 2:1 multiplexer in InP HEMT technology

T. Suzuki, Y. Nakasha, T. Sakoda, K. Sawada, T. Takahashi, K. Makiyama, T. Hirose and M. Takigawa. "A 100-Gbit/s 2:1 multiplexer in InP HEMT technology." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1173-1176 vol.2.

In this paper, we describe a 100-Gbit/s 2:1 multiplexer (MUX). In order to suppress the degradation of signals and to increase the operation speed, we designed interconnections for the circuit using impedance matching techniques. We fabricated the MUX with 0.13-/spl mu/m InP HEMT technology, which has a cutoff frequency of 175 GHz. By using this design, we succeeded in 100-Gbit/s operation of the MUX and obtained clear eye waveforms. We also developed a V-connector module for the circuit, and achieved 80-Gbit/s operation.

Abstracts

Design and measurement of very high bitrate digital ICs fabricated in InP HBT technology

A. Konczykowska, S. Blayac, F. Jorge, M. Riet, V. Puyal and J. Godin. "Design and measurement of very high bitrate digital ICs fabricated in InP HBT technology." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1177-1180 vol.2.

In this paper we present various design aspects of very high bitrate ICs and in particular electrical simulation and transistor modelling. Circuits are fabricated in a self-aligned InP DHBT technology. High speed selector design is used as an illustration. Circuit measurements show excellent operation at 80 Gb/s (measurement set-up limitation). Circuit operation as a 40 Gb/s NRZ to RZ converter was also characterised.

Abstracts

1.4-W 50-Gbit/s InP HEMT 1:4 demultiplexer IC with a multi-phase clock architecture

K. Sano, K. Murata, H. Kitabayashi, S. Sugitani, H. Sugahara and T. Enoki. "1.4-W 50-Gbit/s InP HEMT 1:4 demultiplexer IC with a multi-phase clock architecture." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1181-1184 vol.2.

High-speed and low-power operation of a 1:4 demultiplexer IC with a multi-phase clock (MPC) architecture is reported. The architecture features four parallel latch lines and a toggle flip-flop (TFF) that generates a four-phase clock. The IC, which was fabricated using InP HEMTs, exhibited 50-Gbit/s error-free operation with a power consumption of 1.42 W. Compared to a conventional tree-type InP HEMT 1:4 demultiplexer IC, the IC with the MPC architecture operates at the same operating speed with only one-quarter the power consumption.

Abstracts

A 40/43-Gb/s CDR/DEMUX and MUX chipset integrated on a MCM-ceramic with 3R-regeneration functionality

M. Reinhold, T. Winkler von Mohrenfels, F. Kunz, E. Rose, A. Eismann, M. Kukiela, C. Wolf, F. Znidarsic, C. Dorschky and G. Roll. "A 40/43-Gb/s CDR/DEMUX and MUX chipset integrated on a MCM-ceramic with 3R-regeneration functionality." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1185-1188 vol.2.

A second-generation 40/43-Gb/s CDR/DEMUX and MUX chipset in a 120-GHz-f/sub T/ SiGe technology is presented. While consuming 3.4-W, the fully-integrated CDR/DEMUX provides an electrical sensitivity of less than 40-mVpp at a BER of 10/sup -12/, the MUX consumes 2.3-W. Additionally, the integration of the chipset as a 3R-regenerator on a ceramic is demonstrated.

Abstracts

40 Gb/s TDM system using InP HBT IC technology

K. Krishnamurthy, R. Vetury, Jian Xu, A. Shou, S. Jaganathan, K. Cheng, J. Chow, D. Mensa, Liyang Zhang, I. Gontijo, S. Vu, C. Winczewski, Yet-zen Liu, R. Pullela and M. Rodwell. "40 Gb/s TDM system using InP HBT IC technology." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1189-1192 vol.2.

A 40 Gb/s time-division-multiplexing (TDM) system transmitter and receiver with 4-channel 10 Gb/s interface is presented. InP DHBT IC technology is used to implement the complete chipset (4:1 multiplexer with VCO /clock multiplication unit, modulator driver, transimpedance amplifier, limiting amplifier and 1:4 demultiplexer with clock and data recovery). A 2.26 km long transmission experiment was performed using the system with 40 Gb/s, 2/sup 31/, NRZ PRBS. The transmit eye exhibits a high extinction ratio >12.5 dB with 1 ps added RMS jitter and 4 dbm output power. Receive sensitivity is better than -7.8 dBm with 0.22 dB dispersion penalty.

Abstracts

Single ended to differential MHEMT transimpedance amplifier with 66 dB-/spl Omega/ differential transimpedance and 50 GHz bandwidth

P. Roux, Y. Baeyens, V. Houtsma, A. Leven, J. Weiner, A. Benz and Y.K. Chen. "Single ended to differential MHEMT transimpedance amplifier with 66 dB-/spl Omega/ differential transimpedance and 50 GHz bandwidth." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1193-1196 vol.2.

In this paper, we demonstrate a single ended to differential transimpedance amplifier (TIA) with 66 dB/spl Omega/ transimpedance gain, a 50 GHz 3-dB bandwidth and up to 700 mVp-p differential output voltage, fabricated in a 6-inch MHEMT process. The state-of-the-art gain-bandwidth product of this amplifier (>3 THz), combined with its small chip size (1.9/spl times/1.1 mm/sup 2/), high sensitivity and low power consumption (<350 mW) demonstrate the capabilities of a lumped MHEMT TIA design to realize a low cost receiver for 40 Gb/s fiber optic communication systems.

Abstracts

Determination by the BI-RME method of entire-domain basis functions for the analysis of microstrip circuits

M. Repossi, P. Arcioni, M. Bozzi, M. Bressan and L. Perregrini. "Determination by the BI-RME method of entire-domain basis functions for the analysis of microstrip circuits." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1199-1202 vol.2.

In this paper, we present a novel approach for the numerical determination of entire-domain basis functions for the analysis of shielded microstrip circuits, composed of arbitrarily shaped metallic patches with an arbitrary number of ports. This approach is based on the solution of Helmholtz and Laplace equations in the metallic areas with proper boundary condition by the Boundary Integral-Resonant Mode Expansion (BI-RME) method. Two examples validate the proposed method.

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Abstracts

Inductance extraction for planar spiral inductor by domain decomposition method for conformal modules

Ji-Xiang Zhao and Jun-Fa Mao. "Inductance extraction for planar spiral inductor by domain decomposition method for conformal modules." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1203-1205 vol.2.

In this paper the domain decomposition method (DDM) for conformal modules is used to get simple analytic expressions for the inductance of planar spiral inductors. DDM is found to be valid for inductors of arbitrary spiral shape, as long as the conductor width is uniform along the spire. Expressions of a rectangular spiral inductor and a circular spiral inductor are obtained by DDM, and the computed results are compared with previously published expressions.

Abstracts

CAD of magic tee with interior stepped post for high performance designs

R. Beyer and U. Rosenberg. "CAD of magic tee with interior stepped post for high performance designs." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1207-1210 vol.2.

A CAD - based on the Finite Element/Mode Matching (FE/MM) method - is introduced for high performance Magic Tee designs that make use of an interior stepped post discontinuity in the branching region. The theoretical considerations of the approach are outlined. For validation a Magic Tee is designed and realized at 12 GHz exhibiting high performance properties over a 14 % bandwidth. Accurate coincidence of computed and measured responses verifies the CAD method.

Abstracts

Signal integrity evaluation of a 10 Gbits/sec optoelectronic interconnect

M. Kahrs, S.P. Levitan, D.M. Chiarulli, T.P. Kurzweg, J.A. Martinez, J. Boles, A.J. Davare, E. Jackson, C. Windish, F. Kiamilev, A. Bhaduri, M. Taufik, Xingle Wang, A.S. Morris III, J. Repke, J. Kruchowski and B.K. Gilbert. "Signal integrity evaluation of a 10 Gbits/sec optoelectronic interconnect." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1211-1214 vol.2.

Signal integrity is of vital importance to high speed interconnects. The 10G system is a 10 Gbit/second optical interconnect with a cross-section bandwidth of over 1T bit/second fabricated on a heterogeneous platform consisting of a multi-chip module, high-speed SiGe and GaAs opto-electronics. We compare lumped and multisegment microstrip models of the transmission lines on the MCM hybrid. We also model the wirebonds using a quasi-static model and a Co-Planar Waveguide (CPW) model for the bump bonds between the GaAs and SiGe substrates. These models are utilized by a behavioral simulator to demonstrate the effects of interconnect components on waveform shape. The results demonstrate convincingly that signal integrity is of critical importance to end-to-end performance measures at high transmission speeds and that incorporating these models is important to behavioral simulation.

Abstracts

Automated design of waveguide filters using Aggressive Space Mapping with a segmentation strategy and hybrid optimization techniques

J.V. Morro, H. Esteban, P. Soto, V.E. Boria, C. Bachiller, S. Cogollos and B. Gimeno. "Automated design of waveguide filters using Aggressive Space Mapping with a segmentation strategy and hybrid optimization techniques." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1215-1218 vol.2.

Microwave waveguide filters are key elements present in many communication systems. In recent times, increasing efforts are being devoted to the development of automated Computed Aided Design (CAD) tools of such devices. In this paper a novel CAD tool which improves the efficiency and robustness of the classical Aggressive Space Mapping (ASM) technique is presented. The use of a new segmentation strategy and the hybridization of various optimization algorithms is proposed. The CAD tool has been successfully validated with the design of a real H plane filter for an LMDS application.

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Hybrid EM-simulator based optimization of microwave and millimeter wave diplexers and multiplexers

G. Tudosie, E. Ofli and R. Vahldieck. "Hybrid EM-simulator based optimization of microwave and millimeter wave diplexers and multiplexers." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1219-1222 vol.2.

A hybrid technique for the optimization of microwave diplexers and multiplexers is introduced. The technique is based on a combination of surrogate models with EM simulators. All characteristic model parameters of the initial electromagnetic structure (including the power divider network), as well as their sensitivities, are extracted from an EM-based S-parameter computation of the full structure and are represented by a coupling matrix. The ideal coupling matrix is extracted from the target transfer function representing the multiplexer characteristics. With just n+1 electromagnetic field simulations per optimization step new possibilities of design and tuning of multiplexers are given.

Abstracts

Efficient CAD of a class of waveguide discontinuities via an hybrid Finite-Element/Mode-Matching and modified transverse-resonance analysis

V. Crino, M. Mongiardo and C. Tomassoni. "Efficient CAD of a class of waveguide discontinuities via an hybrid Finite-Element/Mode-Matching and modified transverse-resonance analysis." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1223-1226 vol.2.

We introduce a new technique for the efficient CAD of a class of waveguide components. The basic idea is to apply the Finite Element Method/Mode-Matching (FEM/MM) technique in a direction different from the propagation one, by using a Modified Transverse Resonance (MTR) approach. In this way it is unnecessary to use a fully three-dimensional numerical electromagnetic simulator and several frequency points are computed by just one analysis.

Abstracts

Octave-bandwidth high-directivity microstrip codirectional couplers

M. Morgan and S. Weinreb. "Octave-bandwidth high-directivity microstrip codirectional couplers." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1227-1230 vol.2.

It is a well-known problem with microstrip backward-wave couplers that directivity suffers due to the differing phase velocities of the even- and odd-mode waves. A fully-planar alternative is the forward-wave, or codirectional-coupler, but these structures have not yet been widely accepted, in part because they are complex and tedious to design. Here, we offer a simple quarter-arc geometry for loosely-coupled microstrip couplers with high-directivity that can be very quickly modeled and prototyped. A design example of a 50-110 GHz 12 dB coupler is shown. Measurements indicate that the coupler has better than 20 dB directivity over the full octave bandwidth.

Abstracts

Optimisation and comparison of three diplexers based on a new slot to microstrip junction

P. Gouget, G. Duchamp and J. Pistre. "Optimisation and comparison of three diplexers based on a new slot to microstrip junction." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1231-1234 vol.2.

In this paper, a microstrip to slotline transition using different quarter wavelength stubs is proposed and defined as inhomogeneous. The bandwidth of each stub is separately studied and the microstrip to slotline junction is considered as a band-pass filter controlled by design rules. The DOE optimisation and comparison of three different diplexers using this type of junction is achieved by using new design rules implemented in a new CAD tool. Finally, simulations and measurements confirm the theoretical approach of this study.

Abstracts

Design and characterization of integrated passive elements on high ohmic silicon

E. Valletta, J. Van Beek, A. Den Dekker, N. Pulsford, H.F.F. Jos, L.C.N. de Vreede, L.K. Nanver and J.N. Burghartz. "Design and characterization of integrated passive elements on high ohmic silicon." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1235-1238 vol.2.

This work presents ultra low-loss coplanar waveguides and Marchand type baluns implemented in an optimized high ohmic silicon substrate technology for RF/microwave applications. The CPW configured baluns operate from 15 to 25 GHz with a minimum insertion loss of 0.8 dB at center frequency.

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Impedance-transforming, coupled-line 180/spl deg/ hybrid rings with frequency independent characteristics

Kian Sen Ang, Yoke Choy Leong and Chee How Lee. "Impedance-transforming, coupled-line 180/spl deg/ hybrid rings with frequency independent characteristics." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1239-1242 vol.2.

A new impedance-transforming, 180/spl deg/ hybrid-ring using coupled-lines is presented. Its amplitude and phase balances as well as isolation between diagonal ports are theoretically perfect and frequency independent. This was achieved without using physical phase inverters on uniplanar structures. Instead, the ideal phase inversion between coupled-line structures is exploited. Simple design equations will be derived and validated by experimental results.

Abstracts

Compact rectangular ring unequal power divider

S. Ray and G. Kumar. "Compact rectangular ring unequal power divider." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1243-1246 vol.2.

Three port two-way rectangular ring power divider is described for tight as well as loose power division. These power dividers give more bandwidth than rectangular unequal power dividers. Multiport Network Model (MNM) using de-segmentation method has been developed to analyze this configuration. Parametric study has been done using commercially available software IE3D. Compact rectangular unequal power divider has been achieved by cutting a thin slit on the rectangular patch. Experimental results show good agreement with theoretical results.

Abstracts

Modeling and measurements of novel high k monolithic transformers

A.H. Aly and B. Elsharawy. "Modeling and measurements of novel high k monolithic transformers." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1247-1250 vol.2.

This paper presents modeling and measurements of a novel monolithic transformer with high coupling k and quality factor Q characteristics. The present transformer utilizes a Z-shaped multilayer metalization to increase k without sacrificing Q. The new transformer has been fabricated using Motorola 0.18 micron copper process. A simple 2-port lumped circuit model is used to model the new design. Experimental data shows a good agreement with predicted data obtained from an HFSS software simulator. An increase of about 10% in mutual coupling and 15% in Q has been achieved. For a modest increase in k of about 5%, Q can be increased by up to 20%.

Abstracts

A broadside-edge-coupled vialess balun

R.K. Settaluri and A. Weisshaar. "A broadside-edge-coupled vialess balun." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1251-1254 vol.2.

This paper presents the design procedure for a new two-level vialess balun configuration. Simple design equations are reported for designing the impedance transforming balun in broadside-edge-coupled configuration. The balun is realized in a six-coupled line two-layer topology with no ground connections and interconnecting vias. The simulated results are validated by full-wave electromagnetic simulation and found to be in good agreement.

Abstracts

Enhanced miniaturized Wilkinson power divider

B. Piernas and M. Hirata. "Enhanced miniaturized Wilkinson power divider." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1255-1258 vol.2.

An enhancement technique for miniaturized Wilkinson power divider is proposed in this paper. The design uses capacitance loading at the input and output ports of the device to achieve size reduction. Broadband characteristics are obtained through the addition of a compensation capacitor between the two output ports. The 11 GHz enhanced Wilkinson power divider is fabricated using a planar microstrip process on GaAs substrate. The occupied area of the device is 0.28 mm /spl times/ 0.76 mm. The measured bandwidth for which the input return loss is better than 15 dB is 60.8 % with an insertion loss on this bandwidth not greater than 0.43 dB and a phase deviation less than 0.12/spl deg/.

Abstracts

Shape memory alloy temperature compensation for resonators

B.F. Keats, R.R. Mansour and R.B. Gorbet. "Shape memory alloy temperature compensation for resonators." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1259-1262 vol.2.

In this paper we present a method for designing temperature compensated cavity resonators using shape memory alloys (SMAs). This paper gives a formula for the temperature drift of resonant frequency, which is valid for any conductor-loaded cavity regardless of its shape. This formula is combined with a field perturbation model and used to derive mechanical design constraints from a temperature drift constraint. Experimental results are given that confirm the feasibility of the proposed design approach.

Abstracts

Broadband EM-wave absorber based on integrated circuit concept

Y. Kotsuka and M. Amano. "Broadband EM-wave absorber based on integrated circuit concept." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1263-1266 vol.2.

A broadband EM-wave absorber based on the structural concept of microwave integrated circuit is proposed. Following the fundamental principle and construction, the method of converting the actual microwave circuit into the integrated circuit type absorber is clarified. The problem of fine control of the resistance on the circuit is resolved by changing the configuration of a unit circuit element in a cross shape. Broadband matching characteristics with an absorption band 1.9 times as broad as a conventional Salisbury screen absorber with resistance and capacitance, and 2.6 times as a typical Salisbury absorber are obtained. The thickness of the present absorber is further reduced by introducing a ferrite material, while keeping almost the same broadband matching frequency.

Abstracts

Tunable ferroelectric filter-phase shifter

A. Deleniv, S. Abadei and S. Gevorgian. "Tunable ferroelectric filter-phase shifter." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1267-1270 vol.2.

Design of a tuneable filter-phase shifter is presented. Thin ferroelectric film varactors are used to provide voltage tuneable phase shift in a silicon coplanar waveguide (CPW). Varactors with zero bias capacitance 0.17pF, loss tangent tan/spl delta/-0.04 and 20% tuneability provide continuous voltage tuneable phase shift up to 90/spl deg//spl plusmn/5/spl deg/ at 19 GHz with 10% bandwidth. The figure of merit is about 30/spl deg//dB. The sizes of the phase shifter silicon chip are less than 2/spl times/5.5mm. The phase shifter is designed for possible integration in silicon MMICs.

Abstracts

MSW resonators on micromachined silicon membrane

G. Sajin, R. Marcelli, F. Craciunoiu and A. Cismaru. "MSW resonators on micromachined silicon membrane." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1271-1274 vol.2.

Tunable band-stop and band-pass straight edge resonators (SER) on silicon membrane were obtained and characterized. S-parameters have been measured at different DC magnetic biasing fields showing a frequency tunability domain between 3 GHz and 9.5 GHz ca for band stop resonators and between 2 GHz and 7.5 GHz ca. for band pass resonators. An improvement of the performances for the SERs excited by micromachined microstrip transducers has been clearly demonstrated. The utilization of silicon membranes to support MSW-SERs offers important openings toward the integration of magnetostatic wave devices in microwave circuit with micromachined structures.

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Abstracts

Design of a 20-to-40 GHz bandpass MMIC amplifier

Jia-Liang Chen, Sheng-Fuh Chang, Cherng-Cherng Liu and Hsi-Wei Kuo. "Design of a 20-to-40 GHz bandpass MMIC amplifier." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1275-1278 vol.2.

A millimeterwave bandpass MMIC amplifier, which integrates both features of gain amplifier and bandpass filter, is presented. A synthesis method for such amplifier is developed from the image-parameter filter theory. By employing the proposed bandpass amplifier in a receiver, the bulky of chip filter may not be required. An experimental chip fabricated by 0.1 /spl mu/m PHEMT shows 14.2dB gain from 20 to 40 GHz and 60-dB attenuation below 7 GHz and above 60 GHz. This confirms the proposed method and shows the feasibility of the function integration of gain amplifier with bandpass filter in the millimeterwave range.

Abstracts

InP/InGaAs HBTs using crystallographically defined emitter contact technology

Moonjung Kim, Soo-Kun Jeon, Seong-Ho Shin, Kyounghoon Yang and Young-Se Kwon. "InP/InGaAs HBTs using crystallographically defined emitter contact technology." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1279-1282 vol.2.

New self-alignment techniques employing crystallographically defined emitter contact (CDC) technologies have been developed to fabricate InP/InGaAs heterojunction bipolar transistors (HBTs). The CDC technologies utilize the anisotropic wet etching characteristics of the InP and InGaAs dummy emitter layers, grown on the typical HBT layer structure. The shape of the emitter contact is determined by the crystallographically etched profiles of the InP and InGaAs dummy emitter layers. The fabricated HBTs demonstrated excellent device performance characteristics, indicating the effectiveness of the new self-alignment technology.

Abstracts

Characterization and model of high quality factor and broadband integrated inductor on Si-substrate

M.T. Yang, T.J. Yeh, W.C. Lin, H.M. Hsu, P.P.C. Ho, Y.J. Wang, Y.T. Chia and D.D.L. Tang. "Characterization and model of high quality factor and broadband integrated inductor on Si-substrate." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1283-1286 vol.2.

Proton bombardment has been used to boost the on-chip inductor quality factor and to also improve the frequency response. In this paper we demonstrated these advantages using the 0.13/spl mu/m and 0.18/spl mu/m RF CMOS processes. Based on the model, we evaluated how the performance improved using bombardment technology. A simultaneously impressive increase both in the peak Q-value and the optimal frequency have been evidenced due to its significantly reduced substrate parasitic effect as a result of higher substrate resistivity. This can be considered as a solution to integrate inductor on a Si substrate.

Abstracts

High-Q RF inductors on standard silicon realized using wafer-level packaging techniques

G. Carchon, S. Jenei, L. Carbonell, M. Van Hove, S. Decoutere, W. De Raedt, K. Maex and E. Beyne. "High-Q RF inductors on standard silicon realized using wafer-level packaging techniques." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1287-1290 vol.2.

Wafer level packaging (WLP) techniques have been used to integrate state of the art high Q on-chip inductors on top of a five-levels-of-metal (5LM) Cu damascene back-end of line (BEOL) silicon process using 20 /spl Omega/.cm Si wafers. The inductors are realized above passivation using thick post-processed low-K dielectric (BCB) and Cu layers. For a BCB/Cu-thickness of 16 /spl mu/m/10 /spl mu/m, a peak Q-factor of 34 at 4.3 GHz has been obtained for a 1 nH inductor (substrate contacts present at both ports) with a resonance frequency of 29 GHz; the Q-factor further tops 30 over the 2.1-5.4 GHz frequency range. If a substrate contact is present at only 1 port, Q/sub max/ increases to 38 at 4.7 GHz. Patterned polysilicon ground shields further improve this performance: a Q-factor increase of 90% is demonstrated at 7 GHz for a 2.25 nH inductor. A good agreement between measurements and 3-D simulations is demonstrated.

Abstracts

Wide-band variable transversal phase-shifter

L.A. Bui, A. Mitchell, G.W. Slade and Tan-Huat Chio. "Wide-band variable transversal phase-shifter." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1291-1294 vol.2.

We present a novel broadband phase-shifter based on a transversal filter configuration. This approach allows flexible control of the amplitude response while providing continuous variation of a linear phase slope. Numerical examples, both ideal and using practical RF components are presented and practical challenges in realising the phase-shifter are identified.

Abstracts

Millimeter-wave MMIC switches with pHEMT cells reduced parasitic inductance

Y. Tsukahara, T. Katoh, Y. Notani, T. Ishida, T. Ishikawa, M. Komaru and Y. Matsuda. "Millimeter-wave MMIC switches with pHEMT cells reduced parasitic inductance." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1295-1298 vol.2.

High isolation millimeter-wave switches have been successfully developed using a newly developed line unified shunt pHEMT structure, which is effective to reduce parasitic inductance of its short circuit. The developed V-band SPDT switch shows an isolation of greater than 40 dB and an insertion loss of 1.8 dB at 60 GHz, and the W-band SP3T switch shows an isolation of greater than 35 dB and an insertion loss of 2.5 dB at 77 GHz. Input and output return losses are better than 12 dB in ON-state. These performances of high isolation and low insertion loss are the best among V-band and W-band pHEMT MMIC switches. The switches consume no DC power, and require no complex off-chip bias circuitry.

Abstracts

GSM and DCS SiGe BiCMOS mixer ICs with wide LO power range

M. Kovacevic and M. Madihian. "GSM and DCS SiGe BiCMOS mixer ICs with wide LO power range." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1299-1302 vol.2.

GSM and DCS mixer ICs operating with the LO drive ranging from -35 dBm to -5 dBm and the supply voltage ranging from 2.4 V to 3.6 V are reported in this paper. The measured conversion gain and noise figure of the GSM mixer are 8.9 dB and 10.2 dB, respectively, and those of the DCS mixer are 8.5 dB and 10.9 dB. The GSM mixer IIP3 is 1 dBm, whereas the DCS mixer IIP3 is 4 dBm. A high-gain multistage LO driver and bias currents insensitive to supply voltage variation facilitate the mixer application for commercial mobile terminals. The GSM and DCS mixers were designed and fabricated using 0.25-/spl mu/m SiGe BiCMOS process. An integrated GSM (DCS) mixer, comprising a Gilbert core, an LO driver, a limiter, an IF buffer and bias circuits, consumes 28.5 mA from a 3-V battery. The SiGe BiCMOS mixers feature comparable IIP3, higher gain, and lower noise figure than do our previously fabricated Si BiCMOS mixers based on the same topology, and also consume 29% less power.

Abstracts

C-band linear resistive wide bandgap FET mixers

K. Andersson, V. Desmaris, J. Eriksson, N. Rorsman and H. Zirath. "C-band linear resistive wide bandgap FET mixers." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1303-1306 vol.2.

In this paper the performance of two C-band resistive FET mixers are presented and compared. The first mixer uses a SiC-MESFET as a mixing element and the second uses an AlGaN/GaN-HEMT. The mixers have a minimum conversion loss of 7.8 dB and 7.3 dB respectively. The maximum third-order input intercept points are 30 dBm and 36 dBm respectively; for LO drives of 23 dBm and 30 dBm.

Abstracts

Low-loss high-isolation 60-80 GHz GaAs SPST PIN switch

T. Buber, N. Kinayman, Yong-Hoon Yun and J. Brogle. "Low-loss high-isolation 60-80 GHz GaAs SPST PIN switch." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1307-1310 vol.2.

A low-loss high-isolation GaAs SPST PIN diode switch for millimeter wave applications is presented. Modeling of PIN diode switches using full-wave electromagnetic simulators by including the semiconductor properties of the diode mesa layers is explained. This approach eliminates the necessity of model extraction from measurements in most cases. In addition, usage of simulation tools allows the optimization of diode structure for minimum insertion loss. Main loss mechanisms of GaAs PIN diodes at mm-wave frequencies are explained. Measurement results of a newly developed CPW SPST 55-85 GHz GaAs PIN switch are presented and compared with simulations. The developed shunt switch has 0.6 dB insertion loss and 20 dB return loss in the off state (through) at 75 GHz. It has 20 dB insertion loss and 1 dB return loss in the on state (isolation) at the same frequency.

Abstracts

A zero-bias single-device balanced E-PHEMT mixer with conversion gain for RFID applications

J.A. Garcia, E. Malaver and L. Cabria. "A zero-bias single-device balanced E-PHEMT mixer with conversion gain for RFID applications." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1311-1314 vol.2.

A zero-bias single-device singly-balanced mixer, using an enhancement mode pseudomorphic HEMT (E-PHEMT) is proposed. The mixer takes advantage of the slightly positive pinch-off voltage in this kind of device, for providing gain conversion with an acceptable linearity and avoiding the use of DC bias. A lab model has been designed to be used in an RFID tag, where a low frequency local data signal is up-converted to the 900MHz frequency band, once the device is excited with an interrogating carrier.

Abstracts

44.5 GHz MMIC direct I&Q modulator in coplanar waveguide technology for an EHF Satcom terminal phased array

K. Hettak, P. Beland, C.J. Verver, M.G. Stubbs and G.A. Morin. "44.5 GHz MMIC direct I&Q modulator in coplanar waveguide technology for an EHF Satcom terminal phased array." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1315-1318 vol.2.

A MMIC (monolithic microwave integrated circuit) 44.5-GHz direct I&Q modulator has been developed for implementation in a low-cost EHF SATCOM terminal phased array. In this paper, the performance of the MMIC modulator is reported and the integration aspects are discussed. The K-band even-harmonic quadrature modulator conversion loss was measured to be less than 10 dB, sideband suppression better than 28 dB, carrier (2f/sub LO/) suppression around 15 dB, and IM3 (2f/sub LO/-3f/sub IF/) suppression better than 38 dB over the 43.5 to 45.5 GHz frequency band of interest.

Abstracts

A high performance V-band monolithic quadruple sub-harmonic mixer

Won-Young Uhm, Woo-Suk Sul, Hyo-Jong Han, Sung-Chan Kim, Han-Sin Lee, Dan An, Sam-Dong Kim, Dong-Hoon Shin, Hyung-Moo Park and Jin-Koo Rhee. *"A high performance V-band monolithic quadruple sub-harmonic mixer." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1319-1322 vol.2.*

In this paper, we present a high performance V-band quadruple sub-harmonic mixer monolithic circuit which is designed and fabricated for the millimeter wave down converter applications. While the typical sub-harmonic mixers use a half of fundamental frequency, we adopt a quarter of the fundamental frequency. The proposed circuit is based on sub-harmonic mixer with APDP (anti parallel diode pair). Upon the typical mixer design, additional stubs are placed with the modification of original stub length. And the 0.1 /spl mu/m pseudomorphic high electron mobility transistors (PHEMTs) providing better gain are positioned to each port. Used lumped elements at IF port, it provides selectivity of IF frequency, and increases isolation. Maximum conversion gain of 0.8 dB at a LO frequency of 14.5 GHz and at a RF frequency of 60.4 GHz is measured. Both LO-to-RF and LO-to-IF isolations are higher than 40 dB. These conversion gain results and isolation characteristic are the best performances reported among the quadruple sub-harmonic mixers operating in the V-band millimeter wave frequency thus far.

Abstracts

Novel DSP algorithms for adaptive feed-forward power amplifier design

Kwok-Po Chan and K.-K.M. Cheng. "Novel DSP algorithms for adaptive feed-forward power amplifier design." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1323-1326 vol.2.

Much research effort has recently been devoted to the design and implementation of high linearity feed-forward power amplifier for wireless communication systems. This paper presents two novel DSP (digital signal processing) algorithms that can substantially improve the tracking performances of the adaptive control loops. Both computer simulation and experimental results are included for verification.

Abstracts

An improved Kahn transmitter architecture based on delta-sigma modulation

Yuanxun Wang. "An improved Kahn transmitter architecture based on delta-sigma modulation." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1327-1330 vol.2.

A new architecture for linear high efficiency power amplifiers and transmitters is proposed. The essential idea is to apply delta-sigma modulation to the signal envelopes in the Kahn transmitters. While in traditional Kahn techniques the original signal envelope is restored before the final-stage power amplifier is modulated, in the proposed scheme, the power amplifier undergoes digital modulations and the signal envelope is restored from passing through a high Q bandpass filter at the output. Simulations based on power GaAs FET models show 31% improvements on power efficiency and 5 dB improvement in IM3 compared to traditional Kahn techniques.

Abstracts

THz radiation using compact folded waveguide TWT oscillators

S. Bhattacharjee, J.H. Booske, C.L. Kory, D.W. van der Weide, S. Limbach, M. Lopez, R.M. Gilgenbach, S. Gallagher, A. Stevens and M. Genack. "THz radiation using compact folded waveguide TWT oscillators." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1331-1334 vol.2.

Microfabricated folded waveguide traveling wave tubes are a promising solution to the generation of compact, wideband, high power terahertz radiation. We present feasibility studies of an oscillator concept using an amplifier with recirculated feedback. Simulations of a 560 GHz oscillator and experimental verification of the principle at 50 GHz are presented. Observation and measurements are reported on the generation of stable single frequency oscillation states. On varying the feedback level, the oscillation changes from a single frequency state at threshold to multifrequency spectra in overdriven state. Investigations on dynamics of the regenerative TWT oscillator will be presented. Additionally, preliminary results of experiments to fabricate 100-400 GHz folded waveguide TWT circuits will be reported.

Abstracts

An analog compensation method for asymmetric IMD characteristics of a power amplifier

K.J. Cho, J.C. Choi, J.H. Kim, B.J. Lee, N.Y. Kim, J.C. Lee and S.P. Stapleton. "An analog compensation method for asymmetric IMD characteristics of a power amplifier." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1335-1338 vol.2.

The modulation frequency affects the asymmetric intermodulation distortion (IMD) products of a RF power amplifier. This effect reduces IMD cancellation performance of power amplifiers in connection with predistortion linearization. A phase extraction method to determine phase difference between upper and lower 3/sup rd/ order IMD products and a phase compensation circuit using an envelope injection technique is proposed. The experimental results demonstrate a significant improvement in the 3/sup rd/ order IMD cancellation performance.

Abstracts

New predistortion method using phase modulation with envelope signal

Hyung Soon Jang, Hyeong Tae Jeong, Chul Dong Kim and Ik Soo Chang. "New predistortion method using phase modulation with envelope signal." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1339-1342 vol.2.

A new predistortion method using phase modulation technique is proposed. The phase modulator is adopted for generating predistortion signal. The phase of input signal is modulated with the envelope signal from the envelope detector then the IMD components are generated. Each coefficient of the 3/sup rd/ and 5/sup th/ order intermodulation distortion (IMD) is optimized to improve the linearity of the power amplifier. The amplitude and phase of IMD components are controlled in RF carrier band. This makes it possible to overcome several drawbacks of the envelope control methods such as difficulties in controlling the phase of baseband signal, narrow bandwidth, and delay variation at the low frequency circuits. The experimental results show the sufficient improvements in two-tone and multi-carrier CDMA test over the broad dynamic range.

Abstracts

Multimode fiber link equalization by mode filtering via a multisegment photodetector

K.M. Patel and S.E. Ralph. "Multimode fiber link equalization by mode filtering via a multisegment photodetector." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1343-1346 vol.2.

For short-haul optical networks, multimode fiber is ideal in regards to ease of use and cost-effectiveness. Unfortunately, modal dispersion in the fiber, can lead to severe intersymbol interference. A multisegment photodetector is used to perform spatially resolved equalization of the channel response. We demonstrate, through measured impulse response and bit error rate, robust performance to variations in channel condition.

Abstracts

40 GHz MMIC driver of electro-absorption modulator for high-speed optical pulse generation

S. Dellier, F. Blache, M. Campovecchio, D. de La Grandiere, S. Vuye, R. Quere and J.R. Burie. "40 GHz MMIC driver of electro-absorption modulator for high-speed optical pulse generation." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1347-1350 vol.2.

For the next generation of high-speed optical communications (4/spl times/40Gbit/s OTDM), the availability of very short pulse sources is crucial. This work deals with optical pulse sources using electro-absorption modulators (EAM). With the aim of matching a 100/spl mu/m-long EAM, a 40GHz MMIC driver was designed and fabricated using a GaAs PHEMT 0.15/spl mu/m process. To handle the actual electro-optical objectives of the Driver+EAM function (short pulse /spl sim/5ps, high extinction ratio /spl sim/30dB) we have developed a specific design method, which includes modeling techniques of EAM and CAD-oriented electro-optical design rules. Preliminary optical measurements of the first assembled optical modules (with & without driver) show that the driver leads to more than 10dB improvement for the electro-optical response of the EAM pulse source in the 39.7-42GHz band.

Abstracts

Improved microwave-optical reception applying double amplification in photo transistors

T. Berceli. "Improved microwave-optical reception applying double amplification in photo transistors." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1351-1354 vol.2.

The detection efficiency of photo transistors is improved by a new approach. Its basic principle is the double utilization of the transistor gain mechanism. As a result a significant increase in the responsivity (e.g. 25 dB) is obtained in a narrow band. The new approach is advantageously applicable for the reception of subcarrier multiplexed signals.

Abstracts

Photonic microwave filter using a broadband source sliced by a birefringent optical fiber-based interferometer

H. Gouraud, P. Di Bin, L. Billonnet, P. Faugeras and B. Jarry. "Photonic microwave filter using a broadband source sliced by a birefringent optical fiber-based interferometer." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1355-1358 vol.2.

An experimental and theoretical demonstration of a non-periodic photonic microwave filter is reported. The finite impulse response (FIR) is realized in the optical domain by slicing an optical broadband source with an interferometric scheme based on a birefringent optical fiber. This simple optical operator permits an easy adjustment of the center frequency of the filter with the length of this fiber and opens the potentiality of frequency tunability.

Abstracts

Frequency conversion using a moving plasma front generated optically in transmission lines - theoretical analyses

J. Bae and K. Mizuno. "Frequency conversion using a moving plasma front generated optically in transmission lines - theoretical analyses." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1359-1362 vol.2.

A novel method for frequency conversion using a transmission line on a semiconductor substrate has been presented. Laser pulses move along the transmission line while generating an electron-hole plasma at the surface of the semiconductor substrate. The plasma in the transmission line acts as a moving short with a relativistic velocity, reflecting an incident microwave and up-shifting the frequency through the double Doppler effect. Power and energy conversion efficiencies have been theoretically analyzed for the frequency conversion. The results have shown that the converter can be used to produce short millimeter and submillimeter waves.

Abstracts

Optical-microwave converter: superconductor/photomixer hybrid system

T. Kiwa and M. Tonouchi. "Optical-microwave converter: superconductor/photomixer hybrid system." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1363-1366 vol.2.

A new type of optical-microwave converter utilizing a photomixer and a high-T/sub C/ Josephson junction detector has been developed. The frequency difference of two laser beams has been observed in the characteristic of the high-T/sub C/ Josephson junction detector. The measured response of the detector for the microwave generated by photomixing two lasers suggests that the system can work as a highly sensitive wavelength meter with accuracy of /spl plusmn/3.5 pm. The system operation up to 20 GHz was also demonstrated by changing the wavelength of two laser beams.

Abstracts

Peripheral coupled waveguide traveling-wave electroabsorption modulator

Y. Zhuang, Y. Wu, W.S.C. Chang, P.K.L. Yu, S. Mathai, M. Wu, D. Tishinin and K.Y. Liou. "Peripheral coupled waveguide traveling-wave electroabsorption modulator." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1367-1370 vol.2.

We present the design and preliminary analysis of an efficient and wide bandwidth peripheral coupled waveguide traveling-wave electroabsorption modulator (PCW-TW-EAM), which aims to decouple the optical waveguide and the microwave transmission line. The optical waveguide mode of this device is designed to closely match to a single mode fiber mode for the ease of coupling. The waveguide has presently shown an optical propagation loss of /spl sim/2dB/mm at the modulation wavelength which is essential for wide bandwidth and high modulation efficiency to be achieved in the same design. Simulations indicate that equivalent V/sub /spl pi// less than 1V over a very large bandwidth can be obtained.

Abstracts

Influence of the chirp effect of DFB laser in phase-to-intensity noise conversion in RF-modulated optical links

M.R. Salehi, B. Cabon and Y. Le Guennec. "Influence of the chirp effect of DFB laser in phase-to-intensity noise conversion in RF-modulated optical links." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1371-1374 vol.2.

The power spectral density of the optical intensity in RF modulated optical links is investigated theoretically and experimentally in interferometric systems. The influence of the Henry factor /spl alpha/ of directly modulated DFB laser diodes is shown on the conversion of phase noise into intensity noise, for the first time.

Abstracts

Rigorous analysis of traveling wave photodetectors under high-power illumination

D. Pasalic, R. Vahldieck and A. Aste. "Rigorous analysis of traveling wave photodetectors under high-power illumination." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1375-1378 vol.2.

An efficient hybrid method for the rigorous analysis of traveling-wave photodetectors (TWPDs) is presented. The method consists of a combination of the 2D drift-diffusion based semiconductor simulation in conjunction with a full-wave EM analysis of the overall structure. While the 2D simulation determines the conductivity profile of the semiconductor layers under illuminations of different optical power levels, the 3D simulation characterizes the corresponding RF performance of the TWPD. Comparison with available experimental data has shown excellent agreement.

Abstracts

High-speed microwave-photonic vector modulator (MPVM) with wideband carrier tuning and spectral control

Guangxi Wang and W.D. Jemison. "High-speed microwave-photonic vector modulator (MPVM) with wideband carrier tuning and spectral control." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1379-1382 vol.2.

A microwave/photonic vector modulator (MPVM) has been demonstrated previously by one of the authors using direct QPSK and 16-QAM modulation at carrier frequencies between 1.0 and 2.0 GHz with data rates to 8 Mb/s. This paper significantly extends this work in several areas to include greater than three octaves of carrier tunability, greater than 70 times increase in data rates to 600 Mb/s, and 27 dB of modulated waveform sidelobe level suppression; the latter is critically important for fiber radio applications requiring wireless transmission.

Abstracts

A millimeter-wave harmonic optoelectronic mixer based on InAlAs/InGaAs metamorphic HEMT

Chang-Soon Choi, Woo-Young Choi, Dae-Hyun Kim and Kwang-Seok Seo. "A millimeter-wave harmonic optoelectronic mixer based on InAlAs/InGaAs metamorphic HEMT." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1383-1386 vol.2.

We investigate the InAlAs/InGaAs metamorphic HEMT on GaAs substrate as a harmonic optoelectronic mixer. The fabricated metamorphic HEMT simultaneously performs photodetection of 1.55 /spl mu/m lightwaves and harmonic optoelectronic up-conversion into the millimeter-wave band. By changing the bias conditions of the HEMT, the harmonic optoelectronic mixing efficiency can be selectively enhanced while suppressing undesired mixing components. The metamorphic HEMT as a harmonic optoelectronic mixer is a promising candidate that can simplify the base station architecture in fiber-optic millimeter-wave transmission systems.

Abstracts

A 46-GHz distributed transimpedance amplifier using SiGe bipolar technology

S. Kudszus, A. Shahani, S. Pavan, D.K. Shaeffer and M. Tarsia. "A 46-GHz distributed transimpedance amplifier using SiGe bipolar technology." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1387-1390 vol.2.

In this work we present a transimpedance amplifier (TIA) with a typical 3-dB bandwidth of 46 GHz, suitable for 40 Gb/s data communication links, realized in a commercial SiGe BiCMOS technology. The amplifier uses a traveling-wave topology and achieves a typical transimpedance of 47 dB/spl Omega/ and a low input-referred current noise of 24 pA Hz/sup -0.5/ averaged between 0 and 40 GHz. The amplifier is especially designed to be integrated with a photodiode in a hybrid photoreceiver, using bond wire interconnects. A set of photoreceivers was successfully tested over a temperature range from 0 to 70 C. The low noise of the TIA results in a large dynamic range of the receivers and error-free operation was achieved up to an overload optical input power of more than +3 dBm.

Abstracts

Optically generated dynamically tunable, low noise millimeter wave signals using microchip solid state lasers

Y. Li, S. Goldwasser and P.R. Herczfeld. "Optically generated dynamically tunable, low noise millimeter wave signals using microchip solid state lasers." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1391-1394 vol.2.

This paper concerns the optical generation of microwave and millimeter wave signals by heterodyning two or more solid state microchip lasers. The lasers can be temperature and voltage tuned to produce beat frequencies up to 200 GHz with tuning speed of 50GHz/microsec. A novel fiberoptic delay is employed to stabilize the transmitter yielding a measured phase noise of -101 dBc/Hz at 10 kHz offset.

Abstracts

MM wave mixing in a quantum well IR photo detector

P.D. Grant, H.C. Liu and R. Dudek. "MM wave mixing in a quantum well IR photo detector." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1395-1398 vol.2.

We report on the experimental investigation of combining MM wave mixing with optical heterodyne detection in a quantum well infrared photo detector. The effects of two different non-linear conductances were observed and attributed to the dark conductance and the photo conductance. The bias dependence was found to be similar for each of the conductances.

Abstracts

Photonic tunable microwave transversal filter based on optical switches and fiber dispersion

B. Vidal, V. Polo, J.L. Corral and J. Marti. "Photonic tunable microwave transversal filter based on optical switches and fiber dispersion." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1399-1402 vol.2.

A tunable and reconfigurable photonic microwave filter based on a switched dispersion matrix (SDM) is proposed. The SDM consists of n 2/spl times/2 optical switches and a dispersive medium between them. The architecture shows discrete filter tuning and reconfiguration capabilities using an array of fixed lasers which reduce the system cost regarding other proposals based on broadband tunable lasers. Tuning capabilities have been experimentally demonstrated.

Abstracts

Improved radio over fiber performance using predistortion linearization

A. Katz, W. Jemison, M. Kubak and J. Dragone. "Improved radio over fiber performance using predistortion linearization." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1403-1406 vol.2.

This paper describes improvements to Radio Over Fiber photonic links obtained by increasing the linearity of Mach Zehnder modulators using predistortion. The work was conducted at the Ku and X-band satellite uplink frequencies with a 1550 nm laser, but should be applicable to any microwave or even millimeter frequency band and any externally modulated laser. Link performance was evaluated for 2-tone intermodulation distortion, noise power ratio (NPR) and WCDMA adjacent channel power. Intermodulation distortion was reduced by more than 15 dB, and more than a 6 dB increase in effective signal power was demonstrated for typical system requirements.

Abstracts

Assessment of random and systematic errors in millimeter wave dielectric measurement - open resonator system, Fourier Transform Spectroscopy, W-band spectrometer and broadband free-space measurements

M.N. Afsar, A. Moonshiram and Yong Wang. "Assessment of random and systematic errors in millimeter wave dielectric measurement - open resonator system, Fourier Transform Spectroscopy, W-band spectrometer and broadband free-space measurements." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1407-1410 vol.2.

Assessment of random and systematic error is done on the real part of permittivity (/spl epsi/') and loss tangent tan /spl delta/) of ceramics and polymers such as alumina, polyethylene, polypropylene, Teflon and TPX at millimeter wave frequencies by comparing four different measurement systems namely the open resonator system (using both the cavity length and the frequency variation techniques), the Dispersive Fourier Transform Spectroscopy (DFTS), the W-band spectrometer with Backward Wave Oscillator (BWO) and the broadband free-space measurement system. The data obtained from DFTS and W-band spectrometer were also compared over W-band frequencies (68-118 GHz) by generating /spl epsi/' and tan /spl delta/ plots of acrylic, fiberglass resin and nylon. Systematic error assessment of the data shows excellent agreement for /spl epsi/' of the specimens measured by the four systems. It is observed that /spl epsi/' of the specimens measured with DFTS and broadband free-space measurement system agree well with a standard deviation as highest as 0.009.

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Envelope domain analysis of measured time domain voltage and current waveforms provide for improved understanding of factors effecting linearity

D.J. Williams, J. Leckey and P.J. Tasker. "Envelope domain analysis of measured time domain voltage and current waveforms provide for improved understanding of factors effecting linearity." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1411-1414 vol.2.

A detailed understanding of the factors affecting amplifier linearity can be obtained by performing envelope domain analysis on measured time domain voltage and current waveforms. Analysis of the input and output time varying envelopes provides for a direct observation of amplifier linearization through IF (baseband) source pull.

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Coherent addition of intermodulation distortion in spectrum analyzers

P. Stepanek, D. Kurtz and J. Gorin. "Coherent addition of intermodulation distortion in spectrum analyzers." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1415-1417 vol.2.

Third-order intermodulation distortion testing using CW signals has long been known to be subject to errors due to the coherence of the spectral components generated in the device under test and the analysis device. The same effect occurs when the test signal is noise-like, such as a W-CDMA signal, even though such a signal appears to be noncoherent. This paper demonstrates the effect, so that the reader can be better prepared to optimize the accuracy of measurements of adjacent channel leakage in W-CDMA components.

Abstracts

Combined analysis of systematic and random uncertainties for different noise-figure characterization methodologies

A. Collado, J.M. Collantes, L. De la Fuente, N. Otegi, L. Perea and M. Sayed. "Combined analysis of systematic and random uncertainties for different noise-figure characterization methodologies." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1419-1422 vol.2.

This paper presents a simulation tool for the rigorous analysis of the final uncertainty associated to different methodologies for noise figure characterization. The simulation tool permits the analysis of the combined effect of systematic errors and underlying uncertainties versus any significant characteristic of the DUT or measurement setup. Some application examples are presented showing the suitability of the proposed approach to determine the most efficient characterization methodology for a given DUT and measurement setup.

Abstracts

Influence of sample insertion hole on resonant cavity perturbation measuring method

M. Ikeda, T. Fukunaga and T. Miura. "Influence of sample insertion hole on resonant cavity perturbation measuring method." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1423-1426 vol.2.

Influence of sample insertion holes in resonant cavity for a measuring fixture was investigated experimentally and numerically. Shift of the resonant frequency caused by loaded sample decreased when the cavity height decreased or dielectric constant of a sample increased. Employing tall cavity improved measurement error. Using commercial simulators, it was found that disturbance of electric field near the sample insertion hole caused deviation of resonant frequency from the ideally closed cavity. The simulation result was inspected from the viewpoint of physical rationality.

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Abstracts

Development of a quantum based microwave power measurement

T.P. Crowley, E.A. Donley, T.P. Heavner, J.R. Juroshek and B.F. Riddle. "Development of a quantum based microwave power measurement." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1427-1430 vol.2.

An initial proof-of-principle experiment to measure microwave power based on quantum mechanical principles is presented. An RF magnetic field causes laser-cooled cesium atoms to oscillate between two hyperfine levels at a rate proportional to the field strength. The populations vary as predicted with relative microwave intensity and duration.

Abstracts

Frequency spectrum investigations on detection of radiofrequency electromagnetic fields by biological cells

F. Apollonio, M. Liberti, A. Paffi and G. D'Inzeo. "Frequency spectrum investigations on detection of radiofrequency electromagnetic fields by biological cells." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1431-1434 vol.2.

In order to investigate the biological effects of high frequency electromagnetic (EM) fields as those emitted from mobile telecommunication systems, a mechanistic approach is to develop biophysical models. In this paper the effort of elucidating the modalities of interaction of radiofrequency (RF) EM fields has been focused on the frequency spectrum characterisation of the response of the biological system simulated under exposure conditions. Authors improved the representation of the ionic channels as the core of the previously proposed integrated approach to model electromagnetic fields interaction.

Abstracts

A novel vector control active patch for beamsteering with linearity enhancement capability

L. Cabria, J.A. Garcia, A. Tazon and A. Mediavilla. "A novel vector control active patch for beamsteering with linearity enhancement capability." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1435-1438 vol.2.

In this paper, a novel integrated vector control active patch is investigated for its Introduction in compact arrays with beamsteering capabilities. A dual-feed aperture coupled microstrip patch is simultaneously used as transmitting antenna and output power combiner of two quadrature-phase PHEMT amplifying branches. Gain and/or phase control can be achieved by properly biasing both devices either on the saturated region or in an attractive low voltage highly linear zone.

Abstracts

A compact millimeter-wave slotted-waveguide spatial array power combiner

C. Eswarappa, T. Hongsmatip, N. Kinayman, R. Anderson and B. Ziegner. "A compact millimeter-wave slotted-waveguide spatial array power combiner." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1439-1442 vol.2.

In this paper a new 28 GHz solid-state power amplifier based on a novel slotted-waveguide spatial power divider/combiner is presented. Innovative waveguide-slot-microstrip transitions have been successfully achieved through three-dimensional electromagnetic simulations. An output power of more than 36 dBm was measured at the output of the power amplifier using a four-device combiner. The power combining efficiency of about 80 % has been achieved. The overall size of the power amplifier was only 3.6"/spl times/2.4"/spl times/1.0".

Abstracts

An ultra-wideband microwave radar sensor for characterizing pavement subsurface

Joongsuk Park and Cam Nguyen. "An ultra-wideband microwave radar sensor for characterizing pavement subsurface." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1443-1446 vol.2.

A new ultra-wideband (UWB) stepped-frequency radar sensor operating from 0.6 to 5.6 GHz has been developed using microwave integrated circuits for pavement subsurface characterization. UWB microstrip quasi-horn antennas have also been designed and tested for use in the sensor. A new simple yet effective, accurate procedure was developed to compensate the amplitude deviations and non-linear phase errors of the complex I/Q vectors due to the inherent imperfection of the system. The system has been used to assess a pavement sample with good accuracy.

Abstracts

A radar target transceiver using a full duplex capable retrodirective array system

K.M.K.H. Leong, Yuanxun Wang and T. Itoh. "A radar target transceiver using a full duplex capable retrodirective array system." 2003 MTT-S International Microwave Symposium Digest 3.2 (2003 Vol. II [MWSYM]): 1447-1450 vol.2.

This paper discusses the development of a radar target/communication device which is intended to both facilitate radar imaging and establish a self-tracking communication link between ground terminal and mobile radar station. The device is realized using a retrodirective array with full duplex capability. Demonstration of 10 Mbps data receiving and transmitting functions are presented along with its automatic beam-steering ability.

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Abstracts

Generalized inverter-coupled bandpass filters

R. Levy. "Generalized inverter-coupled bandpass filters." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1455-1457 vol.3.

A generalization of immittance-inverter coupled resonator filters is introduced giving broad flexibility in the design of lumped element filters, which are widely used at microwave frequencies. The technique gives a simple method for the design of filters having an arbitrary number of loss poles at DC and infinity.

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Abstracts

Understanding transmission zero movement in cross-coupled filters

R.J. Wenzel. "Understanding transmission zero movement in cross-coupled filters." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1459-1462 vol.3.

Rules for transmission zero movement in real circuit cross-coupled filters and a classification of two primary transmission zero types are given. The rules and classifications apply to filters of arbitrary bandwidth and give insight into response skewing and "disappearing" zeros. Transmission zero sensitivity and performance limitations are described and related to circuit topology and coupling element types.

Abstracts

Coupling matrix extraction for cascaded triplet (CT) topology

R.N. Gajaweera and L.F. Lind. "Coupling matrix extraction for cascaded triplet (CT) topology." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1463-1465 vol.3.

Each triplet has the property of realizing a single real frequency transmission zero. Asymmetric filter responses can be realized by a cascade of triplet sections. This paper describes a Newton-Raphson method for rapid solution of the equations, which produces the desired coupling matrix for a CT topology.

Abstracts

A powerful tool for the synthesis of prototype filters with arbitrary topology

G. Macchiarella. "A powerful tool for the synthesis of prototype filters with arbitrary topology." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1467-1470 vol.3.

This paper describes a CAD tool for synthesizing prototype filters with arbitrary topology, with cross-couplings starting also from source and (or) from load; the generalized Chebycheff characteristic is assumed, with asymmetric transmission zeros, both pure imaginary or complex. The proposed method employs the coupling matrix of a generic prototype, obtained through well-established procedures; then the coupling matrix of the desired topology is determined with a procedure based on multiple matrix rotations (similarity transforms) and numerical optimization (the sequence and angles of the rotations are automatically evaluated in the procedure and their knowledge is not a priori required). The novel CAD tool has been tested with some coupling schemes recently proposed, which don't require diagonal couplings for realizing asymmetric transmission zeros.

Abstracts

Nonradiative dielectric (NRD) waveguide diplexer for millimeter-wave applications

F. Boone and Ke Wu. "Nonradiative dielectric (NRD) waveguide diplexer for millimeter-wave applications." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1471-1474 vol.3.

In this paper, a T junction and a right angle elbow in Nonradiative dielectric (NRD) guide technology are carefully analyzed. This analysis is based on our mode-matching program combined with a cascading procedure that allows formulating generalized admittance and then generalized scattering matrices. These structures are optimized to reach the maximum power transfer from LSM to LSE mode. Putting these together, a splitter from LSM to LSM mode is created. Two LSM bandpass filters are then designed and added to the previous structure to obtain a diplexer. This diplexer presents two kinds of isolation. The first one can be easily minimized by increasing the order of filters. The second one is defined as a coupling isolation. A new physical topology is then presented to minimize this isolation. Our simulations are compared with HFSS software simulations and results are in very good agreement.

Abstracts

A 4-bit miniature X-band MEMS phase shifter using switched-LC networks

G.L. Tan, R.E. Mihailovich, J.B. Hacker, J.F. DeNatale and G.M. Rebeiz. "A 4-bit miniature X-band MEMS phase shifter using switched-LC networks." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1477-1480 vol.3.

A compact 4-bit true-time-delay MEMS phase shifter fabricated on 8-mil GaAs substrate is described. Miniaturization of the phase shifter is achieved using phase shift networks based on semi-lumped LC circuits and a compact SP2T switch configuration. Trade-off in size and loss is performed to achieve a phase shifter with an area of 7 mm/sup 2/ and an average insertion loss of -1.47 dB at 9.4 GHz. The phase shifter has a measured return loss of < -10.5 dB over 8-12 GHz and an RMS phase error of 2/spl deg/ at 9.4 GHz.

Abstracts

A V-band CPS distributed analog MEMS phase shifter

Hong-Teuk Kim, Sanghyo Lee, Jungmu Kim, Jae-Hyoung Park, Yong-Kweon Kim and Youngwoo Kwon. "A V-band CPS distributed analog MEMS phase shifter." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1481-1484 vol.3.

In this work, a new V-band CPS analog distributed MEMS phase shifter has been developed. Since this phase shifter is based on the balanced CPS lines, no extra mode transition structure is required for integration with the balanced circuits using CPS or slot line as well as for packaging in the waveguides. MEMS bridges over the coplanar strip lines are used to control the mutual capacitance between two CPS strip lines, consequently the phase response of the capacitively loaded CPS line. The fabricated phase shifter showed 55/spl deg//dB at 40 GHz and 74/spl deg//dB at 60 GHz. The return loss is better than 8 dB over a wide frequency range from 1 to 70 GHz. For measurement with CPW-based on-wafer system, a new ultra wideband CPW-to-CPS transition has also been developed, and showed a low insertion loss less than 1.9 dB from DC to 110 GHz.

Abstracts

W-band microstrip RF-MEMS switches and phase shifters

J.B. Rizk and G.A. Rebeiz. "W-band microstrip RF-MEMS switches and phase shifters." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1485-1488 vol.3.

This paper presents W-band microstrip shunt switches on quartz substrates. The -20 dB isolation bandwidth of the switches is limited to around 10% due to the /spl lambda//sub g//4 radial stubs used, with an insertion loss of -0.2 to -0.5 dB. The microstrip switches are used in a switched-line phase shifter and a reflect-line phase shifter at W-band frequencies, and resulted in good performance over a 5-10% bandwidth.

Abstracts

Integrated RF MEMS phase shifters with constant phase shift

Y.J. Ko, J.Y. Park and J.U. Bu. "Integrated RF MEMS phase shifters with constant phase shift." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1489-1492 vol.3.

In this paper, fully integrated RF MEMS phase shifters with low insertion loss, narrow frequency band, and constant phase shift are designed, fabricated, and characterized for mobile satellite broadcasting/communication systems. The fabricated phase shifters are comprised of CPW lines, short/open ended-stubs, and RF MEMS capacitive shunt switches. The constant phase shift can be obtained by optimizing the length of the open-ended stub and the short-ended stub. The fabricated 3-bit phase shifter has insertion loss of avg. -2.0 dB, return loss of min. -10 dB, and phase error of avg. 2.0/spl deg/, respectively. The utilized RF MEMS switches are operated at between 15 and 20 volts.

Abstracts

A 15-to-45 GHz low-loss analog reflection-type MEMS phase shifter

Sanghyo Lee, Jae-Hyoung Park, Hong-Teuk Kim, Jung-Mu Kim, Yong-Kweon Kim and Youngwoo Kwon. *"A 15-to-45 GHz low-loss analog reflection-type MEMS phase shifter." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1493-1496 vol.3.*

A low-loss broadband reflection-type phase shifter (RTPS), showing constant phase shift from 15 to 45 GHz, was developed using MEMS technology. The analog phase shifter consists of two cascaded reflection-type phase shifters for 1:3 bandwidth. Air-gap overlay CPW couplers were employed for low-loss 3 dB coupling, and bridge-type MEMS variable capacitors were used for low-loss reflective terminations. The fabricated phase shifter shows the average insertion loss of 3.63 dB, and rms phase error of 3.7/spl deg/ from 15 to 45 GHz. Compared with the similar RTPS using GaAs PHEMT varactor diodes, much lower loss is observed together with improved bandwidth.

Abstracts

Very high-Q inductors using RF-MEMS technology for System-On-Package wireless communication integrated module

S. Pinel, F. Cros, S. Nuttinck, S.-W. Yoon, M.G. Allen and J. Laskar. "Very high-Q inductors using RF-MEMS technology for System-On-Package wireless communication integrated module." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1497-1500 vol.3.

We present the fabrication and the characterization of very high-Q suspended RF-MEMS inductors for RF applications in C-band, X-band and Ku-band. The fabrication technique relies on conventional MEMS micro-machining on a low cost ceramic RF substrate. This low temperature, low cost manufacturing technique is therefore compatible with the fabrication of a complete S-O-P wireless integrated module. A physical based model of the inductors is presented. It takes into account the influence of substrate losses and radiation losses. The fabricated devices exhibit very high performances such as Q above 100 and self-resonance frequency as high as 50 GHz.

Abstracts

Applications of RF and microwave sampling to instrumentation and measurement

M. Kahrs. "Applications of RF and microwave sampling to instrumentation and measurement." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1503-1506 vol.3.

Measurement of microwave and UHF signals is often done with sampling techniques. In this review, the techniques and technology of sampling of electrical signals is reviewed from the beginning of the twentieth century to the present. It includes both references to the open literature as well as an extensive review of relevant patents. This review is specifically oriented toward applications and not theory. It was written to introduce the Special Session on "High Speed Sampling Circuits and Techniques" at IMS 2003.

Abstracts

Sampling oscilloscope models and calibrations

K.A. Remley and D.F. Williams. "Sampling oscilloscope models and calibrations." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1507-1510 vol.3.

We review the basic principles of operation of electrical sampling oscilloscopes and describe circuit models developed to design, characterize, and help explain their operation. We survey common oscilloscope calibration schemes that correct for finite oscilloscope impulse response, distortion and jitter in the oscilloscope time base, and impedance mismatches.

Abstracts

Rapid millimetre-wave sampler response characterization to well beyond 120GHz using an improved nose-to-nose method

J.B. Scott. "Rapid millimetre-wave sampler response characterization to well beyond 120GHz using an improved nose-to-nose method." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1511-1514 vol.3.

Simple enhancements to the nose-to-nose method of characterizing samplers are described. The technique is applied to a millimetre-wave sampler. These allow sampler magnitude and phase response to be measured to 150GHz and above. Excellent agreement is found with magnitude measurements made using conventional traceable power sensors.

Abstracts

Flip-chip bonded Si Schottky diode sampling circuits for high speed demultiplexers

Jung Han Choi, C.-J. Weiske, G.R. Olbrich and P. Russer. "Flip-chip bonded Si Schottky diode sampling circuits for high speed demultiplexers." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1515-1518 vol.3.

This paper presents a Si Schottky diode sampling circuit for demultiplexer using flip-chip technology on alumina substrate (Al/sub 2/O/sub 3/). In order to design circuits, very high speed Si Schottky diodes, having cutoff frequency of 750 GHz, were modeled using the Root diode model and flip-chip interconnection was simulated using 3 dimensional electromagnetic simulator, HFSS.

Abstracts

100 GHz through-line sampler system with sampling rates in excess of 10 Gsamples/second

A. Agoston, S. Pepper, R. Norton, J. Ebner and K. Schoen. "100 GHz through-line sampler system with sampling rates in excess of 10 Gsamples/second." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1519-1521 vol.3.

A through-line electrical sampler with 100 GHz of bandwidth and sampling rates in excess of 10 Gsamples/s has been fabricated and characterized. The sampling aperture is estimated to be approximately 3 ps. The linear dynamic range is >2 Vpp. The performance of this sampling component enables significant advancements in high-speed test and measurement equipment and mm-wave Ultra-wideband (UWB) receivers.

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Mitigation of correlated non-linearities in digital phased arrays using channel-dependent phase shifts

L.C. Howard, N.K. Simon and D.J. Rabideau. "Mitigation of correlated non-linearities in digital phased arrays using channel-dependent phase shifts." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1525-1528 vol.3.

In an active phased array, each Transmitter/Receiver Module (TRM) performs a set of approximately linear functions (e.g., amplification, mixing, etc.) with the resulting signals later combined via beamforming techniques. Since these nearly-linear functions are performed prior to beamforming, it is theoretically possible to improve upon the dynamic range (DR) of each TRM through post-module array integration gain. It has been demonstrated, however, that DR enhancement may be limited by correlated nonlinear distortion (i.e., correlated from module to module). A general technique that ensures nonlinearities do not add constructively from module to module has been proposed recently, and verified experimentally for a special case. Another special case of the general technique has been described analytically, but with no experimental verification. In this paper, we correct a flaw in this analysis, and extend it. Measurements on a thirteen channel digital phased array demonstrate that introducing random phase shifts into an array can substantially mitigate nonlinear distortion, thus improving DR over the array.

Abstracts

Implementation of a smart antenna system with an improved NCMA algorithm

T. Eireiner, T. Muller, J.-F. Luy and F. Owens. "Implementation of a smart antenna system with an improved NCMA algorithm." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1529-1532 vol.3.

This paper presents the possibility of using adaptive algorithms for digital beamforming purposes. A normalized constant modulus algorithm (NCMA) is implemented in a standard FPGA. In this way, a simple and non-hardware-intensive, smart antenna system in combination with a software-defined radio (SDR) has been realized for mobile FM reception. A new kind of algorithm initialization, leads to an improvement in startup behavior. The quality in signal separation makes the NCMA algorithm also suitable for MIMO purposes. The NCMA algorithm increases the reception quality for mobile communication systems dramatically.

Abstracts

Experimental demonstration of a direction of arrival estimation algorithm for mm-wave broadband communication systems

P. Sanchis, V. Polo, J. Herrera, J.L. Corral, Moon-Soon Choi and J. Marti. "Experimental demonstration of a direction of arrival estimation algorithm for mm-wave broadband communication systems." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1533-1536 vol.3.

The experimental demonstration of a direction of arrival (DOA) estimation algorithm suitable for switched-beam array antenna operating in the millimeter-wave band is reported. The algorithm is based on power measurements and avoids employing the digital signal processing techniques which are commonly used in conventional DOA algorithms. Simulation and experimental results for the proposed algorithm using a four-element antenna array operating at 60 GHz have been obtained, showing an excellent agreement.

Abstracts

Hybrid smart antenna system using directional elements - performance analysis in flat Rayleigh fading

Zhijun Zhang, M. Iskander, Zhengqing Yun and A. Host-Madsen. "Hybrid smart antenna system using directional elements - performance analysis in flat Rayleigh fading." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1537-1540 vol.3.

In this paper we present a new procedure for implementing smart antenna algorithms. It is a hybrid approach that integrates the features of the switched beam method and the adaptive beam forming approach. Specifically it is shown that by using high gain antenna elements and combining the switched beam process with the adaptive beam forming procedure on a limited number of elements (as low as 2 in an 8-element array), a performance close to that of a more complex 8-element adaptive array may be achieved. The proposed hybrid method, therefore, is fast, computationally efficient, and provides a cost effective approach for exploiting space diversity. Even with the inclusion of interference signals, the proposed hybrid approach out-performed the switched beam method, and provided performance similar to that of an adaptive array with less number of elements (3 in an 8-element array). Implementation of an adaptive array also includes estimations; hence, reducing the number of elements in an array may lead to improved accuracy, in addition to fast convergence and reduced complexity.

Abstracts

A self-calibration antenna array system with moving apertures

Weijun Yao, Yuanxun Wang and T. Itoh. "A self-calibration antenna array system with moving apertures." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1541-1544 vol.3.

In this paper, an antenna array system with self-calibration capability to the antenna element position errors is proposed. The essential concept of self-calibration is to detect the element positions by using near field reference sources. The estimated position information is further substituted into the beamforming process to correct the distorted pattern of the antenna array. To validate the proposed concept, a test bed with a "distorted" eight element array is set up. With the proposed calibration architecture, the estimation of the position errors is within 7% of the free space wavelength. Based on the estimation information, the array pattern can thus be synthesized.

Abstracts

Flip Chip design of dual band/tri mode SiGe BiCMOS transmitter IC for CDMA wireless applications

M. Megahed, F. Van Gieson, M. Reddy and D. Yates. "Flip Chip design of dual band/tri mode SiGe BiCMOS transmitter IC for CDMA wireless applications." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1547-1550 vol.3.

Flip Chip circuit design for highly integrated transmitter IC for CDMA handset is presented. The RF flip chip implementation uses peripheral I/O bumps pattern and internal ground bumps within the die, directly on the top metal layer. The IC transmitter is designed to deliver 8 dBm in CDMA mode in cellular band, 11 dBm in AMPS mode and 9 dBm in CDMA mode in PCS band at 90, 88, 108 mA, respectively. Results show that flip chip implementation meets or exceeds the wirebond RFIC performance.

Abstracts

Development of 5.8GHz SiGe BiCMOS direct conversion receivers

S. Chakraborty, S.K. Reynolds, H. Ainspan and J. Laskar. "Development of 5.8GHz SiGe BiCMOS direct conversion receivers." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1551-1554 vol.3.

We present the design, development and full characterization of two direct conversion receiver front-end architectures for IEEE802.11a application in IBM's SiGe BiCMOS technology. These approaches include: a) conventional 50/spl Omega/ system, b) fully monolithic front-end. The developed ICs are targeted for the upper U-NII band at frequency range of 5.725-5.825 GHz and include a low noise amplifier (LNA), two mixers in quadrature, and a frequency divider. All of these circuits use fully monolithic implementation. The LNA provides a gain of 11 dB, noise figure of 4.4dB, IIP3 of -2dBm and occupies an area of 0.7mm /spl times/ 0.7mm. A micromixer topology has been adopted in case of 50/spl Omega/ system and provides 9.2dB gain, input matching of 16dB, double sideband noise figure of 19.5 dB, input 1 dB compression point of -3 dBm, IIP3 and IIP2 of +6 and +32 dBm respectively, dynamic DC offset of 1.6mV, and occupies an area of 1.6mm /spl times/ 1mm. The fully integrated receiver utilizes single-ended Gilbert cell mixers, and occupies a compact area of 1.6mm /spl times/ 1.3mm. It exhibits 20.2dB gain, input 1 dB compression point (input P1dB) of -15.5 dBm, input matching of 15 dB, IIP3 and IIP2 of -3 dBm and +31 dBm respectively, double sideband noise figure of 7.1 dB, dynamic DC offset of 1mV, and LO to RF leakage of 78 dB. The LNA draws 5.78mA from a 2.8V supply, both micromixers draw 10.3mA from 3.1V supply, both Gilbert cell mixers draw 12.71mA from a 3.75V supply, and the frequency divider draws 22mA from 3.75V supply. Two different system architectures are chosen for an architectural trade-off of direct conversion receivers at 5.8GHz. To the best of our knowledge, this work presents the first report of SiGe BiCMOS direct conversion receiver front-ends and their architectural trade-offs for the IEEE802.11a standard at 5.8GHz.

Abstracts

A very low distortion SiGe BiCMOS down converter for W-CDMA applications

D. Watanabe, I. Imanishi, J. Itoh, T. Nakatani and T. Saeki. "A very low distortion SiGe BiCMOS down converter for W-CDMA applications." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1555-1558 vol.3.

A very low distortion down converter for a W-CDMA was developed. A LO amplifier is constructed with a differential amplifier and transistors which operate as a push-pull driver amplifier. As this LO amplifier has faster switching time of the differential pair, the down converter achieved a low noise figure (NF) performance. In addition, the low output impedance of the LO amplifier leads to lower supply current without using the LO buffer circuit. Insertion of a resistance between the bases of the transconductance stage of the mixer circuit realized low distortion without a degradation of the noise figure of the down converter. The down converter in SiGe-BiCMOS process achieved conversion gain of 11.0 dB, NF of 8.8 dB and IIP3 of +3.5 dBm with 7.4 mA current consumption, 2.8 V supply voltage.

Abstracts

A low-power and variable-gain transceiver front-end chip for 5-GHz-band WLAN applications

H. Dodo, Y. Aoki, N. Hayama, M. Fujii, Y. Yamaguchi, Y. Sasaki, H. Ohba and H. Hida. "A low-power and variable-gain transceiver front-end chip for 5-GHz-band WLAN applications." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1559-1562 vol.3.

A low-power 5-GHz-band transceiver front-end chip is described that uses highly reliable, high-performance InGaP/GaAs HBTs and complies with IEEE802.11a standards. Integrated into the chip (2.4/spl times/2.4 mm/sup 2/) are a 20/0-dB dual-gain low-noise amplifier and a wide IF-range down-conversion mixer in the receiver path, a 20-dB variable-gain driver amplifier and a low and stable local oscillator (LO) leakage up-conversion mixer in the transmitter path, and a high-isolation LO buffer. Very low power consumption (120 mW) is attained with a single 3-V supply voltage in receiver mode together with high transceiver performance. The key features and new circuit approaches in each function block are described in details. Measurement showed that a 5-GHz OFDM-modulated Tx signal meets IEEE802.11a standards.

Abstracts

Low distortion RF-LDMOS power transistor for wireless communications base station applications

J.R. Gajadharsing. "Low distortion RF-LDMOS power transistor for wireless communications base station applications." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1563-1566 vol.3.

In this paper, an LDMOS power transistor design is described, having a square-law approximated transfer characteristic to obtain very low distortion in class-AB operation. Compared to conventional LDMOS transistors, significant linearity improvement is achieved over a large power range. Measurements on a 30 W/2 GHz transistor demonstrates 5 to 10 dB improvement in intermodulation distortion (IMD) and single-carrier adjacent channel leakage ratio (ACLR) for WCDMA in the back-off region. The new LDMOS is very suitable for multi-carrier amplifiers in 3G system.

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A low-cost-packaged 4.9-6 GHz LNA for WLAN applications

E. Imbs, I. Telliez, S. Detout and Y. Imbs. "A low-cost-packaged 4.9-6 GHz LNA for WLAN applications." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1569-1572 vol.3.

A two stage fully integrated low-noise amplifier has been developed for 4.9-6 GHz WLAN applications. This circuit was realized in a 0.35 /spl mu/m SiGe BiCMOS process and packaged in a low cost plastic VFQFPN package. The circuit operates over a wide band (4.9-6 GHz) and draws 13.2 mA from 2.0 V supply. It exhibits a noise figure of 3.9 dB and a gain of 18.7 dB at 5.5 GHz. The measured IIP1 and IIP3 are respectively -13.9 dBm and -3.5 dBm at 5.5 GHz. The input and output return losses are lower than -10 dB and the gain ripple is less than 1.5 dB over all the frequency bandwidth.

Abstracts

Development of IEEE802.11a WLAN LNA in silicon-based processes

B. Banerjee, B. Matinpour, C.H. Lee, S. Venkataraman, S. Chakraborty and J. Laskar. "Development of IEEE802.11a WLAN LNA in silicon-based processes." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1573-1576 vol.3.

In this paper, we describe the effects of substrate parasitics in silicon-based processes and present a methodology for designing low-noise amplifiers (LNAs) in silicon processes. Our techniques resulted in excellent agreement between simulations and measurements for a test case LNA design for 802.11a. This LNA, which covers 5-6 GHz and has gain switching is designed in a 0.8 /spl mu/m SiGe bipolar technology with f/sub T/ of 50 GHz. The LNA exhibits a gain of more than 24 dB in the 5-6 GHz band with a noise figure (NF) less than 2.5 dB. The agreement between simulation and measured data is demonstrated.

Abstracts

Enhancement mode GaAs PHEMT LNA with linearity control (IP3) and phased matched mitigated bypass switch and differential active mixer

S. Kumar, M. Vice, H. Morkner and W. Lam. "Enhancement mode GaAs PHEMT LNA with linearity control (IP3) and phased matched mitigated bypass switch and differential active mixer." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1577-1580 vol.3.

A new front end IC has been designed using a single supply enhancement mode GaAs PHEMT 0.5 /spl mu/m process for WCDMA and other wireless applications. This front end has a single ended LNA, single ended in and differential out active balanced mixer with integrated LO, active balun, and buffer amplifier. The LNA also has CMOS logic controllable linearity (IP3) control and a phased matched mitigated bypass switch. The LNA draws 8.5 mA current when switched to high linearity mode and has 15 dB gain, 1 dB NF, -6 dBm IP/sub 1dB/ and 7.3 dBm IIP3. In low linearity mode, it draws 3.5 mA current and has 14 dB gain, 1.1 dB NF, -6 dBm IP/sub 1dB/ and 2 dBm IIP3. In LNA bypass mode, the total bypass loss is <3.5 dB and has 7 dB NF, 5 dBm IIP3 and it draws /spl sim/1 mA current. Also, the bypass switch circuit has an integrated active phase shift network which maintains a phase difference of <25/spl deg/ with LNA ON modes. In all conditions, the LNA/switch combo has >10 dB I/O return loss. The mixer, with active balun and buffer amplifier, consumes 8 mA current and has 12 dB gain, 7 dB noise figure, 0 dBm IIP3 and provides a differential IF out with a differential impedance of about 1000 ohms. The above performance is measured at 2.14 GHz for WCDMA applications.

Abstracts

A coplanar 94 GHz low-noise amplifier MMIC using 0.07 /spl mu/m metamorphic cascode HEMTs

A. Tessmann, A. Leuther, C. Schwoerer, H. Massler, S. Kudszus, W. Reinert and M. Schlechtweg. "A coplanar 94 GHz low-noise amplifier MMIC using 0.07 /spl mu/m metamorphic cascode HEMTs." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1581-1584 vol.3.

A 94 GHz low-noise amplifier MMIC (LNA) has been developed, based on a coplanar technology utilizing 0.07 /spl mu/m depletion type metamorphic HEMTs (MHEMTs). The realized single stage cascode LNA achieved a small-signal gain of more than 12 dB and an average noise figure of 23 dB over the bandwidth from 80 to 100 GHz. With an indium content of 80% in the channel, a 2/spl times/30 /spl mu/m MHEMT device has shown a transit frequency (f/sub t/) of 290 GHz, an extrinsic transconductance of 1450 mS/mm and a maximum stable gain (MSG) of 11 dB at 94 GHz. Using two HEMTs connected in cascode configuration, the MSG could be increased to 22 dB. To stabilize the cascode device and to increase the bandwidth of the amplifier circuit, a resistive feedback was integrated into the HEMT in common-gate configuration. Coplanar topology in combination with cascode transistors resulted in a chip-size of only 1/spl times/1 mm/sup 2/.

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Cryogenic measurements of 183 GHz MMIC low noise amplifiers

D. Dawson, T. Gaier, R. Raja, M. Nishimoto, R. Lai and M. Wells. "Cryogenic measurements of 183 GHz MMIC low noise amplifiers." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1585-1587 vol.3.

We report the packaging and first measurement of Indium Phosphide (InP) monolithic microwave integrated circuit (MMIC) low noise amplifiers (LNAs) operating at cryogenic temperatures above 140 GHz. The amplifiers were measured from 160 to 188 GHz at 20 K and tested for noise temperature and gain, with noise temperatures of 160 K. The packaging method and test setup are described, as well as detailed results at room and cryogenic temperatures.

Abstracts

Development of a receiver downconverter module for Ka-band satellite payload

Dong-Pil Chang, In-Bok Yom and Seung-Pal Lee. "Development of a receiver downconverter module for Ka-band satellite payload." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1589-1592 vol.3.

This paper describes the design and the test results of the receiver-downconverter module for a Ka-band Satellite Payload. The developed module has the low noise amplification in front stage and frequency down conversion which translates from 30.6 GHz - 31.0 GHz to 20.8 GHz - 21.2 GHz.. It has been fabricated and tested by the qualified satellite component manufacturing process and it shows the best performance of the receiver-downconverter modules operating at Ka-band frequency up to date. The module has the performance of 1.9 dB of NF, 55 dB of Gain, and 57 dBc of C/13 for the two-tone signals of -59 dBm input power, respectively, at ambient temperature. It is a small and light module with the size of 93 mm /spl times/ 84 mm /spl times/ 26 mm and the weight of 240 g.

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Miniaturized slot-line and folded-slot band-pass filters

R. Azadegan and K. Sarabandi. "Miniaturized slot-line and folded-slot band-pass filters." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1595-1598 vol.3.

In this paper the concept of a new class of miniaturized filters using printed circuit technology is presented. The building block of the proposed filter is a miniaturized high-Q printed slot-line resonator, which allows for the realization of both standard coupled-line and cross-coupled quasi-elliptic filters. Each resonator occupies an area as small as 0.03/spl lambda//sub 0//spl times/0.06/spl lambda//sub 0/ and can be shown to have a Q as high as 200 at 2.4 GHz. Analytical, and numerical methods are employed to outline a design procedure. An integral equation full-wave method is used to macro-model the coupling coefficient between two adjacent resonators as a function of their relative distance and orientation. Filter theory is used to design different filter types. The design procedure is validated by comparing the simulated S-parameters of a two-pole and a four-pole Chebyshev filter with those measured from prototypes operating, respectively at 515 MHz and 400 MHz.

Abstracts

Accessing to UMTS filtering specifications using new microstrip miniaturized loop-filters

E. Goron, J.P. Coupez, C. Person, Y. Toutain, H. Lattard and F. Perrot. "Accessing to UMTS filtering specifications using new microstrip miniaturized loop-filters." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1599-1602 vol.3.

A new topology for the design of microstrip loop-filters is proposed in this paper. This new geometry is used in a coupled-loop-resonator filter in order to improve the out of band rejection (by introducing an additional transmission zero), as well as insertion loss (thanks to a significant circuit size reduction). The design methodology of these filters is first described and then experimental performances are discussed. Finally, a high performance duplexer, specified for UMTS frequencies and requirements (i.e. in the 1.9-2.17 GHz frequency band), is presented. Measured insertion loss is lower than 2.5 dB and an isolation level greater than 40 dB is achieved between Tx/Rx channels, thanks to the multiple out of band transmission zeros introduced in the filter synthesis.

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A new simple microstrip open-loop resonators filter for high selectivity applications

D.C. Rebenaque, A.A. Melcon and M. Guglielmi. "A new simple microstrip open-loop resonators filter for high selectivity applications." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1603-1606 vol.3.

In this paper the design of a novel planar microwave filter is presented. The structure is designed in microstrip technology, and it is formed by two loop resonators of different lengths. The length of the first resonator is adjusted so that a suitable odd resonance is tuned to the center frequency of the filter. The length of the second resonator is adjusted so that the next even resonance is tuned again to the center frequency of the filter. The change in phase introduced by the resonances of the loops produces a cancellation of energy at a given frequency, therefore implementing a transmission zero for high selectivity. In this paper a design example is provided, and results of a manufactured prototype are discussed. Measured results confirm the theoretical predictions, and validate the new structure for high selectivity applications.

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Abstracts

Small-sized wideband CVT- and CCT-ring filters

Hee-Ran Ahn, I. Wolff and Noh-Hoon Myung. "Small-sized wideband CVT- and CCT-ring filters." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1607-1610 vol.3.

Two types of small-sized wideband CVT- (constant VSWR impedance transformer) and CCT- (constant conductance impedance transformer) ring filters are introduced, designed, simulated and one of two, a CCT-ring filter, is tested. They consist of CVTs and CCTs, and two short stubs are connected at the 90/spl deg/ and 270/spl deg/ positions of each ring. The circumference of the ring can be reduced theoretically up to 60/spl deg/ and two of many cases having about 300/spl deg/ circumference are simulated. The simulated results show more than 100% fractional bandwidth, which can be obtained with more than 5 stages in conventional design techniques. A CCT ring filter suggested in this paper has been fabricated in microstrip technology and the measured results show good agreement with the simulated ones.

Abstracts

Narrow Ka bandpass filters using periodically loaded substrates

W.J. Chappell, Xun Gong and L.P.B. Katehi. "Narrow Ka bandpass filters using periodically loaded substrates." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1611-1614 vol.3.

High-k ceramics (TiO/sub 2/) are periodically embedded into a polymer based host material to create a filter utilizing the two-dimensional stopband of the periodic dielectric materials. The high-k ceramic rods (/spl epsiv//spl sim/90) are periodically spaced in a commercially-available Teflon-based host, to create a material that will inhibit propagation in two-dimensions. The inhibition of energy is used to create a resonance (termed a defect resonance), which in turn serves as the basis to create a filter. 2 and 4 pole filters were designed using this technology. The filter comprises a narrow passband region residing within the material stopband (12.1 GHz to 24.2 GHz). A/spl sim/1% bandwidth filter design yielded measured insertion losses of 1.13 dB and 1.69 dB @ 20.45 GHz for 2 and 4 pole filters respectively, correlating to an unloaded Q of approximately 1100. A maximal discrepancy of 2% was achieved on all measures of filter performance.

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Abstracts

Optimized etched hole size for suppressing the periodicity in the frequency response in photonic bandgap microstrip structures

Chang On Lee, Sang Tae Kim and Chull Chai Shin. "Optimized etched hole size for suppressing the periodicity in the frequency response in photonic bandgap microstrip structures." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1615-1618 vol.3.

Using ideal transmission line model, we find the optimized length for suppressing the periodicity in the frequency response in periodic structure. Optimized length is applied to photonic bandgap (PBG) microstrip structures and we show the existence of optimized etched hole size in ground plane for suppressing the periodicity in the frequency response in PBG microstrip structures and find them.

Abstracts

Coplanar waveguide periodic structures with resonant elements and their application in microwave filters

B.M. Karyamapudi and Jia-Sheng Hong. "Coplanar waveguide periodic structures with resonant elements and their application in microwave filters." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1619-1622 vol.3.

Coplanar waveguide (CPW) periodic structures with resonant elements on the ground plane have been investigated for lowpass and bandstop filter applications. The resonator is constructed by etching out radial shapes on the ground plane. The use of resonant elements allows larger attenuation in the stop band to be obtained with less number of periodic structures as compared with conventional photonic bandgap (PBG) structures. A theoretical study of this type of periodic structure has revealed some useful information for designing filters. Two filters of this type, one for lowpass application and the other for bandstop application have been designed, fabricated and tested. The results are presented.

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Evaluation of CVD diamond for heavy duty microwave switches

E. Kohn, W. Menzel, F.J. Hernandez-Guillen, R. Muller, A. Munding, P. Schmid, D. Grobe and J. Kusterer. "Evaluation of CVD diamond for heavy duty microwave switches." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1625-1628 vol.3.

In this contribution, the use of CVD diamond as a multi-functional material for DC coupled microwave switches is discussed. CVD diamond is a new MEMS material with extraordinary properties, especially for heavy duty applications in extreme environments. An all-diamond cantilever based switch is described using two different actuation principles. First results for a coplanar waveguide configuration are presented.

Abstracts

Silicon carbide for RF MEMS

J.M. Melzak. "Silicon carbide for RF MEMS." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1629-1632 vol.3.

Silicon carbide (SiC) is an excellent candidate for use in next generation RF MEMS devices such as microfabricated switches, micromechanical resonators, and filters. SiC is characterized by a wide bandgap, high acoustic velocity, high thermal conductivity, high electrical breakdown strength, and low chemical reactivity. These material properties lead to potential improvements in operating frequency, power handling capability, and reliability for such devices relative to their silicon counterparts. Furthermore, film deposition and micromachining techniques for SiC have been developed which leverage established tools and processes found in silicon-based microfabrication facilities, thereby demonstrating SiC as a commercially viable microsystem material. This paper presents recent performance results from SiC-based RF MEMS components.

Abstracts

Low cost RF MEMS switches using photodefinable mixed oxide dielectrics

Guoan Wang, S. Barstow, A. Jeyakumar, J. Papapolymerou and C. Henderson. "Low cost RF MEMS switches using photodefinable mixed oxide dielectrics." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1633-1636 vol.3.

This paper presents the design, fabrication and testing of capacitive RF MEMS switches with a new, low processing cost dielectric layer on high-resistivity silicon substrate. The dielectric can be spun on the wafer and its parameters (dielectric constant and loss) can be controlled during fabrication to achieve the desired values. Both bridge- and cantilever-type switches were fabricated on high-/spl rho/ silicon substrate using a simple low cost four-mask process. Measured results are presented.

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Encapsulation of the micromachined air-suspended inductors

Yun-Seok Choi, Euisik Yoon and Jun-Bo Yoon. "Encapsulation of the micromachined air-suspended inductors." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1637-1640 vol.3.

We have proposed and investigated encapsulation of air-suspended microstructures, especially for micromachined inductors in silicon radio frequency integrated circuits (RF ICs), providing a practical solution for covering up structural weakness to shock/vibration and accommodating package processes. As an encapsulating agent, two materials have been studied; polydimethylsiloxane (PDMS) for examining possible structural deformation when spin-coated, and benzocyclobutene (BCB) for measuring possible electrical performance degradation due to the finite dielectric constant. According to the experiments, no structural deformation has been observed after PDMS is spin-coated. After encapsulated by BCB, the maximum 20% degradation of integrated inductor Q-factor has been observed.

Abstracts

A n-state time-domain measurement test-bench for characterization of intermodulation distortion on device level

T. Merkle, S. Ramberger, M. Kuri and F. van Raay. "A n-state time-domain measurement test-bench for characterization of intermodulation distortion on device level." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1643-1646 vol.3.

A flexible nonlinear measurement system is presented for the investigation of intermodulation distortion (IMD) on device level at Ka-band frequencies. The setup is unique in the way that a passive load-pull tuner embedded inside a full two-port test-set is combined with a hybrid receiver to one fully automated test system. The calibration problem of the resulting n-state test-set is formulated with a generalized 4-port error model, for the first time. The hybrid receiver is composed of a virtual 4 channel time-domain sampling oscilloscope and a spectrum analyzer. As an application, we show various two-tone sweep-scenarios applied to our GaAs HEMTs targeting high power applications at Ka-band frequencies.

Abstracts

Proving the usefulness of a 3-port nonlinear vectorial network analyser through mixer measurements

W. Van Moer and Y. Rolain. "Proving the usefulness of a 3-port nonlinear vectorial network analyser through mixer measurements." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1647-1650 vol.3.

A 3-port Nonlinear Vectorial Network Analyser (NVNA) is presented. This new measurement instrument allows designers for the first time to measure the full nonlinear 3-port behaviour for any arbitrary mixer. The usefulness of the 3-port NVNA is proven on amplitude and phase calibrated 3-port measurements of a microwave mixer.

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Large signal pulsed RF and DC load pull characterization of high voltage 10W GaAs-GaInP HBTs

T. Gasseling, S. Heckmann, D. Barataud, J.M. Nebus, J.P. Villotte, R. Quere, D. Floriot and P. Auxemery. "Large signal pulsed RF and DC load pull characterization of high voltage 10W GaAs-GaInP HBTs." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1651-1654 vol.3.

This paper presents an on-wafer set up for the characterization of high voltage (26V) power HBTs under simultaneous large pulsed RF signal and pulsed DC test conditions. Both RF power profiles and DC current/voltage profiles are measured thanks to the use of a pulsed VNA (for RF) and a sampling scope (for DC). Typically the pulse width range is (300 ns - 300 ms) and a 10% duty cycle is applied. RF power performances and DC consumption of the transistors under test are recorded at different time positions within the pulse width This enables to investigate the effects of transient thermal aspects on RF power characteristics. S Band Measurements of 10 Watt (20 finger 2*70mm/sup 2/ GaAs-GaInP HBTs from Thales; TRT and UMS foundry) with specific gold radiator are reported in this paper.

Abstracts

New methods & non-linear measurements for active differential devices

J. Dunsmore. "New methods & non-linear measurements for active differential devices." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1655-1658 vol.3.

This paper presents new results for nonlinear measurements of active differential devices based on a novel source system. The system provides both true-differential and common-mode stimulus for CW and modulated RF signals, and presents results of non-linear operation of differential devices driven with such signals, which are compared with the same devices driven at the same levels using single ended drive and calculating the differential response. A remarkable result is that the latter method performs very well for devices having common-to-differential isolation.

Abstracts

Calibration of a gigahertz-bandwidth vector signal generation and analysis system

J. Qiu, D. Abe, T.M. Antonsen, Jr., B.G. Danly and B. Levush. "Calibration of a gigahertz-bandwidth vector signal generation and analysis system." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1659-1662 vol.3.

The calibration procedure for a vector signal generation and analysis system with over 1.6 GHz Bandwidth is described. To achieve the desired bandwidth, two software filters (a prefilter and a postfilter) are used to correct the non-uniform frequency responses in the system. We describe techniques for obtaining the response functions of both the signal generator and the signal analyzer. The measured response functions are used to construct the filters to achieve the flat frequency response. Finally a 1-Gsymbol/s 32-QAM raised-cosine-filtered waveform is generated to demonstrate the application of the system.

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A new characterization technique of "Four hot S parameters" for the study of nonlinear parametric behaviors of microwave devices

T. Gasseling, D. Barataud, S. Mons, J.M. Nebus, J.P. Villotte and R. Quere. "A new characterization technique of "Four hot S parameters" for the study of nonlinear parametric behaviors of microwave devices." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1663-1666 vol.3.

This paper presents a new characterization system which enables calibrated "Hot S parameter" measurements of power transistors in a load pull environment. The device under test (DUT) is driven by a large signal at a frequency f/sub 0/ while a small signal at a frequency f is injected as a perturbation signal. A frequency sweep of the perturbation tone is performed (basically from 300MHz up to f/sub 0/ (ie lower sideband)). Upper sideband, from f/sub 0/ up to 2f/sub 0/, can be extended in a same manner. The four "Hot S parameters" measured at f are dependent on the nonlinear regime of the DUT forced by the large signal at f/sub 0/. The aim of this experimental purpose is to investigate nonlinear parametric behaviors like nonlinear stability. A description of the proposed measurement set-up is done. Calibration and measurement procedures are described and significant S band measurement results of HBTs are reported and discussed.

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Multi-beam discrete lens arrays with amplitude-controlled steering

S. Romisch, D. Popovic, N. Shino, R. Lee and Z. Popovic. "Multi-beam discrete lens arrays with amplitude-controlled steering." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1669-1672 vol.3.

This paper presents a multi-beam antenna array with amplitude-controlled continuous beam steering of each beam. The principle is demonstrated on a Ka-band full-duplex dual-polarized array with an uplink frequency of 24.7GHz and a down-link frequency of 26.7GHz. The array is designed as a discrete lens, and the antenna elements are dual-frequency patches integrated in a 5-layer structure with delay lines that enable multiple beams. The array is spatially fed with a feed corresponding to each beam. Amplitude control at the feed results in continuous beam steering. Theoretical and experimental results for the multi-beam patterns and the beam steering are presented.

Abstracts

A high-speed adaptive antenna array with simultaneous multiple-beamforming capability (2003 Vol. III [MWSYM])

T. Nishio, Yuanxun Wang and T. Itoh. "A high-speed adaptive antenna array with simultaneous multiple-beamforming capability (2003 Vol. III [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1673-1676 vol.3.

A new type of adaptive beamforming antenna system architecture is developed for multi-channel wireless communications. Multi-beam beamforming with high data throughput is accomplished using the proposed beamformer architecture consisting of analog mixers and multi-tone direct digital synthesizers (DDS). The multi-beam beamformer is based on a multi-tone weighting scheme combined with analog-digital hybrid signal processing. High-speed real-time beamforming is realized by an analog beamformer circuit, while the flexibility on adaptive beamforming algorithms is retained by computing weighting coefficients using the digital signal processor (DSP). A 5.8 GHz eight-element adaptive beamforming array successfully demonstrates two-beam simultaneous beamforming and two-channel data recovery at 25 Mb/s data throughput in each channel with BPSK modulation, based on SDMA (space division multiple access).

Abstracts

A 60 GHz integrated antenna array for high-speed digital beamforming applications

Ji-Yong Park, Yuanxun Wang and T. Itoh. "A 60 GHz integrated antenna array for high-speed digital beamforming applications." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1677-1680 vol.3.

A 60 GHz integrated four-element planar antenna array is developed. Each antenna is integrated with a sub-harmonic I/Q mixer based on APDPs for the convenience of high-speed signal processing such as adaptive beamforming. An average conversion loss of four channels of less than 10.6 dB is achieved. Amplitude imbalance and phase deviation between I and Q outputs of each channel are less than 2.5 dB and 7/spl deg/, respectively. The array is used to construct a digital beamforming system along with an IF circuit block and DSP modules. Beam scanning results are successfully demonstrated.

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Multipath communications using a phase-conjugate array

J. Tuovinen, G.S. Shiroma, W.E. Forsyth and W.A. Shiroma. "Multipath communications using a phase-conjugate array." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1681-1684 vol.3.

A new microwave wireless communications scheme based on a phase-conjugating retrodirective antenna is introduced for maintaining a reliable radio link in a severe multipath environment. The method does not eliminate multipath, but uses it advantageously and is better suited to cope with mobile receivers than other methods. In the ideal case, the negative effects of multipath propagation can be completely avoided and multipath propagation only improves reliability of the radio channel. The principle is experimentally verified at 5.35 GHz and demonstrates that severe fading can be avoided and variation of received signal power can be reduced.

Abstracts

An active self-steering array using self-oscillating mixers

G.S. Shiroma, Chenyan Song, R.Y. Miyamoto and W.A. Shiroma. "An active self-steering array using self-oscillating mixers." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1685-1688 vol.3.

A retrodirective array using self-oscillating mixers (SOMs) is presented. SOMs allow for easier implementation of larger two-dimensional arrays by eliminating the complex local-oscillator (LO) feed structure. A four-element linear retrodirective array using SOMs is demonstrated at a LO frequency of 8.87 GHz. Each element is successfully phased locked at the LO frequency while 33 dB of isolation between adjacent elements is measured at the RF frequency. The LO power generated by a single SOM element at the fundamental frequency is +3 dBm. Retrodirectivity is successfully observed for scattering angles of -30/spl deg/, 0/spl deg/, and +15/spl deg/.

Abstracts

Coupled phase-locked loop arrays for beam steering

P.F. Maccarini, J. Buckwalter and R.A. York. "Coupled phase-locked loop arrays for beam steering." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1689-1692 vol.3.

Some of the limitations of coupled oscillator arrays, mainly intrinsic small locking bandwidth, amplitude fluctuations and limited agreement between unit cells and models, can be overcome with the use of coupled phase-locked loop arrays, which with appropriate models are more predictable than COAs and offer larger locking range and amplitude-independent phase relationships. The two offer similar advantages, such as phase-shifterless beam scanning and modulation abilities, as well as analogous challenges, for example the modeling and consequent design of unit cell and coupling schemes at microwave frequencies. Discrete and continuum modeling of CPLLAs are presented. The phase dynamics shows a diffusion type behavior, where the locking propagates away from the detuning points. The ability of beam scanning is then shown as the steady state solution of edge detuning. Additionally, the length of the coupling line together with the sign of the IF loop gain is proved to be an important factor in the transient and steady-state phase distribution along the array. These theoretical results are experimentally verified through the design and characterization of a 2.45 GHz CPLLA. These synchronized arrays are governed by strongly nonlinear behavior, and much still needs to be understood; this paper aims to show that they also present interesting properties that future research may exploit.

Abstracts

Digital predistortion linearization of frequency multipliers

Youngcheol Park, Kah Mun Low and J.S. Kenney. "Digital predistortion linearization of frequency multipliers." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1695-1698 vol.3.

This paper presents a novel technique to linearize frequency multipliers for use with modulated signals. Using amplitude and phase mapping functions, a modulated signal may be translated to an integer multiple of the carrier frequency with minimal distortion. To validate this technique, a Schottky-diode frequency tripler was built to transmit digital signals at 2.46 GHz with an 820 MHz input carrier frequency. Measured results show that with an IS-95B input signal, the digital predistorter achieved 26 dB of improvement in the Adjacent Channel Power Ratio (ACPR) at 2.46 GHz. Its output Error Vector Magnitude (EVM) was 13% with predistortion, whereas it was near 100% without predistortion. Additionally, an adaptive digital predistorter was designed, and simulation showed a 40 dB improvement in IMD with 4-tone signal input.

Abstracts

Baseband digital predistortion using subband filtering technique

O. Hammi, S. Boumaiza, M. Jaidane and F.M. Ghannouchi. "Baseband digital predistortion using subband filtering technique." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1699-1702 vol.3.

This paper proposes a subband baseband digital predistortion architecture for power amplifiers operated in multi-channel wideband applications. The new architecture is composed of a cascade of a fixed nonlinear function and an adaptive linear subband filter bank. It takes advantage of subband filtering for computational complexity reduction and convergence enhancement. This will allow digital baseband predistortion to be applied to wideband signals that traditional architectures fail to handle due to the insufficient processing speed capacity of the available digital signal processors. Power amplifiers non-linear behavior changes versus temperature were used for a first attempt to evaluate this new subband predistorter performances.

Abstracts

SDR transmitter based on LINC amplifier with bias control

Young Yun Woo, Jaehyok Yi, Youngoo Yang and Bumman Kim. "SDR transmitter based on LINC amplifier with bias control." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1703-1706 vol.3.

This paper describes a LINC (Linear Amplification using Nonlinear Components) handset transmitter adopting DC bias control. The power amplifier is operated at a saturated output power level and its level is adjusted by DC bias control. Thus the transmitter guarantees high efficiency at all usable output power level. Due to the LINC linearization, it can operate as a linear power amplifier. The new LINC transmitter can be used as a transmitter for software defined radio (SDR), since it can efficiently amplify both the GSM type constant envelope signal and CDMA type non-constant envelope signal, and its control part is very simple and mostly embodied in the digital domain. For verification, a 1.71 GHz LINC prototype transmitter has been implemented and tested. The results, compared with conventional cases, clearly show the suitability of the new LINC transmitter for SDR application.

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Design considerations for single package radio/spl trade/ (SPR) solution for EGSM/DCS dual band cellular phones

M. Megahed, E. Ngompe, M. Ayvazian and M. Glasbrener. "Design considerations for single package radio/spl trade/ (SPR) solution for EGSM/DCS dual band cellular phones." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1707-1710 vol.3.

A fully integrated front end radio on SPR, that provides a hybrid SOC and SIP solution, is presented. The SPR includes DCR transceiver, PA, directional coupler detector and FEM implemented on different die technologies plus discrete SAW, LPF, and diplexer in addition to embedded and discrete SMT components. The module is implemented on a low cost 4-layer MCM laminate substrate and its size is equal to 13/spl times/13/spl times/1.8 mm. The area saving on PCB phone boards by using the SPR is about 1/4 the discrete solution implementation. Results show that the complete radio integration can be successfully integrated on SPR.

Abstracts

A compact wideband MEM switched diversity antenna for indoor mobile channels

B.A. Cetiner, J.Y. Qian, S. Liu, L. Jofre, G.P. Li and F. De Flaviis. "A compact wideband MEM switched diversity antenna for indoor mobile channels." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1711-1714 vol.3.

In this paper we introduce a wideband three-element diversity antenna for compact wireless communication systems operating in the 4-6 GHz band. A series of experiments to characterize the diversity performance of the antenna for non-line-of-sight (NLOS) indoor multipath environments is conducted. From these experiments, we calculate envelope correlation, power imbalance, and diversity gain. We also use this structure as a basis for another diversity antenna, with RF MEM switches providing different reception/transmit characteristics for switched diversity signals. A novel printed circuit board (PCB)-compatible RF MEMS process technology employed to construct the system on RT/Duroid5880 is discussed. Radiation characteristics of the MEM switched antenna are also provided.

Abstracts

High-efficiency linear amplification by dynamic load modulation

F.H. Raab. "High-efficiency linear amplification by dynamic load modulation." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1717-1720 vol.3.

Load modulation is a new technique in which amplitude-modulated signals are produced with high efficiency by dynamic variation of the load impedance of the power amplifier. The prototype MOSFET PA operates in class E and produces a peak output of 19 W at 30 MHz with an efficiency of 66 percent. Load modulation is accomplished by a T network with a pair of high-voltage MOSFETs that act as a voltage-variable capacitor. The envelopes of a variety of different signals are successfully generated. For a Rayleigh (multi-carrier) envelope with a 10-dB peak-to-average ratio, the average efficiency is twice that achieved in linear operation of the same PA.

Abstracts

Amplitude modulator utilizing a high-Q Class-E DC-DC converter

W.H. Cantrell and W.A. Davis. "Amplitude modulator utilizing a high-Q Class-E DC-DC converter." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1721-1724 vol.3.

A high-level amplitude modulator is designed and tested utilizing a high-Q Class-E DC-DC converter operating at a nominal switching frequency of 30 MHz. The output power is a maximum of 16.1 W and the efficiency is as high as 77.9%. The switching frequency is varied to control the output amplitude of the modulator. It is shown theoretically that the maximum useful dynamic range is 12.0 dB. An equation is derived that predicts the amount of frequency variation necessary to vary the output amplitude by a specific amount, based on the loaded Q of the circuit design. A RHP zero in the control-to-output transfer function is shown to have a detrimental effect on the modulation frequency to switching frequency ratio. The modulator is used to generate a DC-offset triangle-wave at frequencies as high as 500 kHz.

Abstracts

Analytic expressions for the optimum source & load impedance and associated large-signal gain of an RF power transistor

J. Walker. "Analytic expressions for the optimum source & load impedance and associated large-signal gain of an RF power transistor." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1725-1728 vol.3.

This paper presents for the first time analytic expressions for the optimum source and load impedance and associated large-signal gain for a transistor with series inductive and parallel capacitive feedback in addition to input and output capacitance. Both class A and B are considered. The computed results are shown to be in good agreement with experimental data.

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Accurate, wideband characterization and optimization of high power LDMOS amplifier memory properties

M. Eron, E. Martony, Y. Fogel, E. Jeckeln and M. Hrybenko. "Accurate, wideband characterization and optimization of high power LDMOS amplifier memory properties." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1729-1732 vol.3.

Accurate, wideband measurements of high power LDMOS PCS band stages were carried out in an effort to quantify their memory characteristics. The measurements help identify intrinsic and extrinsic sources of memory in addition to a measurable parameter that can be used for improved design. Results of successful circuit optimization for memory are also presented.

Abstracts

Method for modeling amplitude and bandwidth dependent distortion in nonlinear RF devices

E.G. Jeckeln, Huei-Yuan Shih, E. Martony and M. Eron. "Method for modeling amplitude and bandwidth dependent distortion in nonlinear RF devices." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1733-1736 vol.3.

A modeling procedure for identifying amplitude and bandwidth dependent distortion in nonlinear RF devices is presented. The modeling mechanism is based on removing the nonlinearity behavior from the relationship between input-output measurements and applying a linear identification procedure using ARMA models. The model parameter estimation is processed through a non-recursive procedure where an overdetermined set of linear equations is solved analytically employing QR-factorization. Results were carried out for different LDMOS transistor modules at 2.14 GHz. The model fit was in the order of 96%. The method allows the bandwidth dependent distortion to be evaluated under real operating conditions by monitoring pole and zero behavior.

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Exact analysis of a simple class E circuit version for device characterization purposes

P.M. Gaudo, C. Bernal and A. Mediano. "Exact analysis of a simple class E circuit version for device characterization purposes." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1737-1740 vol.3.

The mathematical exact analysis of a simple class E high-efficiency switching mode tuned power amplifier is performed. The simple network only contains one capacitor and one inductor. Switch duty-cycle and Q cannot be chosen independently, and thus this circuit is only of interest for applications in which a high harmonic content in the load is permitted. In this paper, this circuit is used as a test bench for extracting, with no need for optimization, the parameters of a simple FET output port model in high frequency switching conditions. This method is a quick way to predict if a transistor will be useful in a class E application. Experimental measurements showing good agreement with theoretical results are presented.

Abstracts

Using amplifiers with poor linearity to linearize amplifiers with good linearity

T.P. Weldon and K. Miehle. "Using amplifiers with poor linearity to linearize amplifiers with good linearity." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1741-1744 vol.3.

A new linearization method is presented where a device with poor linearity is combined with a second device having good linearity. The resulting composite device has much better linearity than the two original devices. The new method is applicable to both receivers and transmitters, and is implemented as an integrated circuit without external components. Third order intermodulation distortion is canceled by appropriate design of the gains and intercept points of two amplifiers. Finally, hardware test data is presented both for an integrated circuit prototype and for a prototype using off-the-shelf amplifiers.

Abstracts

A novel bandpass filter using active capacitance

Jae-Ryong Lee, Young-Hoon Chun and Sang-Won Yun. "A novel bandpass filter using active capacitance." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1747-1750 vol.3.

In this paper a novel RF active bandpass filter is proposed. In the proposed design the resonator is made of an active capacitor together with a conventional inductor. The FET-based active capacitor exhibits a negative resistance property as well as capacitive property, and it compensates the resistance from the inductor which consists of the resonant circuit Conventional active filters usually have high noise figure, while in the proposed design good noise characteristics can be achieved. So, the proposed active filter is applicable to the RF front-end design as RFIC or MMIC. The measured 2-stage active bandpass filter shows bandwidth of 52.5 MHz, 0.3 dB insertion loss, 0.3 dB ripple, noise figure of 2.7 dB and OIP3 of 8 dBm at 1.9 GHz, which agrees well with the simulated results.

Abstracts

A 60 GHz-band coplanar MMIC active filter

M. Ito, K. Maruhashi, S. Kishimoto and K. Ohata. "A 60 GHz-band coplanar MMIC active filter." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1751-1754 vol.3.

This paper presents the design and performance of a 60 GHz-band coplanar active filter. To compensate the loss of a passive filter, a resonator composed of a quarter-wavelength line is terminated by a negative resistance circuit. A cross-coupling is introduced to make attenuation poles at both sides of the pass-band. A fabricated filter with two resonators shows an insertion loss of 3.0 dB with a rejection of greater than 20 dB at 3 GHz-separation from a center frequency of 65.0 GHz. The size of the filter is 2.5 mm /spl times/ 1.1 mm.

Abstracts

Implementation of a tunable coplanar filter

T. Paillot, P. Blondy, D. Cros, P. Guillon, J.C. Orlianges, C. Champeaux and A. Catherinot. "Implementation of a tunable coplanar filter." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1755-1758 vol.3.

This paper presents the implementation of a 34 GHz tunable CPW filter. An original excitation structure has been used. The filter has been simulated achieving 9% fractional bandwidth, insertion losses of 4 dB, return losses better than 15 dB and 3% tunability.

Abstracts

Performance of polygonal-shaped TFBARs and on-wafer tuning inductors

Jong-Soo Kim, Kun-Wook Kim, Myeong-Gweon Gu, Jong-Gwan Yook and Han-Kyu Park. "Performance of polygonal-shaped TFBARs and on-wafer tuning inductors." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1759-1762 vol.3.

In this paper, two different shapes of thin film bulk acoustic resonators (TFBARs) are characterized with respect to electrode thickness and overall area, and gold plated on-wafer inductors are employed to tune the TFBAR filter performance. Air-gap type TFBARs are fabricated with aluminum nitride (AlN) as a piezoelectric material and platinum as top and bottom electrodes. An equivalent inductor model is employed for the tuning of fabricated TFBAR bandpass filters, designed based on the modified Butterworth-Van Dyke (MBVD) equivalent circuit. Fabricated inductors revealed inductance of 3 nH and Q factor of about 8 at 2 GHz. It is clearly shown that tuning inductors can enlarge the bandwidth of the TFBAR ladder filters by about 10 MHz and suppress the out-of-band rejection around 10 dB further.

Abstracts

Tunable duplexer having multilayer structure using LTCC

K. Saitou and K. Kageyama. "Tunable duplexer having multilayer structure using LTCC." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1763-1766 vol.3.

A tunable duplexer has been designed for GSM1800/1900 digital cellular system. The tunable duplexer has been fabricated with LTCC (Low Temperature Co-fired Ceramics) multilayer technologies assisted by varactor diodes. To accomplish higher attenuation for each system, multi-tuning method, which enables to control the passband and the stopband independently, is applied. Size is designed as 5.7/spl times/5.7/spl times/1.8mm. Insertion losses are less than 3.5dB. Attenuation is more than 25dB at Fo+200MHz in Tx, and is more than 10dB at F0-150MHz in Rx.

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Electronically tunable LTCC based multi-layer filter for mobile handset application

M. Rahman and K. Shamsaifar. "Electronically tunable LTCC based multi-layer filter for mobile handset application." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1767-1770 vol.3.

A novel tunable bandpass filter for mobile handset application is reported. Combline topology has been used for this filter and it has been implemented in LTCC multi-layer technology for small size. The filter can be tuned over DCS, PCS, and UMTS bands used in mobile communication without degrading the response. It has less than 4.3 dB insertion loss over the entire tuning range and has a small foot print. Simulated and measured responses of the filter show good correspondence.

Abstracts

On the design of LTCC filter for millimeter-waves

V. Kondratyev, M. Lahti and T. Jaakola. "On the design of LTCC filter for millimeter-waves." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1771-1773 vol.3.

To test the repeatability of scattering parameters of LTCC bandpass filters at millimeter-waves a dual-mode stripline patch filter was designed. Measurement results showed 2.8 dB insertion loss and 12 dB return loss in passband. The measurements of two test structures exhibited good coincidence of scattering parameters, which are in a good agreement with the predicted results. To prevent the influence of the stripline package onto the filter performance additional investigations were carried out. As a result the suitable configuration of feed lines were chosen.

Abstracts

Compact, broad-stopband elliptic-function lowpass filters using microstrip stepped impedance hairpin resonators

Lung-Hwa Hsieh and Kai Chang. "Compact, broad-stopband elliptic-function lowpass filters using microstrip stepped impedance hairpin resonators." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1775-1778 vol.3.

A compact elliptic-function lowpass filter is developed. Multiple cascaded microstrip hairpin resonators operated at different 3-dB cutoff frequencies are used to design the filter. The filters are evaluated by experiment and simulation with good agreement. The return loss is better than 12.84 dB from DC to 0.81 GHz. The insertion loss is less than 0.5 dB. The rejection is greater than 35.7 dB from 1.5 to 10 GHz. This compact, low loss, sharp cutoff frequency response, and broad stopband lowpass filter should be useful in many wireless communication systems.

Abstracts

Low-loss bandpass RF filter using MEMS capacitance switches to achieve a one-octave tuning range and independently variable bandwidth

R.M. Young, J.D. Adam, C.R. Vale, T.T. Braggins, S.V. Krishnaswamy, C.E. Milton, D.W. Bever, L.G. Chorosinski, Li-Shu Chen, D.E. Crockett, C.B. Freidhoff, S.H. Talisa, E. Capelle, R. Tranchini, J.R. Fende, J.M. Lorthioir and A.R. Tories. *"Low-loss bandpass RF filter using MEMS capacitance switches to achieve a one-octave tuning range and independently variable bandwidth." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1781-1784 vol.3.*

We demonstrate a low insertion loss (1.5dB) tunable two-pole bandpass radio frequency filter with a tuning range of one octave (812-1752 MHz). It is also tunable in band width, with 3dB-bandwidths of 7 to 42% being achieved. The circuit used consists of two fixed high quality factor toroidal inductors mounted on a printed circuit board next to a fused-quartz substrate on which were fabricated the MEMS (Micro-Electro-Mechanical System) capacitance switches. Five arrays of MEMS elements, with a total of 34 MEMS bridges, are used on this chip. Each array is independently addressable in a four-bit scheme to permit well matched, independent tuning of the center frequency and bandwidth.

Abstracts

A high performance MEMS miniature tunable bandpass filter

A. Abbaspour-Tamijani, L. Dussopt and G.M. Rebeiz. "A high performance MEMS miniature tunable bandpass filter." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1785-1788 vol.3.

A miniature tunable 3-pole filter is fabricated using coplanar waveguide (CPW) transmission-tines on glass substrate (C/sub r/ = 4.6, tan /spl delta/ = 0.006) and an array of RF-MEMS varactors. The filter is tuned using a bias voltage of 0-80 Volts. The filter is /spl sim/3.6 mm long and gives a near ideal frequency response. A tuning range of 14% from 18.6 to 21.4 GHz was achieved, with a constant fractional bandwidth of 7.4 /spl plusmn/ 0.1% and a mid-band insertion loss of 3.85-4.15 dB.

Abstracts

Tunable bandpass filter using distributed MEMS transmission lines

B. Lakshminarayanan and T. Weller. "Tunable bandpass filter using distributed MEMS transmission lines." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1789-1792 vol.3.

This paper presents a two-state tunable RF MEMS bandpass filter operating at 16.5 and 22 GHz. The topology consists of coplanar waveguide sections that are periodically loaded with MEMS capacitors. The passband insertion loss and bandwidth are 2.3 dB and 11.5% at 16.5 GHz, and 3.3 dB and 16.5% at 22 GHz. The typical switching voltage is 45-50 V.

Abstracts

Electrostatically-tunable analog RF MEMS varactors with measured capacitance range of 300%

D. Peroulis and L.P.B. Katehi. "Electrostatically-tunable analog RF MEMS varactors with measured capacitance range of 300%." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1793-1796 vol.3.

This paper reports on the design, fabrication, and testing of a novel analog MEMS varactor with measured tuning range of 300%. The proposed electrostatically actuated varactor is based on a parallel-plate approach and is best suited for microwave/millimeter-wave applications. The measured capacitance values are in the range of 40-160 fF and are achieved with DC voltages of 20-34 V. The proposed varactor has the additional advantages of very high resonant frequency (its series measured parasitic inductance is 9 pH) and high quality factor (higher than 80 at 40 GHz).

Abstracts

MEMS based thin film 2 GHz resonator for CMOS integration

M. Hara, J. Kuypers, T. Abe and M. Esashi. "MEMS based thin film 2 GHz resonator for CMOS integration." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1797-1800 vol.3.

This paper describes the development of the aluminum nitride (AIN) thin film bulk acoustic resonator (FBAR) using noble MEMS techniques for CMOS integration. This resonator has an air gap between a substrate for acoustic isolation. Germanium (Ge) was used as a sacrificial layer to make the air gap. This technique gives simple process and high CMOS compatibility. The resonator achieved a Q factor of 780 and an effective electro-mechanical coupling constant (k/sub eff//sup 2/) of 5.36 % at a resonant frequency of 2 GHz.

Abstracts

3D silicon micromachined RF resonators

K.M. Strohm, F.J. Schmuckle, O. Yaglioglu, J.-F. Luy and W. Heinrich. "3D silicon micromachined RF resonators." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1801-1804 vol.3.

Passive components with high quality factor are required for many applications, e.g., filters. In the field of micromachining, this is commonly achieved by using multiple-wafer structures. An alternative technique is presented here together with design and measurement data, which is based on MEMS technology and yields single-wafer resonators thus reducing costs. Cavity resonators with the Si being partly removed show quality factors Q beyond 360.

Abstracts

Harmonic load/source pull strategies for high efficiency PAs design

P. Colantonio, A. Ferrero, F. Giannini, E. Limiti and V. Teppati. "Harmonic load/source pull strategies for high efficiency PAs design." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1807-1810 vol.3.

An advanced load/source pull bench has been used in conjunction with harmonic tuning techniques for accurate and effective power amplifier design. The optimization strategy is presented together with the measured results obtained with a medium power 1-mm MESFET.

Abstracts

Characterization of a microwave probe up to frequencies of 400 GHz

M. Bieler, M. Spitzer, G. Hein and U. Siegner. "Characterization of a microwave probe up to frequencies of 400 GHz." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1811-1814 vol.3.

A microwave probe has been characterized up to frequencies of 400 GHz with time-domain sampling techniques. The complex transfer function of the probe as well as the complex reflection and transmission coefficients of transmission line discontinuities have been determined from the time-domain data. This work promotes the time-domain characterization of high-frequency components with coaxial connectors. This task requires the transfer of picosecond electrical pulses between coplanar and coaxial lines, which is often accomplished with microwave probes. Therefore, the detailed propagation characteristics of the probes have to be known for reliable time-domain characterization of coaxial high-frequency devices.

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GSOLT: the calibration procedure for all multi-port vector network analyzers

H. Heuermann. "GSOLT: the calibration procedure for all multi-port vector network analyzers." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1815-1818 vol.3.

The general method of 1- to n-port network analyzer calibration is described using the classical SOLT model which includes all linear errors of the network analyzer test-sets. This developed GSOLT-procedure works with vector network analyzers with n+1 measurement channels to measure n-port devices with high accuracy. The presented error correction algorithm of the GSOLT-procedure is outstanding regarding the simplicity and numerical robustness. The algorithm allows an easy programming for the correction of measurements of any device independent of the number of ports (1 to n). Experimental results attest to the very good precision of GSOLT error corrected measurements.

Abstracts

An optimal multiline TRL calibration algorithm

D.F. Williams, C.M. Wang and U. Arz. "An optimal multiline TRL calibration algorithm." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1819-1822 vol.3.

We examine the performance of two on-wafer multiline Thru-Reflect-Line (TRL) calibration algorithms: the popular multiline TRL algorithm implemented in the MultiCal/spl reg/ software package, and a newly implemented iterative algorithm designed to give optimal results in the presence of measurement noise. We show that the iterative algorithm outperforms the MultiCal software in the presence of measurement noise, and verify its uncertainty estimates.

Abstracts

A new empirical method for extracting unloaded resonant frequencies from microwave resonant cavities

A.J. Canos, J.M. Catala-Civera, F.L. Penaranda-Foix, J. Monzo-Cabrera and E. De los Reyes. "A new empirical method for extracting unloaded resonant frequencies from microwave resonant cavities." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1823-1825 vol.3.

Equivalent circuits traditionally used to model resonators and coupling networks in the vicinity of a resonance provide values of unloaded resonant frequencies which usually do not agree with experimental results. A new empirical method for the extraction of influence of coupling networks on resonant cavities is presented. The characterization of coupling structures is performed directly from measurements without the need of obtaining the electromagnetic fields inside the cavity, which is very interesting from a practical point of view. Results are validated with simulations and experimental measurements. The accuracy of some cavity applications, such as dielectric characterization techniques can be directly improved with this approach.

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Novel mode content analysis technique for multimode waveguides

P.V. Nikitin, D.D. Stancil, A.G. Cepni, A.E. Xhafa, O.K. Tonguz and D. Brodtkorb. "Novel mode content analysis technique for multimode waveguides." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1827-1830 vol.3.

This paper presents a novel technique for analyzing the mode content in multimode waveguides. The technique is based on measuring the frequency response between the two antennas coupled into a multimode waveguide and using that information to extract the frequency-averaged mode content at the location of the transmitting antenna. The technique is applicable to cases in which the complex mode amplitudes are approximately constant over the frequency range of interest. This method is valuable for determining the mode mix generated by arbitrary transmitting antennas in a multimode waveguide propagation environment, such as HVAC duct system used for indoor wireless communications.

Abstracts

Experimental demonstration of a 35 GHz holographic antenna

A.E. Fathy, M. ElSherbiny, A. Rosen, G. Ayers and S. Perlow. "Experimental demonstration of a 35 GHz holographic antenna." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1833-1836 vol.3.

We have developed a novel two-dimensional grating antenna based on microwave holography. The two-dimensional grating (hologram) is formed on a dielectric substrate and fed by an integrated surface wave exciter. Various design issues will be presented, as will a 35 GHz demonstration prototype antenna designed, fabricated, and tested. Measured radiation patterns closely agreed with the theoretical prediction.

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Tailoring the dielectric properties of meta materials

J.K. Abraham, R. Tellakula, K.J. Vinoy, Y. Sha and V.K. Varadan. "Tailoring the dielectric properties of meta materials." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1837-1840 vol.3.

This paper presents the experimental investigations on the effect of metallic inclusions on a dielectric substrate for tailoring the properties of meta material. Dielectric properties of samples are measured with different metallic inclusions and the results are compared with and without inclusions. The designs of several samples leading to negative permittivity are presented along with their experimental results.

Abstracts

Array antenna characterization technique based on evanescent reactive-near-field probing in an ultra-small anechoic box

Q. Han, K. Inagaki and T. Ohira. "Array antenna characterization technique based on evanescent reactive-near-field probing in an ultra-small anechoic box." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1841-1844 vol.3.

This paper presents a new technique in which small array antenna performance is characterized based on reactive-near-field probing in an ultra-small anechoic box and with a multi-probe. Unlike conventional far- or near-field measurement methods, the radiation patterns in the proposed approach are computed from the currents only at discrete points picked up in the evanescent region of an array antenna's elements. An equivalent weight vector is introduced to effectively eliminate the need for sensor scanning. Cross correlation coefficients between the far-field patterns of a conventional measurement and the reactive-near-field ones are as high as 0.933 to 0.998 for single-probe pick-up and as high as 0.885 to 0.988 for multi-probe pick-up. This shows that the proposed technique can replace large anechoic chambers currently used for characterizing small array antennas' performance.

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Investigation of an experimental setup of a smart antenna

M. Piasecki and J. Modelski. "Investigation of an experimental setup of a smart antenna." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1845-1848 vol.3.

This article presents the results of the investigation of smart antenna modeling, simulations and operation. The experimental setup consisting of an antenna array, microwave circuits, additional control circuitry and implemented adaptive algorithm is described and characterized. The results of measurements of operational smart antenna system are presented in contrast with computer simulations of the antenna adaptation process for various signal and interference scenarios.

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A novel phased array based on the extended resonance power dividing technique

A. Tombak and A. Mortazawi. "A novel phased array based on the extended resonance power dividing technique." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1849-1852 vol.3.

A novel phased array based on the extended resonance power dividing technique has been presented. This phased array eliminates the need for a separate power splitter and phase shifters in a conventional phased array system. As a proof of principle, a 2 GHz extended resonance based phased array consisting of 4 microstrip patch antennas has been designed, fabricated and tested. The measured scan range was +/- 13.5 degrees with an average beamwidth of 26 degrees.

Abstracts

Variable periphery amplifier with built-in phase shifting capability for ultra compact transceiver module

J.M. Yang, X. Lan, R. Wang, R. Kagiwada and C.C. Yang. "Variable periphery amplifier with built-in phase shifting capability for ultra compact transceiver module." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1853-1855 vol.3.

The objective of this paper is to provide an novel solution to construct an ultra compact transceiver module to achieve cost saving and weight reduction goals required for a large aperture phased array. The idea is to utilize variable periphery amplifiers to modulate the magnitude of the in-phase and quadrature component of the input signal. The phase of the combined signal then can be varied in a similar fashion to an IQ modulator. The advantage of the approach is the realization of an amplifier with built-in phase shifting capability. The typical performance degradation associated with the phase shifter in the conventional design can then be avoided.

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A high-power W-band quasi-optical frequency tripler

J.B. Hacker, A.L. Sailer, B. Brar, G. Nagy, R.L. Pierson, Jr. and J.A. Higgins. "A high-power W-band quasi-optical frequency tripler." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1859-1862 vol.3.

A monolithic W-band quasi-optical array consisting of 196 heterostructure barrier varactors mounted in a waveguide has produced 684 mW of CW output power with a peak conversion efficiency of 11.3% at 93 GHz. The compact 32 mm/sup 2/ array was fabricated using two-barrier twin-mesa varactors with InGaAs/InAlAs/AlAs barriers on a lattice-matched InP substrate. Device measurements demonstrate low series resistance and high cutoff frequency. Simulations show even greater output power and efficiency can be achieved by increasing the device density in the array.

Abstracts

V-band transmission and reflection grid amplifier packaged in waveguide

Chun-Tung Cheung, R. Tsai, R. Kagiwada and D.B. Rutledge. "V-band transmission and reflection grid amplifier packaged in waveguide." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1863-1866 vol.3.

We designed and demonstrated two monolithic V-band grid amplifiers packaged in waveguides. We measured a 2 dB small-signal system gain for both transmission and reflection amplifiers. This is the first monolithic grid amplifier packaged and measured in a waveguide in the V-band.

Abstracts

Numerical and experimental investigation of losses in a tray based spatial power amplifier

A. Al-Zayed, S. Ortiz, M. Ozkar and A. Mortazawi. "Numerical and experimental investigation of losses in a tray based spatial power amplifier." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1867-1870 vol.3.

This paper presents experimental and numerical investigations on a 49-element Ka-band amplifier array. This study is aimed at determining the origin of various losses in the amplifier array. Passive simulation data confirms that the load seen by the active devices is well matched and that most of the power is coupled to the LSE/sub 10/ mode. This means that coherent power combining should take place if there is no phase and amplitude variation due to the active devices and phase correcting dielectric lenses.

Abstracts

Broadband high power amplifier using spatial power combining technique (2003 Vol. III [MWSYM])

Pengcheng Jia, Lee-Yin Chen, A. Alexanian and R.A. York. "Broadband high power amplifier using spatial power combining technique (2003 Vol. III [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1871-1874 vol.3.

High power, broad bandwidth, high linearity and low noise are among the most important features in amplifier design. Broadband spatial power combining techniques address all these issues by combining the output power of a large quantity of microwave monolithic integrated circuit (MMIC) amplifiers in a broadband coaxial waveguide environment, while maintaining good linearity and improving phase noise of the MMIC amplifiers. A coaxial waveguide was used as the host of the combining circuits for broader bandwidth and better uniformity by equally distributing the input power to each element. A new compact coaxial combiner with much smaller size is investigated. Broadband slotline to microstrip line transitions are integrated for better compatibility with commercial MMIC amplifiers. Thermal simulations are performed and a new thermal management scheme is employed to improve the heat sinking in high power applications. A high power amplifier, using the compact combiner design, is built and demonstrated to have a bandwidth from 6 to 17 GHz with 44 W maximum output power. Linearity measurement has shown a high IP3 of 52 dBm.

Abstracts

A negative reflective/refractive "meta-interface" using a bi-directional phase-conjugating array

C.A. Allen, K.M.K.H. Leong and T. Itoh. "A negative reflective/refractive "meta-interface" using a bi-directional phase-conjugating array." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1875-1878 vol.3.

A negative reflective/refractive "meta-interface" using a bi-directional phase-conjugating antenna array is proposed. Negative reflection is due to the retro-directivity of the array while negative refraction is a consequence of the bi-directionality of the slot elements used in the array. A simple design of the interface is presented. The prototype demonstrates negative reflection and refraction in far-field and near-field measurements.

Abstracts

An ultra-narrowband HTS bandpass filter

K. Dustakar and S. Berkowitz. "An ultra-narrowband HTS bandpass filter." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1881-1884 vol.3.

This paper presents the measured results of an HTS ultra-narrowband bandpass filter with a 100 kHz bandwidth. This filter, with a fractional bandwidth of 0.014% and a center frequency of 700 MHz, represents a previously unrealized portion of filter parameter space. This filter was realized using a five-pole Chebyshev filter design and was fabricated using an HTS microstrip configuration. This filter required very high Q, very weak coupling, and a strong reduction in parasitics. Unloaded Qs of 135,000 were achieved with a resulting insertion loss of 1.37 dB. Even resonator Qs of 20,000 would lead to a filter loss of 9 dB. A noise figure of 1 dB was achieved for a complete system with this filter and a cryogenic low-noise amplifier.

Abstracts

New advances in HTS microstrip filter design

Shen Ye and C. Sans. "New advances in HTS microstrip filter design." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1885-1888 vol.3.

This paper presents a new filter design technique. By using the concept of primary and secondary couplings between a pair of resonators, greater flexibility in the control of sequential couplings and cross couplings can be achieved. A 6-pole 0.1% filter is shown as an example. It was designed for YBCO thin-film on 0.020" MGO substrate. Excellent measured responses demonstrate the validity and potential of this new technique.

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Superconducting microstrip filters using compact resonators with double-spiral inductors and interdigital capacitors

Jiafeng Zhou, M.J. Lancaster and F. Huang. "Superconducting microstrip filters using compact resonators with double-spiral inductors and interdigital capacitors." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1889-1892 vol.3.

Novel resonators composed of double-spiral inductors and interdigital capacitors are developed, which not only are compact in size but also have no harmonics up to three times of the fundamental frequency. The center frequency is insensitive to the thickness of the substrate. A miniature seven-pole narrow-band HTS bandpass microstrip filter has been designed, fabricated and tested for an astronomy observation application, which requires a center frequency at 610 MHz and 0.82% fractional bandwidth. The computed and measured results are found in excellent agreement.

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A superconducting thin film filter of very high wide-band rejection

H.R. Yi, S.K. Remillard and A. Abdelmonem. "A superconducting thin film filter of very high wide-band rejection." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1893-1896 vol.3.

The wide band rejection of superconducting thin film filters is investigated. The cross talk between input and output ports for thin film filters degrades the wide band rejection. We present a thin film filter design based on a newly invented thin film resonator. The cross coupling between the input and output ports is reduced by a factor of more than ten. The fabricated thin film filter shows good performance and consistency with design and theory. The measured return loss in the passband is more than 23 dB. The insertion loss is 0.66 dB corresponding to a filter Q of 36,000. Steep rejection slopes at the band edges are obtained. The wide band rejection is 95 dB.

Abstracts

Field-simulation-based strategy for designing microstrip filters

E. Semouchkina, G. Semouchkin, M. Lanagan and R. Mittra. "Field-simulation-based strategy for designing microstrip filters." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1897-1900 vol.3.

The insertion loss spectrum of a microstrip open-loop square ring band-pass filter is analyzed by using the Finite Difference Time Domain (FDTD) field simulations. Visualization of standing waves at resonant frequencies guides the placement of stepped impedance sections or capacitive loads at electric field maxima. Strategic load placement enables us to modify selected resonant modes, to monitor efficiently center and attenuation pole frequencies, to affect the shape and width of the pass-band, and to alter the input impedance. The presented approach is useful for miniaturizing various types of microstrip filters and antennas and optimizing their performance.

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Dual-mode microstrip triangular patch resonators and filters

Jia-Sheng Hong and Shuzhou Li. "Dual-mode microstrip triangular patch resonators and filters." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1901-1904 vol.3.

Dual-mode operation of microstrip triangular patch resonators has been investigated. It has been found theoretically that the dual modes can result from the rotation and superposition of a fundamental mode. The characteristics of the dual modes and their mode splitting are described. The application of this new type of dual mode microstrip patch resonator in the design of microwave planar filters is presented. A two-pole filter and one four-pole filter of this type are demonstrated for the first time. Both theoretical and experimental results are presented. Advantages of using this type of filter are not only its lower loss and higher power handling capability, but also its compact size and natural circuit topology for implementing filters.

Abstracts

Meandered line microstrip filter with suppression of harmonic passband response

P. Vincent, J. Culver and S. Eason. "Meandered line microstrip filter with suppression of harmonic passband response." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1905-1908 vol.3.

This paper presents a new technology for implementing parallel-coupled line filters with suppression of passband harmonics. The meandered line design suppresses passband harmonics by using numerous bends and angles to equalize the phase velocities of the odd and even mode field distributions that occur in conventional straight-coupled line filters. A meandered line filter fabricated as part of this study achieved 40% size reduction and 70 dB rejection at the 2/sup nd/ harmonic without degrading the passband performance.

Abstracts

Microwave coplanar filters on Si substrates

K.T. Chan, A. Chin, J.T. Kuo, C.Y. Chang, D.S. Duh, W.J. Lin, Chunxiang Zhu, M.F. Li and Dim-Lee Kwong. "Microwave coplanar filters on Si substrates." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1909-1912 vol.3.

High performance band-pass and band-stop microwave coplanar filters operating from 22 to 94 GHz have been realized on Si substrates using a proton implantation process. Very good insertion loss and filter characteristics close to ideal EM simulation are measured that demonstrate excellent filter performance to 91 GHz.

Abstracts

Power handling and linearity of MEM capacitive series switches

J. Muldavin, R. Boisvert, C. Bozler, S. Rabe and C. Keast. "Power handling and linearity of MEM capacitive series switches." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1915-1918 vol.3.

This paper presents the power handling and linearity of a capacitive series MEMS switch. The switching time as a function of incident RF power is also discussed. The MIT Lincoln Laboratory series capacitive MEMS switch handled nearly 10 Watts of RF power under cold switching conditions and up to 1.7 Watts of RF power under hot switching conditions. The power handling is a function of the pull-down voltage of the switch and the frequency of the RF signal.

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RF actuation of capacitive MEMS switches

J.R. Reid, L.A. Starman and R.T. Webster. "RF actuation of capacitive MEMS switches." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1919-1922 vol.3.

An analytical calculation of microwave actuation for shunt capacitive MEMS switches is presented. This calculation shows that the microwave signal deflects the beam according to the RMS voltage of the signal. In addition, heating of the beam due to dissipated microwave power is shown to play a significant role in microwave actuation.

Abstracts

Electro/thermal measurements of RF MEMS capacitive switches

R.M. Reano, D. Peroulis and J.F. Whitaker. "Electro/thermal measurements of RF MEMS capacitive switches." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1923-1926 vol.3.

An aspect-ratio-limited fabrication procedure for the secondary handling of miniaturized micromachined and fiber-fed gallium arsenide electrothermal probes is presented, and a completed probe is used to measure the electric field and temperature above an RF MEMS capacitive switch. The probe dimensions are 125 /spl mu/m /spl times/ 125 /spl mu/m /spl times/ 100 /spl mu/m. Measurements of switches with dimensions of 250 /spl mu/m /spl times/ 640 /spl mu/m are performed for RF powers between 252 mW and 6.7 W in the UP and DOWN states. Non-contact temperature measurements 25 /spl mu/m above the switch in the UP state show a thermal rise time of 0.63 /spl plusmn/ 0.05 seconds for an RF input power of 6.7 W. The accompanying temperature rise is 16.8 /spl plusmn/ 0.7/spl deg/C. In the DOWN state, the increase in temperature is 3.0 /spl plusmn/ 0.8/spl deg/C. Spatial line scans of temperature show the localization of heat energy in the UP state and its delocalization in the DOWN state due to conductive heat transfer into the substrate. Electric field measurements yield traveling waves in the UP state and standing waves in the down state. Standing waves in the DOWN state are consistent with preferential substrate heating on the input side to the switch.

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Post-enabled precision flip-chip assembly for variable MEMS capacitor

F.F. Faheem, N.D. Hoivik, Y.C. Lee and K.C. Gupta. "Post-enabled precision flip-chip assembly for variable MEMS capacitor." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1927-1930 vol.3.

A variable capacitor array with a high Q-factor and a high tuning ratio is demonstrated. A novel "post-enabled" flip-chip assembly allows precise multiple digital capacitance levels within one device. This capacitor array is realized by a hybrid integration of a MEMS device with RF circuits on an alumina substrate. The MEMS is prefabricated using a commercially available foundry process and is initially suspended using mechanical tethers on a silicon substrate, which is removed during the flip-chip assembly. The precise gap between the MEMS and the RF circuit is controlled using posts. Each post is designed by a stack of structural layers available in the commercial foundry process. We measured a Q-factor above 200 at 1 GHz, a capacitance ratio of 4.7:1, and tuning range of 171 MHz in a resonator circuit. More importantly, we achieved a digital capacitance level and negligible warpage due to the excellent gap control following the flip-chip assembly.

Abstracts

High frequency parasitic effects for on-wafer packaging of RF MEMS switches

A. Maxgomenos and L.P.B. Katehi. "High frequency parasitic effects for on-wafer packaging of RF MEMS switches." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1931-1934 vol.3.

A silicon micromachined on-wafer DC to 40 GHz packaging scheme for RF MEMS switches is presented. The designed on-wafer package has an insertion loss which is less than 0.3 dB up to 40 GHz (including a 2.7 mm long through line) and a return loss below -18 dB up to 40 GHz. The inclusion of the bonding ring and the dc bias lines creates parasitic resonances. This paper presents a detailed study of the package parasitics and provides solutions that can effectively eliminate them for frequencies up to 40 GHz.

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A packaged, high-lifetime ohmic MEMS RF switch

S. Majumder, J. Lampen, R. Morrison and J. Maciel. "A packaged, high-lifetime ohmic MEMS RF switch." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1935-1938 vol.3.

An electrostatically actuated broadband ohmic microswitch has been developed that has applications from DC through the microwave region. The microswitch is a 3-terminal device based on a cantilever beam and is fabricated using an all-metal, surface micromachining process. It operates in a hermetic environment obtained through a wafer-bonding process. Characteristics of the wafer-level packaged switch include DC on-resistance of less than 1 ohm with an actuation voltage of 80 V, lifetime of greater than 10/sup 10/ cycles with on-resistance variation of less than 0.2 Ohm and current handling capability of 1 A. Key RF characteristics at 2 GHz include an insertion loss of 0.32 dB and isolation of 33 dB for our 4-contact microswitch. Preliminary measurements at higher microwave frequencies are extremely promising with full characterization and planned product improvements underway.

Abstracts

A novel direct-imaging radar sensor with frequency scanned antenna

W. Mayer, M. Wetzel and W. Menzel. "A novel direct-imaging radar sensor with frequency scanned antenna." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1941-1944 vol.3.

The principle, design and experimental results of a simple direct imaging radar sensor are presented. The FM-CW radar principle and a frequency scanned antenna are combined with waveforms of different frequency slopes in such a way that angular and range information are provided by the amplitude envelope of a fixed video frequency. The sensor architecture uses a minimum of active RF components and digital signal processing. With low cost frequency scanned antennas, this architecture can be applied in radar surveillance stations or automotive side looking sensors.

Abstracts

Range correlation effect on ISM band I/Q CMOS radar for non-contact vital signs sensing

A.D. Droitcour, O. Boric-Lubecke, V.M. Lubecke, J. Lin and G.T.A. Kovacs. "Range correlation effect on ISM band I/Q CMOS radar for non-contact vital signs sensing." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1945-1948 vol.3.

A quadrature direct conversion microwave Doppler radar has been fully integrated in 0.25 /spl mu/m CMOS. This ISM band radar chip has been used to detect heart and respiration movement 50 cm from the subject. While oscillator phase noise is a performance-limiting factor in CW radar systems, the range correlation effect enables measurement of small phase modulations in spite of the notoriously high phase noise of the on-chip CMOS oscillator. This is the first reported quantitative experimental verification of the range correlation effect.

Abstracts

77GHz MMIC transceiver modules with thick-film multi-layer ceramic substrate for automotive radar applications

H. Nagaishi, H. Shinoda, H. Kondoh and K. Takano. "77GHz MMIC transceiver modules with thick-film multi-layer ceramic substrate for automotive radar applications." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1949-1952 vol.3.

A 77GHz MMIC transceiver module has been developed for automotive radar applications by using a low-cost thick-film multi-layer ceramic substrate. The module accommodating all MMIC-based transceiver functions in a single-cavity housing for improved manufacturability can be either assembled with built-in Tx/Rx antennas or mounted on external antenna sheet, depending on required antenna beam width. The module, measuring 25/spl times/25/spl times/3.4mm/sup 3/ with 3.3g in weight, has demonstrated >150m target detection capability when evaluated in a radar system, compatible with our current production-type radar.

Abstracts

A 24-GHz tank level gauging system with state-space frequency estimation and a novel adaptive model order selection algorithm

M. Pichler, P. Gulden, M. Vossiek and A. Stelzer. "A 24-GHz tank level gauging system with state-space frequency estimation and a novel adaptive model order selection algorithm." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1953-1956 vol.3.

For the evaluation of signals in frequency modulated continuous wave radar systems for object distance measurement tasks, highly sophisticated state-space frequency estimation algorithms pose an alternative to the traditionally used fast Fourier transformation. Current implementations of this approach suffer from instability problems when applied to real radar measurements. In this paper a method is presented to overcome the present stability problems by proposing a novel model order estimation procedure. With the use of practical measurements in a level gauging system an improvement of 2-3 over the resolution of the FFT-based methods is shown, and stability of the model order selection algorithm is proved.

Abstracts

A novel effective surface impedance formulation for efficient broadband modeling of lossy thick strip conductors

Aosheng Rong, A.C. Cangellaris and Limin Dong. "A novel effective surface impedance formulation for efficient broadband modeling of lossy thick strip conductors." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1959-1962 vol.3.

A novel effective surface impedance is proposed for accurate modeling of the frequency-dependence of field penetration inside thick strip conductors. The proposed effective surface impedance is obtained through the rigorous modeling of the frequency-dependent cross-sectional field distribution in the interior of the lossy conductor, and is a function of both frequency and position along the perimeter of the cross section of the conductor. Availability of such an effective surface impedance enables the use of a surface integral equation formulation for the electromagnetic analysis of on-chip interconnects and integrated passives structures. Such formulations are much more efficient than volumetric ones without sacrificing accuracy in the modeling of the impact of conductor internal impedance and skin effect loss on the electromagnetic response. The validity of the proposed model is demonstrated through comparisons with measured scattering parameters for on-chip interconnect structures.

Abstracts

Integral equations and state variables in the s-domain modeling of passive multilayered components

G. Conciauro, P. Arcioni and M. Bressan. "Integral equations and state variables in the s-domain modeling of passive multilayered components." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1963-1966 vol.3.

This paper outlines the basic ideas of a new and very efficient integral method for the electromagnetic modelling of boxed multilayered passive circuits. Differently from standard integral approaches, the method leads to a state-space representation of the component, which directly permits us to find its admittance matrix, in the form of a reduced-order pole expansion in the s-domain, through standard Krylov sub-space technique.

Abstracts

MoL-analysis of periodic structures

L.A. Greda and R. Pregla. "MoL-analysis of periodic structures." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1967-1970 vol.3.

A new algorithm for the analysis of finite three-dimensional symmetrical periodic structures by the Method of Lines (MoL) is presented and substantiated. It combines the numerical stable impedance transformation with the Floquet's theorem. A numerically stable way of obtaining Floquet modes using open- or short-circuit matrix parameter description of two-ports is proposed. To validate the described method, a microstrip meander line is designed, realized and measured. Comparison between measured and simulated results is given.

Abstracts

Efficient MLFMA analysis of coupled rectangular and circular apertures in a finite screen

I. Rullhusen and F. Arndt. "Efficient MLFMA analysis of coupled rectangular and circular apertures in a finite screen." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1971-1974 vol.3.

A multilevel fast multipole algorithm (MLFMA) is introduced for the efficient analysis of coupled rectangular and circular apertures of different size within a finite conducting screen. The electric field integral equation (EFIE) is written in terms of mixed potential formulation. Aperture waveguide modal eigenvectors and Rao-Wilton-Glisson (RWG) functions for triangular patches are utilized as basis functions for the magnetic and electric surface current densities, respectively. For the resulting method-of-moments (MoM) solution, a MLFMA is formulated which includes the modal excitations of the coupled rectangular and circular apertures. This leads to significantly reduced computational complexity for these kinds of problems. The method is verified by available measurements and reference calculations.

Abstracts

Analysis of Substrate Integrated Slab Waveguides (SISW) by the BI-RME method

M. Bozzi, D. Deslandes, P. Arcioni, L. Perregrini, K. Wu and G. Conciauro. "Analysis of Substrate Integrated Slab Waveguides (SISW) by the BI-RME method." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1975-1978 vol.3.

This paper presents a novel method for the analysis of Substrate Integrated Slab Waveguides (SISWs), recently proposed as wideband integrated transmission lines. This method applies to the analysis of H-plane waveguides, filled with a dielectric medium perforated with air holes. The analysis is based on the segmentation technique combined with the BI-RME method, which permit to determine the generalized admittance matrix of the circuit and, finally, the dispersion diagram of the SISW. Some numerical and experimental results are reported.

Abstracts

Fast computation of MoM matrix elements over a wide frequency range using a new interpolation technique

Junho Yeo and R. Mittra. "Fast computation of MoM matrix elements over a wide frequency range using a new interpolation technique." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1979-1982 vol.3.

This paper presents an interpolation algorithm, in the context of Method of Moments (MoM), for computing the matrix elements for planar microstrip structures over a wide frequency range. Three different interpolating functions are implemented depending upon the distance between the basis and the testing functions. It is demonstrated that the use of the proposed impedance matrix interpolation scheme can result in significant savings in the computation time with little or no compromise in the accuracy of the solution.

Abstracts

Analysis of finite microstrip structures using an efficient implementation of the integral equation technique

F. Quesada Pereira and A. Alvarez Melcon. "Analysis of finite microstrip structures using an efficient implementation of the integral equation technique." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1983-1986 vol.3.

An efficient numerical implementation of the integral equation technique (IE) has been developed for the analysis of the electrical characteristics of finite microstrip structures. The technique formulates a volume version of the IE for the finite dielectric objects. The numerical implementation combines rooftop basis and testing functions for the conducting metallic areas, and two different choices for the dielectric objects. The first is based on a classical approach, combining pulse basis functions and deltas for testing. The second is a novel full Galerkin approach which employs rooftop functions defined on brick cells inside the dielectrics. The input impedances of two microstrip antennas have been computed with the new technique, showing good agreement with respect measurements. Also the radiation patterns of the antennas have been evaluated, showing again good agreement with respect to measurements. The practical value of the approach is that microstrip circuits can be designed minimizing the volume and size of the dielectric substrates. In addition, it is possible to accurately predict the backward radiation of practical microstrip radiators.

Abstracts

A reduced intermodulation distortion tunable ferroelectric capacitor: architecture and demonstration (2003 Vol. III [MWSYM])

Yong-Kyu Yoon, Dongsu Kim, M.G. Allen and J.S. Kenney. "A reduced intermodulation distortion tunable ferroelectric capacitor: architecture and demonstration (2003 Vol. III [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1989-1992 vol.3.

A ferroelectric tunable capacitor device architecture is presented that allows for a reduction of intermodulation distortion (IMD), while maintaining high tunability at low bias voltages. The tunable capacitor is fabricated from epitaxial thin-film barium strontium titanate (BST) deposited on a sapphire substrate. The RF portion of the capacitor is a conventional planar gap capacitor with a 10/spl sim/14/spl mu/m gap. However, rather than superimposing the DC bias on the RF gap, a separate bias structure is fabricated within the RF gap. The interdigital bias structure has narrowly-spaced high resistance (2/spl sim/3/spl times/10/sup 4/ /spl Omega///spl square/) indium tin oxide (ITO) electrodes spaced 1/spl sim/2/spl mu/m apart. The high resistivity of the bias electrodes decouples the DC bias from the RF signal path. This bias structure allows high DC fields to be developed with less than 30V applied to tune the material permittivity, but is sufficiently resistive to avoid affecting the Q of the RF capacitor. Because the RF gap is wide, the IMD performance remains good, even at modest tuning voltages. Three different gap capacitors have been fabricated for concept verification: 1) a conventional gap structure (without bias structure), 2) the proposed RF gap capacitor with the DC bias structure, and 3) a narrower conventional RF gap capacitor structure used as an IMD reference. The frequency response of the proposed gap capacitor with the bias structure is characterized and its analysis shows that the highly resistive bias lines are serving as a DC bias path for high tunability, but are not attenuating the RF signal. Two-tone IMD tests show that the IMD performance for the gap capacitor with the bias structure is improved by 6 dB over the conventional reference structure at the same tunability.

Abstracts

Compact ferroelectric reflection phase shifters at X-band

J.L. Serraiocco, P.J. Hansen, T.R. Taylor, J.S. Speck and R.A. York. "Compact ferroelectric reflection phase shifters at X-band." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1993-1996 vol.3.

Compact reflection phase shifters using thin film barium strontium titanate have been developed. X-band designs measuring less than 0.5 mm/sup 2/ are realized by using only lumped element components. The circuits are constructed monolithically, using planar spiral inductors, thin-film resistors, and parallel plate ferroelectric capacitors on a dielectric substrate. A novel low impedance transforming design is used to enhance performance. The first prototypes show promise, giving approximately 14/spl deg//dB. Further process and design improvements will increase performance.

Abstracts

Tunable ferroelectric components in LTCC technology

A. Deleniv, T. Hu, H. Jantunen, S. Leppavuori and S. Gevorgian. "Tunable ferroelectric components in LTCC technology." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 1997-2000 vol.3.

Designs of a tunable matching network and a tunable phase shifter by LTCC ferroelectric technology are presented. The devices are designed for operation in K frequency band. Test structure measurements are presented along with extracted parameters of used ferroelectrics (dielectric permittivity and tunability). These measured parameters are then used to design phase-shifter and matching network using ADS "Momentum". Simulated performance of these components is presented.

Abstracts

Bulk-acoustic-wave filters: performance optimization and volume manufacturing

R. Aigner, J. Kaitila, J. Ella, L. Elbrecht, W. Nessler, M. Handtmann, T.-R. Herzog and S. Marksteiner. "Bulk-acoustic-wave filters: performance optimization and volume manufacturing." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2001-2004 vol.3.

Performance parameters of BAW devices are reviewed and ranked corresponding to their importance for RF-filters in mobile phone applications. The most important performance parameters - such as resonator bandwidth and Q-values - critically depend on the quality of the piezolayer and other relevant layers in the acoustic stack. The design of the complete layer stack in a Solidly Mounted Resonator (SMR) concept in combination with a proper design of lateral resonator-boundaries will be revealed to be extremely important for the suppression of spurious resonances. Challenges in manufacturing of BAW filters will be briefly reviewed. Examples of state-of-the-art in BAW filters in production and ramp-up status will be presented.

Abstracts

Comparison of micromachined FBAR band pass filters with different structural geometry

J.Y. Park, H.M. Lee, H.C. Lee, K.H. Lee, Y.J. Ko, J.H. Shin, S.H. Moon and J.U. Bu. "Comparison of micromachined FBAR band pass filters with different structural geometry." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2005-2008 vol.3.

In this paper, fully integrated FBARs (Film Bulk Acoustic Wave Resonators) and FBAR band pass filters have been designed, fabricated, and characterized for advanced mobile/wireless communication systems by using silicon bulk micromachining technology. Two different band pass filters are fabricated and compared with 7 bulk acoustic resonators in series and shunt connection. Various structures are also investigated for finding the better geometry of the FBAR BPF. In addition, dependency of the quality of AlN film on Mo bottom electrode is also presented. The developed AlN film has 1.9/spl deg/ of FWHM (full width half maximum) of rocking curve and approximately 70 MPa in tensile stress on top of the Mo electrode layer. The measured effective coupling coefficient, K/sup 2//sub effective/ is ranged from 6.8 to 7.3. The fabricated resonator has a quality factor of 1530, insertion loss of -0.45 dB, and return loss of -28 dB, respectively. Fabricated two different (Type-A and Type-B) band pass filters have insertion loss of -1.5 dB and -1.578 dB, return loss of -6 dB and -10 dB, stop band notch of -50 dB and -52 dB, bandwidth of 75 MHz and 70 MHz, 18 MHz and 32 MHz in separation between lower stop band notch and left edge of pass band, and chip size of 1.3 mm /spl times/ 1.5 mm, respectively.

Abstracts

Accurate modeling and simulation of SAW RF filters

F.M. Pitschi, J.E. Kiwitt, C.C.W. Ruppel and K.C. Wagner. "Accurate modeling and simulation of SAW RF filters." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2009-2012 vol.3.

The popularity of wireless services and the increasing demand for higher quality, new services, and the need for higher data rates will boost the cellular terminal market. Today, third generation (3G) systems exist in many metropolitan areas. In addition, wireless LAN systems, such as Bluetooth or IEEE 802.11-based systems, are emerging. The key components in the microwave section of the mobile terminals of these systems incorporate - apart from active radio frequency integrated circuits (RFICs) and RF modules - a multitude of passive components. The most unique passive components used in the microwave section are surface acoustic wave (SAW) filters. Due to the progress of integration in the active part of the systems the component count in modern terminals is decreasing. On the other hand, the average number of SAW RF filters per cellular phone is increasing due to multi-band terminals. As a consequence, the passive components outnumber the RFICs by far in today's systems. The market is demanding smaller and smaller terminals and, thus, the size of all components has to be reduced. Further reduction of component count and required PCB area is obtained by integration of passive components and SAW devices using low-temperature co-fired ceramic (LTCC). The trend or reducing the size dramatically while keeping or even improving the performance of the RF filters requires accurate software tools for the simulation of all relevant effects and interactions. In the past it was sufficient to predict the acoustic behavior on the SAW chip, but higher operating frequencies, up to 2.5 GHz, and stringent specifications up to 6 GHz demand to account for electromagnetic (EM) effects, too. The combination of accurate acoustic simulation tools together with 2.5/3D EM simulation software packages allows to predict and optimize the performance of SAW filters and SAW-based front-end modules.

Abstracts

A compact transceiver for wide bandwidth and high power K-, Ka-, and V-band applications

D. Yamauchi, R. Quon, Yun-Ho Chung, M. Nishimoto, C. Romo, J. Swift, R. Grundbacher, D. Lee and L. Liu. "A compact transceiver for wide bandwidth and high power K-, Ka-, and V-band applications." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2015-2018 vol.3.

Using the state-of-the-art InP MMICs and advanced packaging techniques, we demonstrated a compact transceiver with wide bandwidth (13% to 54%) and high power (over 500 mW) in covering K-, Ka and V-band operating frequencies. This module consists of over 30 MMICs and over 200 components and is considered to be the most complex module reported in the millimeter-wave frequencies. This work has laid a good foundation for combining MMIC and packaging technologies for a versatile millimeter-wave transceiver module.

Abstracts

Fully terminated Ka band high isolation, high power MMIC SPDT switch in GaAs PIN technology

O. Levy, A. Madjar, D. Kryger and S. Matarasso. "Fully terminated Ka band high isolation, high power MMIC SPDT switch in GaAs PIN technology." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2019-2022 vol.3.

In this paper we present the design and performance of a millimeter wave MMIC SPDT switch. The switch is produced in a GaAs PIN process. The switch is fully terminated in all 3 ports due to an integrated resistor layer in the PIN process, and has an OFF state. The isolation is better than 40 db, return loss better than 20 db in all states. The power handling capability exceeds 5 watt. To our best knowledge, this is the first reported millimeter wave switch to possess all of the above properties.

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A V-band GaAs HEMT uniplanar monolithic integrated antenna and receiver front end

I-Jen Chen, Huei Wang and Powen Hsu. "A V-band GaAs HEMT uniplanar monolithic integrated antenna and receiver front end." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2023-2026 vol.3.

A V-band monolithic integrated folded-slot balanced mixer with LO source on the same chip is presented for the first time. The circuit is designed based on the uniplanar structures such as coplanar waveguide (CPW) and slotline. The embedding impedance of the folded-slot antenna is calculated by finite-difference time-domain (FDTD) method and compared with the impedance of the Schottky-Barrier diode at 60 GHz to design the mixer. The V-band voltage control oscillator (VCO) is developed based on the 0.15 /spl mu/m GaAs HEMT technology. A reduced-size CPW-to-slotline transition is designed for the LO pumping network. The measured results of the VCO, transition, and mixer are included.

Abstracts

A new millimeter-wave stripline resonator with embedded air cavities in LTCC multilayer structure

Young Chul Lee and Chul Soon Park. "A new millimeter-wave stripline resonator with embedded air cavities in LTCC multilayer structure." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2027-2030 vol.3.

We have designed and implemented an innovative low-loss and high-Q millimeter-wave stripline resonator by including air cavities in the LTCC substrate between the ground planes. Measurements of a stripline resonator with air cavities above and below the conducting strip reveal Q-factor of 290 and total loss of 0.03dB/mm at 34.8GHz, and they are improved by 138% and 58%, respectively compared to the conventional LTCC stripline resonator. The dielectric loss of this resonator is analyzed as small as 0.0003dB/mm at the resonant frequency, and that is equivalent to an improvement of a factor of 120 compared to the conventional one. The proposed stripline resonator with the embedded air cavities can meet demands for low-loss millimeter-wave MCM applications.

Abstracts

A heterostructure barrier varactor sideband generator

Haiyong Xu, J.L. Hesler, Yiwei Duan, T.W. Crowe and R. M. Weikle II. "A heterostructure barrier varactor sideband generator." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2031-2034 vol.3.

A heterostructure barrier varactor (HBV) sideband generator (SBG) is investigated for the first time. Compared with Schottky varactor SBGs, odd sidebands are suppressed and higher output power is possible. Preliminary measurements at 200 GHz have shown conversion efficiencies of 10-15 dB over a 10 GHz tuning range. Simulations and theoretical models are presented to predict and confirm these results. The subharmonic SBG design described in this paper is scaleable to submillimeter wavelengths and can yield a highly tunable CW power source when used in conjunction with a fix-tuned laser.

Abstracts

60GHz ultra compact transmitter/receiver with a low phase noise PLL-oscillator

A. Yamada, E. Suematsu, K. Sato, M. Yamamoto and H. Sato. "60GHz ultra compact transmitter/receiver with a low phase noise PLL-oscillator." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2035-2038 vol.3.

In this paper, we present a transmitter and a receiver for a millimeter-wave video transmission system. The size of each is 110 mm/spl times/55 mm/spl times/23 mm, as a result of using an antenna-integrated millimeter-wave module and a filter-integrated SHP (sub-harmonically pumped) mixer MMIC. Both transmitter and receiver have a local signal of 29.5 GHz, for up/down-conversion, which is generated by multiplying a signal from a 1.8 GHz PLL-oscillator. A low phase noise of -103 dBc/Hz at 100 kHz offset was achieved.

Abstracts

Leakage and guidance properties of unbalanced insulated NRD-guide for co-layered integrated circuits

Ping Yang, Duochuan Li and Ke Wu. "Leakage and guidance properties of unbalanced insulated NRD-guide for co-layered integrated circuits." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2041-2044 vol.3.

The leakage and guidance characteristics of unbalanced insulated NRD-guides (nonradiative dielectric waveguides) were studied by means of a mode-matching technique. Leakage suppressing conditions and single mode operating conditions are investigated for practical applications, and the relations between geometrical parameters of the structure and the guided wave, as well as leakage properties, were obtained. Extensive results and useful guidelines were provided for practical application of this guided-wave structure in co-layered integration circuits.

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Propagation characteristics of substrate integrated waveguide based on LTCC

Hao Li, Wei Hong, Tie Jun Cui, Ke Wu, Yu Lin Zhang and Li Yan. "Propagation characteristics of substrate integrated waveguide based on LTCC." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2045-2048 vol.3.

The substrate integrated waveguide (SIW) is a new type of guided wave structure fabricated with periodic metallic via holes in a multilayered LTCC substrate. The SIW takes the advantages of both waveguide and microstrip structures, like the high-Q factor, high power capacity, small size, and the possibility of integration. In this paper, the propagation characteristics of the SIW are investigated, based on a finite difference method by using appropriate absorbing boundary conditions. A special treatment has been made in the interaction of the incident wave with the SIW structure. Simulated results are given to test the validity and efficiency of the proposed method, from which very interesting phenomena have been found in the SIW.

Abstracts

Analysis of guided-wave problems in substrate integrated waveguides -numerical simulations and experimental results

Yu Lin Zhang, Wei Hong, Feng Xu, Ke Wu and Tie Jun Cui. "Analysis of guided-wave problems in substrate integrated waveguides -numerical simulations and experimental results." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2049-2052 vol.3.

In this paper, a novel finite difference frequency domain (FDFD) algorithm is proposed for the analysis of substrate integrated waveguide (SIW) guided-wave problems where the perfectly matched layer (PML) has been chosen as the absorbing boundary condition and the Floquet theorem has been used to consider the periodic structure. Using the above method, the guided-wave problem is then converted to a generalized matrix eigenvalue problem and finally transformed to a standard matrix eigenvalue problem, which can be easily solved with many efficient available subroutines. Excellent agreements of numerical simulations and experimental results show the validity and efficiency of the proposed algorithm.

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Mode coupling phenomenon in high permittivity NRD guide with asymmetrically remained small air gap

F. Kuroki, K. Yamaoka, M. Yamaguchi and T. Yoneyama. "Mode coupling phenomenon in high permittivity NRD guide with asymmetrically remained small air gap." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2053-2056 vol.3.

It is known that a high permittivity NRD (nonradiative dielectric) guide, where an LSM01 mode mainly propagates, suffers from irregular transmission phenomena. Since high permittivity materials such as ceramics and alumina have rough and hard surfaces, we assumed that this problem was caused by an asymmetric remaining small air gap between the metal plates and the high permittivity dielectric materials in the NRD guide. From the theoretical and experimental investigations, it is clear that the LSM01 mode is liable to couple with an unwanted mode, while an LSE01 mode, being another nonradiating mode, is hard to couple with such a mode.

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Calculation and demonstration of dynamic behavior of time dependent electromagnetic field distribution in H-plane rectangular waveguide circuit

T. Hiraoka and Hsu Jui-Pang. "Calculation and demonstration of dynamic behavior of time dependent electromagnetic field distribution in H-plane rectangular waveguide circuit." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2057-2060 vol.3.

The time dependent electromagnetic field distribution in rectangular waveguide circuits are calculated exactly, based on mode corresponding equivalent networks and excitation conditions. The dynamic behavior of fields in waveguide circuits is demonstrated by displaying the calculated field distribution in a time sequence on the monitor of a personal computer with the help of visualization software.

Abstracts

Novel artificial embedded circuit meta-material for design of tunable electro-ferromagnetic permeability medium

K. Sarabandi and H. Mosallaei. "Novel artificial embedded circuit meta-material for design of tunable electro-ferromagnetic permeability medium." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2061-2064 vol.3.

Utilizing the available materials in nature, one can easily obtain a dielectric medium with almost any desired permittivity; however, the atoms and molecules of natural materials, or their mixtures, prove to be a rather restrictive set when one tries to achieve a desired permeability at a desired frequency, specially in the Gigahertz range. The ability to design materials with both /spl epsi/ and /spl mu/ parameters would represent tremendous progress in technology. The main challenge in this paper is to design a novel artificial periodic tunable embedded circuit meta-material to successfully present a medium with both dielectric (/spl epsi/) and magnetic (/spl mu/) properties. The building block unit cell of the proposed structure is a miniaturized high Q tank circuit terminated to the ferro-electric material. The transmission line approach and FDTD technique are applied to successfully obtain the constitutive parameters of the periodic meta-material and highlight the unique characteristics of the medium.

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Modal computation of arbitrary waveguides composed of linear, circular and elliptical arcs

S. Cogollos, S. Marini, P. Soto, H. Esteban, J.V. Morro, V.E. Boria and B. Gimeno. "Modal computation of arbitrary waveguides composed of linear, circular and elliptical arcs." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2065-2068 vol.3.

In this paper, the very accurate and efficient modal analysis of arbitrarily shaped waveguides, whose cross-section is defined by a combination of straight, circular and/or elliptical arcs, is solved. An extension of the well-known boundary integral-resonant mode expansion (BI-RME) method is proposed. Successful comparisons with available numerical and experimental data fully demonstrates the validity of the improved BI-RME method proposed.

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TLM simulation of electromagnetic wave propagation in anisotropic moving media

A.C.L. Cabeceira, I. Barba, A. Grande and J. Represa. "TLM simulation of electromagnetic wave propagation in anisotropic moving media." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2069-2072 vol.3.

A TLM (Transmission Line Matrix) model suitable to simulate the propagation of waves in moving anisotropic continuous media is presented. As it is well known, an electromagnetic wave propagating in a general medium, moving with respect to its source, experiences a drag by the own medium, which involves a wave velocity dependent on the direction of propagation. In this work, we present a first approach for the case of uniform movement of an anisotropic dielectric medium with respect to an electromagnetic source. Although the technique allows for quantitative results, a special attention is devoted to the simulation of wave fronts: distorted elliptical fronts because a particular kind of "anisotropy" appears, even in an isotropic medium.

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A new radiation boundary condition for FDTD based on self-teleportation of fields

R. Diaz and I. Scherbatko. "A new radiation boundary condition for FDTD based on self-teleportation of fields." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2073-2076 vol.3.

A technique for injecting perfect plane waves into finite regions of space in FDTD has been reported. The essence of the technique, called field teleportation, is to invoke the principle of equivalent sources using FDTD's discrete definition of the curl to copy any field propagating in one FDTD domain to a finite region of another domain. In this paper we apply this technique of field teleportation to the original domain itself to create a boundary across which any outward traveling FDTD field produces an exact negative copy of itself. Repeated application of this radiation boundary and termination of the domain with a moderate absorbing boundary condition readily yields reflection coefficients of the order of -80 dB up to grazing incidence onto the boundary.

Abstracts

Extending SPICE with FDTD and generalized characteristic model for coupled microstrip lines simulation

S.K. Ip and F.Y. Chang. "Extending SPICE with FDTD and generalized characteristic model for coupled microstrip lines simulation." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2077-2080 vol.3.

The implementation of an efficient full wave enabled SPICE simulator is presented. The generalized characteristic model has been integrated into FDTD-SPICE simulator so that full wave analysis with lumped terminal devices is much faster. Example with coupled microstrip lines terminated with diodes showed that it is 75% faster than FDTD-SPICE analysis.

Abstracts

A composite-cell multiresolution time-domain technique for design of electromagnetic band-gap and via-array structures

N. Bushyager, M. Tentzeris and J. Papapolymerou. "A composite-cell multiresolution time-domain technique for design of electromagnetic band-gap and via-array structures." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2081-2084 vol.3.

In this paper the Haar-wavelet multiresolution time-domain (MRTD) scheme is modified in a way that enables the modeling of arbitrary positioned metals within a cell, leading to the development of composite cells that are useful for the simulation of highly detailed structures. The application of this technique to one such structure, an electromagnetic band-gap (EBG) resonator, is presented. The technique demonstrates a time-domain approach in which MRTD can be used to drastically reduce the number of cells needed to simulate a complex device while taking full advantage of the technique's inherent time-and space-adaptive gridding.

Abstracts

A standard cell hardware implementation for finite-difference time domain (FDTD) calculation

L. Verducci, P. Placidi, P. Ciampolini, A. Scorzoni and L. Roselli. "A standard cell hardware implementation for finite-difference time domain (FDTD) calculation." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2085-2088 vol.3.

Several inherent characteristics make the Finite-Difference Time Domain (FDTD) algorithm almost ideal for the analysis of a wide class of microwave and high-frequency circuits as testified by the great number of papers that appeared in the last two decades and by the presence of many software packages on the present market. The application of the FDTD method to practical, three-dimensional problems, however, is often limited by the demand of very large computational resources. In this paper, the architecture of a digital system, dedicated to the solution of the 3D FDTD algorithm and based on a custom VLSI chip, which implements the "field-update" engine, is described. The system is conceived as a PCB module communicating with a host personal computer via a PCI bus and accommodating dedicated synchronous DRAM banks as well. Expectations are that significant speed-up, with respect to state-of-the-art software implementations of the FDTD algorithm, can be achieved.

Abstracts

A wavelet-transformed finite-difference time-domain scheme with a static multi-resolution grid

A. Rennings, F. Wittmann, M. Walter, P. Waldow and I. Wolff. "A wavelet-transformed finite-difference time-domain scheme with a static multi-resolution grid." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2089-2092 vol.3.

Recently an effective implementation for wavelet transformed operators on three-dimensional data was derived. This novel data structure is used to transform an FDTD scheme with a fast WT into a multi-resolution version. Our approach combines the favorable characteristics, tics of a FDTD scheme and the possibility to resolve the electromagnetic field on locally different resolutions. Since small wavelet coefficients are not updated during the time loop the six field components are computed within such a multi-scale grid instead of the single-resolution Yee grid of FDTD. Finally, resonator structures have been simulated to evaluate the efficiency and applicability of our approach.

Abstracts

An effective 3-D solver for MMIC interconnects - EVFE technique with PML

Weijun Yao and Yuanxun Wang. "An effective 3-D solver for MMIC interconnects - EVFE technique with PML." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2093-2096 vol.3.

In this paper, the perfectly matched layer (PML) boundary condition has been successfully implemented into the 3D envelope finite element (EVFE) technique to truncate the space meshes. The numerical test shows that PML can provide 40 dB overall absorption in the presence of four layers of absorber. A few MMIC interconnect structures were analyzed using EVFE techniques with PML boundary conditions. The results demonstrate that the proposed approach is an efficient and precise way to analyze the MMIC interconnects.

Abstracts

A hybrid approach for modeling complex antenna systems on vehicular platforms

W. Thiel, L.P.B. Katehi and K. Sabet. "A hybrid approach for modeling complex antenna systems on vehicular platforms." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2097-2100 vol.3.

The use of multi-antenna systems on vehicular platforms, for the implementation of ad-hoc wireless network architectures, is typically hampered by the problem of co-site interference between transceivers loading neighboring radiating elements and the impact of the platform on the radiation pattern. This paper presents a rigorous, full-wave analysis of effects pertinent to vehicular multi-antenna system performance, based on a hybrid time/frequency domain analysis that combines the method of moments (MoM) with the finite difference time-domain method (FDTD). For the fast solution of such problems, MPI-based parallelization strategies are developed. Applications where the combined MoM and FDTD simulation of multi-antenna systems sheds light on the serious impact of mutual transceiver interference on wireless network operation are provided.

Abstracts

A simplified analytic CAD model for linearly tapered microstrip lines

C.L. Edwards, M.L. Edwards, Sheng Cheng, R. Stilwell and C.C. Davis. "A simplified analytic CAD model for linearly tapered microstrip lines." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2101-2104 vol.3.

Quasi-TEM propagation, appropriate for a linearly tapered microstrip line (LTML), is modeled and known microstrip impedance behavior is approximated directly. The telegrapher's equation and the resulting ABCD matrix is solved in terms of Airy functions, commonly available in scientific programming libraries. The theoretical model has been verified with measurements.

Abstracts

A scalable model for the substrate resistance in multi-finger RF MOSFETs

Jeonghu Han and Hyungcheol Shin. "A scalable model for the substrate resistance in multi-finger RF MOSFETs." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2105-2108 vol.3.

We present a method to extract the substrate resistance of RF MOSFETs. We also analyze the substrate networks of multi-finger RF MOSFETs with vertical body contacts and propose a new method to predict the substrate resistance for any number of gate fingers. After the resistance components of the substrate networks are extracted, the effective substrate resistance is expressed as a function of the number of gate fingers. We compare the values of the substrate resistance predicted by the proposed method, and extracted from Y-parameter data. The Y-parameters are obtained from both device simulation and measurement. The model predicts the substrate resistances accurately for multi-finger transistors.

Abstracts

Accurate small-signal model and its parameter extraction in RF silicon MOSFETs

Jaejune Jang, Zhiping Yu and R.W. Dutton. "Accurate small-signal model and its parameter extraction in RF silicon MOSFETs." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2109-2111 vol.3.

An accurate method to extract a small signal equivalent circuit model of RF silicon MOSFETs is presented. Analytical calculations are used for each intrinsic parameter and accuracy is within 1% for the entire operational region. 2D physical device simulation is used to analyze this methodology. A simple non-quasi static (NQS) model is reported, which offers good accuracy needed for circuit simulation, including a simple network representing the coupling between source and drain. Accurate extraction methods for extrinsic parameters have been also developed. The compact model and its parameter extraction are verified on Si-MOSFETs through S-parameter measurements.

Abstracts

Modeling the drain current of the dual-gate GaAs MESFET

M. Ibrahim, B. Syrett and J. Bennett. "Modeling the drain current of the dual-gate GaAs MESFET." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2113-2116 vol.3.

A new empirical model of the dual-gate GaAs MESFET (DGFET) drain current is presented. The model uses a modified expression of the well-established hyperbolic tangent-function to accurately fit the DC and the RF I/V characteristics of the DGFET. The frequency dispersion of the DGFET transconductances and output conductance is taken into account in the new model. The new model is tested on many devices of different topologies. Very good agreement between the measured and the calculated I/V characteristics over a wide range of bias conditions is achieved.

Abstracts

A scalable model for silicon spiral inductors

A. Scuderi, T. Biondi, E. Ragonese and G. Palmisano. "A scalable model for silicon spiral inductors." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2117-2120 vol.3.

A simple model for monolithic spiral inductors on silicon substrates is presented. Each lumped element of the model is related to the layout geometry by analytical equations. Moreover, a novel equation for series resistance is also proposed. The model was validated by comparisons with on-wafer measurements over a wide range of geometrical layout parameters.

Abstracts

Steady state analysis of multitone nonlinear periodic circuits in wavelet domain

N. Soveiko and M. Nakhla. "Steady state analysis of multitone nonlinear periodic circuits in wavelet domain." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2121-2124 vol.3.

A new method for steady state analysis of nonlinear periodic circuits is proposed. The new method is similar to the well known technique of harmonic balance, but uses wavelets as basis functions instead of the Fourier series. Because of the increased sparsity of the Jacobian matrix, the new method scales linearly with the size of the problem and is well suited for large scale simulations.

Abstracts

CAD identification and validation of a non-linear dynamic model for performance analysis of large-signal amplifiers

C. Florian, F. Filicori, D. Mirri, T. Brazil and M. Wren. "CAD identification and validation of a non-linear dynamic model for performance analysis of large-signal amplifiers." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2125-2128 vol.3.

We describe the CAD identification and software implementation of a Volterra-like integral series expansion for the behavioral-level simulation of communication amplifiers. The model represents an improvement with respect to the classical AM-AM AM-PM memoryless approach. The performance of the model is compared with both the AM-AM AM-PM approach and circuit-level CAD simulation.

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GMRES preconditioners for multivariate steady-state time-domain method (RF simulation)

A. Lehtovuori, J. Virtanen and M. Valtonen. "GMRES preconditioners for multivariate steady-state time-domain method (RF simulation)." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2129-2132 vol.3.

Envelope methods play an important part in current RF simulation. We focus on an envelope method called the multivariate steady-state method (MSSTD). The method solves the steady state of a circuit especially in the case when signals at two very different frequencies are present, and harmonic balance is inefficient due to the shape of the signals. Different preconditioners for the iterative matrix solving method (GMRES) have been tested. Simulation results show that the preconditioner consisting of larger diagonal blocks decreases the number of iteration cycles needed and also the simulation time. However, other types of preconditioners should be studied to find a more robust and reliable solver for this type of problem and therefore one new approach has been proposed.

Abstracts

Modeling nonlinear behavior of band-pass memoryless and dynamic systems

J.C. Pedro, N.B. Carvalho and P.M. Lavrador. "Modeling nonlinear behavior of band-pass memoryless and dynamic systems." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2133-2136 vol.3.

This paper addresses nonlinear distortion arising in microwave band-pass memoryless and dynamic systems, focusing on wideband power amplifiers (PA). It first identifies the minimum requirements for their correct representation. Then, it shows that the complex behavior of long term memory effects does not allow a unique characterization procedure, but requires various nonlinear distortion figures according to the type of nonlinear RF impairments the actual system is sensitive to.

Abstracts

Noise and distortion figure - an extension of noise figure definition for nonlinear devices

P.M. Lavrador, N.B. de Carvalho and J.C. Pedro. "Noise and distortion figure - an extension of noise figure definition for nonlinear devices." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2137-2140 vol.3.

Deals in the integration of additive and nonlinear distortion noise contributions into a single new figure of merit: Noise and Distortion Figure, NDF. In the same way as traditional noise figure, NF, was conceived to be a measure of SNR degradation, NDF is now proposed as its extension to nonlinear systems, as a measure of SINAD degradation. NDF definition is discussed and its application to SINAD evaluations in systems of practical interest to the wireless community is exemplified.

Abstracts

Multisine excitation for ACPR measurements

K.A. Remley. "Multisine excitation for ACPR measurements." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2141-2144 vol.3.

We use a simulator to compare adjacent-channel power ratio (ACPR) measurements of a nonlinear device excited with various multisine signals to ACPR measurements of the same device excited with pseudorandom digital modulation. We examine four common types of multisine excitation, each with identical numbers of tones, tone-spacings, and nominal power levels, but with different magnitude and phase relationships between tones. We show that use of some common multisines may result in significant overestimation of the actual ACPR from the digitally modulated nonlinear device.

Abstracts

Optimum component values for a lossy Class E power amplifier

P. Alinikula. "Optimum component values for a lossy Class E power amplifier." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2145-2148 vol.3.

The Class E power amplifier offers a means to increase the battery efficiency in wireless terminals. The losses can be taken into account by solving the drain waveforms for a switch having a non-zero on resistance. In this paper a new analysis formulation is presented in which the input values (P/sub OUT/, V/sub DD/ and R/sub ON/) are combined into one parameter k. Then, the efficiency and optimum component values for a lossy Class E amplifier can be solved with relatively simple calculations. The analysis reveals that there is a maximum value for switch losses that can be accepted in order to operate in the Class E mode. The results of the analysis are presented in plots providing initial component values for practical Class E power amplifier design. The validation simulation results show excellent match with the calculated values.

Abstracts

Influence of time and processing mismatches between phase and envelope signals in linearization systems using envelope elimination and restoration, application to Hiperlan2

G. Baudoin, C. Berland, M. Villegas and A. Diet. "Influence of time and processing mismatches between phase and envelope signals in linearization systems using envelope elimination and restoration, application to Hiperlan2." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2149-2152 vol.3.

This paper is a theoretical and experimental study of the influence of time and processing mismatches between the envelope and the phase of an OFDM in an envelope elimination and restoration (EER) linearization system. We give the theoretical expression of the power spectral density of the distorted signal in the case without intersymbol interference at the emitter. In the general case, we give the average power of the distortion as a function of the time mismatch. We also propose an approximation of the distorted signal as a delayed version of the original signal, that explains the observed rotations of the constellations at the receiver on the different OFDM carrier. Others effects of EER principle are also studied, such as limitation of envelope and phase bandwidth and non-linearity of the envelope restoration command.

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Efficient analysis of phase-locked loops through a novel time-frequency approach, based on two envelope transient formulations

S. Sancho and A. Suarez. "Efficient analysis of phase-locked loops through a novel time-frequency approach, based on two envelope transient formulations." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2153-2156 vol.3.

A novel time-frequency analysis for phase-locked loops (PLL) is presented here, based on two nested envelope transient formulations. The outer envelope is centered, as usual, about the VCO frequency. The inner-envelope is obtained when considering a frequency domain expansion of the loop state variables about the reference frequency and its multiples, with slow-varying phasors. Thus, the influence of these frequency components on the loop behavior is taken into account. The double envelope approach enables an efficient and realistic simulation of the acquisition times in the common case of slow time response of the loop. On the other hand, the phase-noise can be analyzed from very low offsets from the carrier, while taking into account the spurious content due to the reference frequency. In the absence of noise perturbations, the application of harmonic balance to the VCO envelope enables an accurate and efficient analysis of the PLL versus any parameter of interest. The combination with continuation techniques to circumvent the possible turning points is straightforward. The stability is analyzed through the calculation of the eigenvalues of the harmonic-balance characteristic matrix. Very good agreement has been obtained in the comparison with time domain simulation and experimental results.

Abstracts

Nonlinear simulation techniques for the optimized design of push-push oscillators

F. Ramirez, J.L. Garcia H, T. Fernandez and A. Suarez. "Nonlinear simulation techniques for the optimized design of push-push oscillators." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2157-2160 vol.3.

In the push-push oscillator, the circuit symmetry enables, through a suitable choice of terminating impedances, an output frequency that is twice the oscillation fundamental frequency. The main difficulty is the complexity of the design, for which there is a lack of specific simulation tools. Here, a harmonic-balance technique is presented, allowing the circuit optimization for prefixed oscillation frequency and maximum output power at the second harmonic component. The oscillator dynamics is analyzed through the envelope transient approach, making use of a new initialization technique of the circuit variables. For a realistic prediction of the first-harmonic cancellation, a sensitivity analysis is performed. A continuation technique is applied to obtain the variation of the output power and frequency versus inequalities in significant circuit parameters. The circuit phase noise is analyzed through the envelope transient approach. The techniques have been applied to a 18 GHz push-push oscillator, with very good agreement with the experimental results.

Abstracts

Folded microstrip resonator

B.S. Virdee and C. Grassopoulos. "Folded microstrip resonator." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2161-2164 vol.3.

A compact concertina shaped microstrip ring resonator, referred to here as a 'folded ring' resonator is shown to behave analogously to a microstrip annular-ring resonator. The folded ring resonator resonates at identical resonant mode frequencies as the annular-ring resonator, which is designed to operate at the same fundamental mode frequency and when fabricated on an identical dielectric substrate. It is also demonstrated that the folded ring when cut in half, referred to here as a 'folded half-ring' resonator, also exhibits similar transmission characteristics to a conventional annular-ring resonator. This resonator structure is even more compact. In addition, an input/output-coupling scheme to the resonator is employed that significantly improves the insertion loss and return loss performance of the resonant structures.

Abstracts

Inductance-enhanced high-impedance surfaces for broadband simultaneous switching noise mitigation in power planes

T. Kamgaing and O.M. Ramahi. "Inductance-enhanced high-impedance surfaces for broadband simultaneous switching noise mitigation in power planes." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2165-2168 vol.3.

Full wave electromagnetic simulation is used to study the application of high-impedance surfaces (HIS) in simultaneous switching noise (SSN) mitigation in power planes. The impact of the geometry on the performance of power planes with simple and inductance-enhanced HIS is investigated. A lumped-element compact model form, applicable to both types of power planes is developed. Good agreement is obtained between the modeled and simulated S-parameters of the power planes from DC to 4 GHz.

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An Nth-harmonic oscillator using an N-push coupled oscillator array with voltage-clamping circuits

Shih-Chieh Yen and Tah-Hsiung Chu. "An Nth-harmonic oscillator using an N-push coupled oscillator array with voltage-clamping circuits." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2169-2172 vol.3.

The push-push oscillator is commonly used for implementing a second-harmonic oscillator. By combining two out-of-phase oscillators, their fundamental frequency components are canceled and the second-harmonic components are enhanced. This structure can be extended to triple-push, quadruple-push and hence N-push harmonic oscillators. From the oscillator injection-locking phenomenon, the relative phase between coupled oscillators can be controlled by the oscillator free-running frequency. As the output phase-shifted version signals are properly shaped and combined, the desired harmonic components are constructively added and lower-order harmonic components are canceled. This structure can be viewed as the general case of push-push oscillators. Since the output power is combined in a passive circuit, it does not suffer from the power limit of the output device in the cascade structure. The desired harmonic component can be selected by tuning the relative phase of the coupled oscillators and the conductive angle of the voltage-clamping circuit. Second-harmonic, third-harmonic and fourth-harmonic oscillators are designed and verified experimentally.

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PLL and injection locked PLL (ILPLL) operations of a push-pull self oscillating mixer (SOM)

M.R. Tofighi and A.S. Daryoush. "PLL and injection locked PLL (ILPLL) operations of a push-pull self oscillating mixer (SOM)." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2173-2176 vol.3.

This paper presents the experimental results of a push-pull Self-Oscillating Mixer (SOM) tunable in a range of 421-463 MHz operating in PLL and Injection Locked PLL (ILPLL) regimes. By careful selection of the oscillator feedback resistor, an excellent down-conversion gain of up to 24.3 dB is observed. As a result, for the first time, the phase detection is performed as part of the SOM without the need for an external phase detector and gain stages. Issues such as tuning voltage-frequency variation, SOM phase-frequency variation, tracking range, pull in range, phase noise, and SOM phase controllability are discussed in the paper.

Abstracts

Multi-harmonic generator based on the synchronization of a nonlinear bipolar oscillator

E. de Cos, F. Ramirez and A. Suarez. "Multi-harmonic generator based on the synchronization of a nonlinear bipolar oscillator." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2177-2180 vol.3.

A multi-harmonic generator, based on the synchronization of a bipolar oscillator at the fundamental frequency is presented. The fact that the oscillator generates, by itself, the high harmonic content reduces the requirements of RF input power. The first-harmonic injection enables a relatively large synchronization band. The design is based on a bipolar transistor oscillator, spending a long fraction of its period in the saturated regime. The circuit is simulated through harmonic balance, performing stability and phase-noise analyses. The possibility of frequency conversion between different harmonic components of the oscillator has also been evaluated. A prototype providing harmonics between 0.24 and 2.4 GHz has been manufactured, with very good agreement with experimental results.

Abstracts

Efficiency enhanced and harmonic suppressed differential VCO with novel buffer scheme using transformers for IEEE 802.11a

S.-W. Yoon, S. Hong and J. Laskar. "Efficiency enhanced and harmonic suppressed differential VCO with novel buffer scheme using transformers for IEEE 802.11a." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2181-2184 vol.3.

We propose a novel buffer scheme for cross-coupled differential Voltage-Controlled-Oscillator (VCO) design. Transformers are used for the new buffer configuration. The primary coil of the transformer is the inductor of the LC resonator, and the oscillation signal is extracted through the secondary. We also implement differential VCOs using a conventional buffer, and compare the performance with that of VCOs with a transformer buffer. With transformer buffers, we achieve a fivefold efficiency enhancement and 9 dBc more harmonic suppression than the conventional structure. The conventional type VCO shows an oscillation frequency of 4.4/spl sim/5.4 GHz with approximately 0 dBm output power using a total current of 15 mA. The transformer buffer VCO shows 4.7/spl sim/5.1 GHz with 6.5/spl plusmn/1 dBm output power using only 10 mA for the cross-coupled core. The 2/sup nd/ harmonic suppression of each VCO shows -10 dBc and -19 dBc, respectively. Both show a phase noise of about -111 dBc/Hz at 1 MHz offset. To the best of our knowledge, this is the first demonstration of enhancing efficiency and linearity in a VCO using transformers as a buffer stage.

Abstracts

Tunable, ultra-low phase noise YIG based opto-electronic oscillator

D. Eliyahu and L. Maleki. "Tunable, ultra-low phase noise YIG based opto-electronic oscillator." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2185-2187 vol.3.

We describe a YIG tuned opto-electronic oscillator with extremely low phase noise. The oscillator can be tuned from 6 to 12 GHz in steps of 3 MHz, and exhibits a phase noise of -128 dBc/Hz at 10 KHz away from the carrier. This is nearly a 30 dB improvement over conventional YIG oscillators, and is derived from the novel approach of the opto-electronic oscillator. To our knowledge, this is the lowest noise performance of any YIG tuned oscillator previously reported.

Abstracts

A low phase noise 19 GHz-band VCO using two different frequency resonators

S. Hamano, K. Kawakami and T. Takagi. "A low phase noise 19 GHz-band VCO using two different frequency resonators." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2189-2192 vol.3.

A low phase noise 19 GHz-band VCO is presented in this paper. The VCO has a novel tuning circuit consisting of two resonators which have a different resonant frequency. With these two resonators, the Q factor of the tuning circuit of the VCO is improved, and low phase noise can be achieved. The measurement results of the developed VCO show phase noise from -120 dBc/Hz to -122 dBc/Hz at 1 MHz from the carrier over a 290 MHz tuning bandwidth in the 19 GHz-band. This VCO achieves one of the lowest recorded values of phase noise at K-band.

Abstracts

Low phase noise Ku band frequency multiplied and divided MMIC VCOs using InGaP/GaAs HBT technology

Donghyun Baek, Junggun Kim, Dongwoo Kang and Songcheol Hong. "Low phase noise Ku band frequency multiplied and divided MMIC VCOs using InGaP/GaAs HBT technology." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2193-2196 vol.3.

A 36 GHz frequency multiplied VCO and a 1.9 GHz frequency divided VCO are presented. These are realized on an InGaP/GaAs HBT technology with low f/sub T/ and f/sub MAX/ of 30 GHz and 45 GHz, respectively. In a multiplied VCO, an LC-tuned VCO operates at 18 GHz, which is doubled in a frequency multiplier using the HBT's nonlinear characteristics. High conversion gain of about -2 dB is obtained in a small chip area, 0.56 /spl times/ 0.61 mm/sup 2/. Furthermore, high output power of -3 dBm is achieved with an SSB phase noise of -96.5 dBc/Hz at 1 MHz offset frequency from 36 GHz. The frequency divided VCO using a balanced VCO and a 1/8 static frequency divider using emitter-coupled logic is presented. It shows low phase noise performance of -115 dBc/Hz at 1 MHz offset from 15 GHz and - 130 dBc/Hz at 1 MHz offset from 1.9 GHz.

Abstracts

An InGaP/GaAs collector-up tunnelling-collector HBT and subtransistor via-hole structure for small and highly efficient power amplifiers

K. Tanaka, K. Mochizuki, C. Takubo, H. Matsumoto, T. Tanoue and I. Ohbu. "An InGaP/GaAs collector-up tunnelling-collector HBT and subtransistor via-hole structure for small and highly efficient power amplifiers." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2197-2200 vol.3.

A novel structure of InGaP/GaAs collector-up tunneling-collector heterojunction bipolar transistors (C-up TC-HBTs) with sub-transistor via-holes, for use in small power amplifiers, is presented. Having the via-holes directly under the C-up UBTs is convenient in terms of thermal conduction; power amplifiers composed of multi-finger HBTs in this configuration take up dramatically less area than those with devices in the conventional configuration. The result was the demonstration of thermally stable operation for a 4-finger C-up TC-HBT at up to 0.9 mW//spl mu/m/sup 2/, in spite of the low finger pitch of only 15 /spl mu/m. Moreover, a small 32-finger C-up TC-HBT, with a total area of 0.25 /spl times/ 0.31 mm, was capable of delivering a power-added efficiency of 52% at 24.4 dBm in wide-band CDMA operation. These results show the strong potential for microwave application of high-efficiency power amplifiers composed of C-up TC-HBTs.

Abstracts

A 1 watt, 3.2 VDC, high efficiency distributed power PHEMT amplifier fabricated using LTCC technology

Lei Zhao, A. Pavio and W. Thompson. "A 1 watt, 3.2 VDC, high efficiency distributed power PHEMT amplifier fabricated using LTCC technology." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2201-2204 vol.3.

A 1 watt distributed PHEMT amplifier, that operates from 800 MHz to 2.1 GHz, with a 3.2 Volt DC supply has been developed using a novel new approach. The amplifier was designed to provide high efficiency operation, targeted for broadband wireless applications. Key to the amplifier's performance, is a novel broadband impedance matching transformer, fabricated using LTCC technology, as well as a low loss tapered drain network. The class B design has 50 /spl Omega/ terminal impedances and built-in bias decoupling.

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High-efficiency power characteristics for WCDMA applications of SiGe HBT devices using a novel form of base-bias resistance

M. Kondo, I. Miyashita, M. Koshimizu, Y. Kagotoshi, H. Nagai and K. Washio. "High-efficiency power characteristics for WCDMA applications of SiGe HBT devices using a novel form of base-bias resistance." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2205-2208 vol.3.

We present SiGe heterojunction bipolar transistor (HBT) devices that exhibit highly efficient and linear power characteristics comparable to those of GaAs HBTs under wide-band code-division multiple-access (WCDMA) modulation for the first time. Two resistors in series are inserted in the base-bias current path of the device. One only conducts envelope-frequency components of the base current while the other also conducts DC. By adjusting the resistance values, the adjacent channel power ratio (ACPR) was significantly reduced over a wide range of output power levels without loss of efficiency. An optimized device with a total emitter area of 3390 /spl mu/m/sup 2/ exhibited 44% power-added-efficiency (PAE) and 27.3-dBm output power with ACPR of less than -40 dBc under WCDMA modulation at 1.95 GHz and 3.4-V bias voltage.

Abstracts

MMIC power amplifier adaptively linearized with RF coupled active bias circuit for W-CDMA mobile terminals applications

J.H. Kim, Y.S. Noh and C.S. Park. "MMIC power amplifier adaptively linearized with RF coupled active bias circuit for W-CDMA mobile terminals applications." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2209-2212 vol.3.

A new on-chip linearizer self-adapting to the input power has been devised and implemented on a highly linear monolithic microwave integrated circuit (MMIC) power amplifier for 1.95 GHz wide-band code division multiple-access (W-CDMA) systems. The linearizer consists of an InGaP/GaAs heterojunction bipolar transistor (HBT) active bias circuit and reverse biased junction diode for which the dynamic admittance to input power level varies adaptively to control RF transmission power to the bias circuit. The proposed linearizer effectively improves the gain compression with little insertion power loss, and more importantly, it consumes no additional die area and DC power. The HBT MMIC power amplifier with the integrated linearizer exhibits a maximum output power of 30.3 dBm, a power gain of 27.5 dB, a power added efficiency of 42% at the maximum output power under an operation voltage of 3.4 V, and adjacent channel leakage power ratio of -38 dBc at 27 dBm of output power.

Abstracts

Single-tone optimisation of an adaptive-bias Doherty structure

J. Lees, M. Goss, J. Benedikt and P.J. Tasker. "Single-tone optimisation of an adaptive-bias Doherty structure." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2213-2216 vol.3.

The Doherty PA configuration has become well established as a means of enhancing PA efficiency. The improvement, however, is usually accompanied by deterioration in overall linearity. This paper addresses two important features of the Doherty PA configuration, which offer a means of improving the linearity/efficiency trade-off obtained using a classical adaptive bias implementation. One issue is the need to generate a suitable bias control voltage for the auxiliary PA device. Such control enables the use of two devices with equal periphery for main and auxiliary functions. The second issue is the use of phase compensation to ensure the combined signals sum in the correct manner prescribed by classical analysis. Both of these refinements are demonstrated using an experimental circuit operating at 1.8 GHz. Extensive experimental data are presented on the beneficial effects of phase control, which show that a better compromise between optimum efficiency and linearity can be obtained using different phase offsets at different drive levels. This raises the interesting possibility of adjusting relative phase, bias and relative input magnitude dynamically in order to obtain improved linearity from the Doherty configuration, especially for signals having high peak to average ratios.

Abstracts

Power and linearity performance of a cascode InGaP/GaAs HBT distributed amplifier for instrument applications

L. Boglione. "Power and linearity performance of a cascode InGaP/GaAs HBT distributed amplifier for instrument applications." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2217-2220 vol.3.

This paper describes the performance of a cascode InGaP/GaAs HBT distributed amplifier for instrument applications. In particular, the linearity of the distributed amplifier is considered. The compression point, the second and third harmonics, and the third order intercept point have been measured over different bias conditions. At nominal bias, the amplifier delivers a P1dB of 20 dBm and a TOI of 30 dBm up to 20 GHz. This amplifier can achieve simultaneously some of the best results published in the literature.

Abstracts

A design of predistortion HPA using frequency up-conversion mixing operation

Gyujae Seo, Jeongho Kim, Yongchae Jeong and C. Kim. "A design of predistortion HPA using frequency up-conversion mixing operation." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2221-2224 vol.3.

In this paper, we propose a predistortion linearizing method using a frequency up-conversion operation. This method does not require any additional signal sources even using the mixing operation. This method uses the 2/sup nd/ low frequency intermodulation distortion signal of a driver amplifier as the mixing signal. With the proposed predistortion method, the (C/I)/sub 3rd/ of the amplifier is improved by 26 dB (@Po=22 dBm/tone), where the two tones are 1.8544 GHz and 1.8556 GHz.

Abstracts

A W-band ultra low noise amplifier MMIC using GaAs pHEMT

N. Tanahashi, K. Kanaya, T. Matsuzuka, I. Katoh, Y. Notani, T. Ishida, T. Oku, T. Ishikawa, M. Komaru and Y. Matsuda. "A W-band ultra low noise amplifier MMIC using GaAs pHEMT." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2225-2228 vol.3.

This paper presents a newly developed 76 GHz three-stage LNA for automotive radar systems. The LNA utilizes multi band rejection filter type stabilizing circuits to achieve good noise figure together with good stability. The operating bias condition was carefully chosen to obtain low temperature dependence of gain. As a result, the LNA delivers a noise figure of 3.5 dB typically, small temperature dependence of gain of -0.016 dB/deg.C and high return loss using a highly conventional 0.19 /spl mu/m T-shaped gate AlGaAs/InGaAs/GaAs pHEMT process.

Abstracts

A 38/77 GHz MMIC transmitter chip set for automotive applications

J. Udomoto, T. Matsuzuka, S. Chaki, K. Kanaya, T. Katoh, Y. Notani, T. Hisaka, T. Oku, T. Ishikawa, M. Komaru and Y. Matsuda. "A 38/77 GHz MMIC transmitter chip set for automotive applications." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2229-2232 vol.3.

This paper describes the successful development of 38/77 GHz transmit MMICs for automotive applications. They consist of a 38 GHz amplifier, a frequency doubler, and a 77 GHz power amplifier. These amplifiers achieve output powers of 16 dBm at 38 GHz and 15 dBm at 76.5 GHz at 1 dB gain compression point. The output power of the 77 GHz amplifier is one of the highest delivered by a single chip MMIC at 76.5 GHz. The frequency doubler delivers an output power of 5.7 dBm at 76.5 GHz. These results are promising for automotive applications in the W-band.

Abstracts

25.5 to 76.5GHz active frequency tripler for automotive radar applications

D. Allen, D. Bryant and W. Gaiewski. "25.5 to 76.5GHz active frequency tripler for automotive radar applications." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2233-2236 vol.3.

This paper discusses the development of a 25.5 GHz to 76.5 GHz single stage active frequency tripler for automotive radar applications. With an input drive level of 17 dBm at f/3, the frequency triplers tested demonstrated an output power level of 0 dBm from 73 to 82 GHz. The frequency tripler was subsequently cascaded with a 25.5 GHz VCO to demonstrate a 76.5 GHz VCO.

Abstracts

A broadband integrated LTCC laminated waveguide to metallic waveguide transition

Yong Huang and Ke-Li Wu. "A broadband integrated LTCC laminated waveguide to metallic waveguide transition." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2237-2240 vol.3.

In this paper, a compact and broadband integrated transition between a laminated waveguide in a multi-layer Low Temperature Co-fired Ceramic (LTCC) substrate and a metallic rectangular waveguide (RWG) is presented. A Ka-band prototype of the proposed broadband transition is designed and fabricated in an LTCC substrate. The simulated and measured results of the prototype transition show excellent agreement. It has been demonstrated, through the experimental results of the Ka-band prototype, that the proposed transition configuration gives an effective bandwidth of over 8% with -15 dB return loss and average -0.4 dB insertion loss over the bandwidth in the Ka frequency band.

Abstracts

Millimeter-wave phase shifters utilizing planar integrated Schottky barrier diodes

Zhiyang Liu, J.C. Midkiff and R.M. Weikle II. "Millimeter-wave phase shifters utilizing planar integrated Schottky barrier diodes." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2241-2244 vol.3.

Two prototype phase shifters operating at 220 GHz and based on planar integrated Schottky barrier diodes have been designed, fabricated, and tested. A 180/spl deg/ reflection-coefficient phase shifter has demonstrated a measured phase shift of 184/spl deg//spl plusmn/22/spl deg/ over the 216-221 GHz band with return loss no greater than 6 dB. A quadrature (90/spl deg/) branchline-coupler phase shifter has given a measured phase shift of 85/spl deg//spl plusmn/10/spl deg/ over the 219-225 GHz band with insertion loss no greater than 8.5 dB. The phase shifters presented in this work can be used as modulators for RF front-ends as well as for sideband generation.

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A broadband 100 GHz phase switch/mixer using a uniplanar slotline transition

T. Gaier, D. Dawson and M. Wells. "A broadband 100 GHz phase switch/mixer using a uniplanar slotline transition." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2245-2248 vol.3.

We have developed a broadband 180/spl deg/ phase switch using one-sided planar grounded slotline design. The design is based upon a grounded coplanar waveguide (CPW) to slotline transition acting as a balun. This design offers several advantages over existing topologies making it well suited to monolithic microwave integrated circuit (MMIC) integration. The uniplanar construction allows for simple module integration and the slot transition with a cutoff frequency serves the same function as a waveguide transition used in multipliers and mixers. We fabricated a switch using flip-chip Schottky diodes and demonstrated the circuit as a W-band phase switch and a mixer. The switch has 5 dB insertion loss and phase flatness of 10/spl deg/ from 90-110 GHz. As a mixer the circuit performs with 12 dB conversion loss from 76-112 GHz, with an IF bandwidth exceeding 25 GHz. This performance is comparable to commercially available waveguide mixers, which are incompatible with MMIC integration.

Abstracts

Nonreciprocal GaAs phase-shifters and isolators for millimetric and sub-millimetric wavelengths

V.H. Mok and L.E. Davis. "Nonreciprocal GaAs phase-shifters and isolators for millimetric and sub-millimetric wavelengths." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2249-2252 vol.3.

Two new nonreciprocal waveguiding structures - a grounded-dielectric/semiconductor slab and a grounded-semiconductor/dielectric slab have been investigated analytically and numerically. The results demonstrate nonreciprocal behavior and the potential for the design of phase shifters and isolators in millimetric and submillimetric wavelengths region. Dispersion diagrams are plotted to show the wave behavior for both structures.

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Application of CPW based spiral-shaped defected ground structure to the reduction of phase noise in V-band MMIC oscillator

Young-Taek Lee, Jong-Sik Lim, Sungwon Kim, Jaechun Lee, Sangwook Nam, Kwang-Seok Seo and Dal Ahn. "Application of CPW based spiral-shaped defected ground structure to the reduction of phase noise in V-band MMIC oscillator." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2253-2256 vol.3.

A CPW based spiral-shaped defected ground structure (DGS) is used in a MMIC for the first time to reduce the phase noise in a V-band MMIC oscillator. The parallel equivalent L-C components, resulting from defects on both ground planes in the CPW, produce a band rejection property. Hence the spiral-shaped DGS can be employed at the gate circuit of the series feedback oscillator to improve the quality factor of the oscillator. A V-band CPW MMIC oscillator, incorporated with this DGS resonator, was designed, fabricated and measured. To demonstrate the effect of the spiral-shaped DGS on phase noise, another oscillator with only a conventional open stub CPW line was also tested. The phase noise performance of the oscillator with the spiral-shaped DGS is improved by 8 dB compared to that of the oscillator without the DGS.

Abstracts

High-Q LTCC resonators for millimeter wave applications

A. El-Tager, J. Bray and L. Roy. "High-Q LTCC resonators for millimeter wave applications." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2257-2260 vol.3.

This paper examines millimeter wave LTCC waveguide resonators and proposes a design strategy for obtaining high-Q factors using a number of loss-reduction and feeding techniques. The modeling and simulation methodology employed has been confirmed through a baseline LTCC resonator design, showing excellent agreement between measurements and predictions. An optimum design was then carried out which yielded an unloaded Q of over 1000 at Ka-band, the highest value ever reported for a standard LTCC process.

Abstracts

A 1V monolithic transformer-coupled 30-Gb/s 2:1 multiplexer in 120 nm CMOS

D. Kehrer, H.-D. Wohlmuth, C. Kienmayer and A.L. Scholtz. "A 1V monolithic transformer-coupled 30-Gb/s 2:1 multiplexer in 120 nm CMOS." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2261-2264 vol.3.

A completely integrated transformer coupled 2:1 multiplexer, for high speed operation, in 0.12 /spl mu/m standard CMOS is presented. The multiplexer uses a monolithic transformer to couple the clock to the multiplexer core. This circuit technique allows the 2:1 multiplexer to work from a single 1 V supply voltage while achieving data rates of 30 Gb/s.

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Novel direct-coupled current switch architecture for a series-connected voltage-balancing pulse driver

Y. Umeda, A. Kanda and T. Enoki. "Novel direct-coupled current switch architecture for a series-connected voltage-balancing pulse driver." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2265-2268 vol.3.

A series-connected voltage-balancing circuit can output n-times larger voltage swing than can be output by a single transistor, where n is the number of series-connected transistors. This circuit makes it possible for high-speed low-breakdown-voltage transistors to be applied to large-voltage-swing pulse drivers, such as an optical modulator driver. This paper reports the first operation of this type of driver at 10 Gbit/s. Novel direct-coupled current switch architecture prevents FETs exceeding gate-drain breakdown voltage and keeps high-speed operation. The fabricated driver demonstrated 3.7 V/sub pp/ (7.4 V/sub pp, diff/) output with clear eye opening.

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Abstracts

Effect of output buffer design on 40Gb/s limiting amplifiers designed with InP HBT technology

G. Georgiou, V. Houtsma, R. Pullela, Q. Lee, A. Leven, J.S. Weiner, R. Kopf, A. Tate, Y. Yang, Y. Baeyens and Y.-K. Chen. "Effect of output buffer design on 40Gb/s limiting amplifiers designed with InP HBT technology." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2269-2272 vol.3.

An InP-based HBT technology with peak f/sub t/ /spl sim/ 135GHz is used to design and fabricate several 3-stage limiting amplifier with high margin at >40Gbps. Feedback techniques are used in all design for the first two stages. The different designs compare the conventional (resistive load) differential pair output buffer with a feedback (active load) transimpedance output buffer. The common differential specifications are S11 and S22 < -15dB and S21 > 25dB with output swing >500mV. Results show that the design with the negative feedback output buffer has a lower small-signal bandwidth but a larger 40Gb/s eye opening than design with the conventional differential pair output buffer.

Abstracts

Liquid crystal polymer (LCP) for microwave/millimeter wave multilayer packaging

Z. Wei and A. Pham. "Liquid crystal polymer (LCP) for microwave/millimeter wave multilayer packaging." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2273-2276 vol.3.

This paper presents characterization and analysis of liquid crystal polymer materials for microwave and millimeter multi-layer packaging. Processing techniques have been developed to fabricate interconnects on this new LCP material. The experimental results demonstrate that an interconnect on LCP achieves a measured insertion loss of less than 0.1 dB/mm up to 50 GHz. This material is highly suitable for microwave and millimeter wave packaging.

Abstracts

High performance multilayered high temperature cofired ceramic for wide band packaging

C.A. Tavernier, F. Valentin, M. Mazouz, R. Vigo, W. Muffato, P. Maeder and M. Havasi. "High performance multilayered high temperature cofired ceramic for wide band packaging." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2277-2280 vol.3.

Opto-electronic and wireless packages have to meet stringent technical performance and cost. Traditionally glass sealed metal machined packages respond to the demand. In 2003, with ever growing complexity, new technology now offers advantageous solutions. While keeping high hermiticity, low mechanical tolerance and electromagnetic compatibility, multilayered ceramic offers a superior flexibility at a lower cost. The present article provides insight on High Temperature Cofired Ceramic (HTCC) achievable electrical performance in the DC to 40 GHz range based on FEM modeling with Ansoft HFSS. We compare model and experimental results for ring and cavity resonators with quality factor up to 180. Based on the model we then derive wide band asymmetrical stripline and vertical interconnect.

Abstracts

Microshield transmission line and spiral inductor integrated on polymer thick film

Ju-Hyun Ko, Shin-Seong Ho and Young-Se Kwon. "Microshield transmission line and spiral inductor integrated on polymer thick film." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2281-2284 vol.3.

Newly proposed microshield transmission line and spiral inductor are developed on CMOS grade silicon substrate using polymer thick film as a supporter for signal line. The fabricated microshield line shows maximum available gain of less than -0.12dB/mm and return loss of larger than 17dB up to 40GHz. Due to its microshield structure, the coupling from the neighboring signal line is less than -70dB from 0.5GHz to 25GHz. For the inductor of 3.62nH, self resonant frequency of 14.5GHz, and maximum quality factor (Q) of 15.5 at 5.5GHz are obtained. Because the fabrication process is compatible with the conventional standard silicon IC process, it is applicable to silicon RF IC. Multichip module (MCM) package for high performance is also a good branch for these packaging devices.

Abstracts

Index of Authors (2003 Vol. III [MWSYM])

"Index of Authors (2003 Vol. III [MWSYM])." 2003 MTT-S International Microwave Symposium Digest 3.3 (2003 Vol. III [MWSYM]): 2319-2327.

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Front Cover (2003 [RFIC])

"Front Cover (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): -.

The following topics are dealt with: receivers for 2G and 3G applications; wireless data system IC and architecture; 40 Gb/s optical communications integrated circuits; RF VCOs; novel small signal circuits; power amplifiers for wireless applications; active device technology; advanced synthesizers; advanced PA circuit techniques; small signal system front ends; inductor and substrate modeling; advanced VCOs and synthesizers; optical system ICs; RFIC device technologies; active device modeling; transceivers for cellular 2G and 3G systems; mixers and modulators for cellular applications; chip sets for wireless data applications; mixers for wireless LAN and broadband applications; dividers; ultra-wideband communications and radar.

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Abstracts

Wireless RF design challenges

K. Hansen. "Wireless RF design challenges." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 3-7.

The challenges and opportunities for the RF designer have perhaps never been greater. The drive to higher levels of integration in the extremely competitive cellular chipset market place; the emergence of new wireless communications links such as Bluetooth and WLAN; and the continual need to provide multi-band, multi-mode, multiservice, modulation independent, cost effective transceivers have all produced a great demand for RF design skills. This paper discusses the markets, system level specifications, and RF design challenges.

Abstracts

Multi mode wireless terminals - key technical challenges

A. Loke and M. Abdelgany. "Multi mode wireless terminals - key technical challenges." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 11-14.

Increasing demand for seamless connectivity on mobile platforms is fueling phenomenal technological innovation in the wireless industry. In addition to second and third generation digital cellular standards striving to provide subscribers with higher data rates along with voice several competing standards like wireless local area networks (WLAN) and Bluetooth are gaining consumer acceptance as viable solutions for data connectivity. Industry is rapidly moving towards convergence of radio technology to cater for multiple communication standards on a single platform. Key technical challenges in the implementation of radio architectures for multi mode radio are presented.

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The impact of emerging "4G" systems on the performance and complexity requirements of RFICs

L.E. Larson. "The impact of emerging "4G" systems on the performance and complexity requirements of RFICs." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 15-18.

Although 4G systems are many years from being deployed on a widespread basis, there is an active ongoing worldwide effort to develop the requirements of these proposed new systems. The standards and goals of these new systems are still in considerable flux, although some overall trends have emerged. This paper presents an overview of a variety of proposed schemes, and their issues for RFIC implementation at the handset level.

Abstracts

Integrated adaptive LO leakage cancellation for W-CDMA direct upconversion transmitters

C. Lanschutzer, A. Springer, L. Maurer, Z. Boos and R. Weigel. "Integrated adaptive LO leakage cancellation for W-CDMA direct upconversion transmitters." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 19-22.

A method for on-chip implementation is presented to compensate both local oscillator leakage due to finite LO to RF port isolation and input DC offset. It uses an RF power detector and a digital control loop and is intended for use in direct upconversion transmitters. The entire control loop was integrated in a CMOS UNITS transceiver chip. This paper presents the cancellation principle, simulations, and measurement results.

Abstracts

High performance low current CDMA receiver front end using 0.18 /spl mu/m SiGe BiCMOS

M. Kamat, Peihua Ye, Yong He, B. Agarwal, P. Good, S. Lloyd and A. Loke. "High performance low current CDMA receiver front end using 0.18 /spl mu/m SiGe BiCMOS." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 23-26.

Silicon germanium bipolar CMOS (SiGe BiCMOS) process technology is gaining popularity for RF circuits in wireless applications due to high performance, low cost, high yield and levels of integration with mixed signal and digital CMOS circuits. A tri-band quad mode CDMA RF receiver front end is designed in a 0.18 /spl mu/m SiGe BiCMOS process that enabled LNAs with sub 1 dB noise figure and low-noise high-linearity mixers with low current consumption.

Abstracts

A SiGe WCDMA/DCS dual-band RF front-end receiver

June-Ming Hsu, Yung-Hui Chen, Shin-Fu Chen, Ming-Ching Kuo and Peng-Un Su. "A SiGe WCDMA/DCS dual-band RF front-end receiver." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 27-30.

A WCDMA/DCS dual-band RF front-end receiver IC fabricated in a 0.35 /spl mu/m SiGe BiCMOS technology is presented. This RF receiver uses a novel fully-differential LNA with dual input-stages to replace the requirement of paralleling two similar LNAs in previous dual-band designs. This chip dissipates 24 mA from a 2.7 V supply and can be used in direct-conversion or low-IF receivers. The measured voltage gain, P1dB and iIP3 are 32 dB, -25 dBm and -15 dBm, respectively.

Abstracts

A single-chip transceiver for 802.11a and Hiperlan2 wireless LANs

S. Pipilos, E. Metaxakis, A. Tzimas, S. Vlassis, S. Sgourenas, Y. Tsividis and T. Varelas. "A single-chip transceiver for 802.11a and Hiperlan2 wireless LANs." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 33-36.

A fully integrated transceiver for 802.11a and Hiperlan2 wireless local area network applications is described. This single-chip transceiver employs direct conversion with on-chip channel-select filters and DC offset cancellation servo circuitry, as well as correction loops for maintaining accurate I/Q balancing and transmitter power control. The transceiver exceeds both WLAN standard requirements for the 54 Mbps mode, demonstrating a receiver sensitivity of -75 dBm for this mode. A highly flexible interface allows a variety of baseband processors to interface with this chip.

Abstracts

5-GHz and 2.4-GHz dual-band RF-transceiver for WLAN 802.11a/b/g applications

B.-U. Klepser, M. Punzenberger, T. Ruhlicke and M. Zannoth. "5-GHz and 2.4-GHz dual-band RF-transceiver for WLAN 802.11a/b/g applications." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 37-40.

A fully monolithic dual-band radio transceiver chip for 802.11a, 802.11b and 802.11g applications is presented in a 0.25 /spl mu/m 40 GHz BiCMOS technology. The transceiver chip contains a complete receiver chain with low noise amplifier, mixer, programmable gain amplifier, CCK and OFDM channel filters. In the transmit path, a direct-modulation transmitter with integrated anti aliasing filters and programmable gain control is implemented. The frequency synthesizer consists of a fully integrated VCO, a reference oscillator and a phase locked loop for both supported frequency bands of 2.4 GHz and 5 GHz. For a 3 V power supply, the overall power consumption for 802.11a receive-mode and transmit-mode are 600 mW and 450 mW, respectively.

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A CMOS 802.11b wireless LAN transceiver

X. Li, J.R. Paviol, B.A. Myers and K.K. O. "A CMOS 802.11b wireless LAN transceiver." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 41-44.

This paper describes a 2.4 GHz 0.25 /spl mu/m CMOS RF transceiver chip that has the potential to be used in place of a SiGe transceiver chip used in an 802.11b radio. The 802.11b radio with the CMOS transceiver was tested along with the radio with a SiGe transceiver. The CMOS radio transmits an RMS power of 13.1 dBm at the antenna output while the SiGe radio has 13.2 dBm output power. The CMOS radio receiver has a sensitivity of -81 dBm at 11 Mbps while the SiGe receiver has a sensitivity of -84 dBm. Overall, the radio with CMOS transceiver consumes 5% more current than the one with the SiGe chip.

Abstracts

A direct conversion RF front-end for 2-GHz WCDMA and 5.8-GHz WLAN applications

M. Hotti, J. Kaukovuori, J. Ryynanen, K. Kivekas, J. Jussila and K. Halonen. "A direct conversion RF front-end for 2-GHz WCDMA and 5.8-GHz WLAN applications." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 45-48.

A direct conversion RF front-end for 2.0 GHz WCDMA and 5.8 GHz WLAN applications is described. The measured double-sideband NF, IIP3 and voltage gain are 3.6 dB, -15.1 dBm and 29.5 dB for WCDMA, and 5.2 dB, -17.4 dBm and 26.5 dB for WLAN, respectively. The RF front-end consumes 22.3 mA in WCDMA mode and 23.1 mA in WLAN mode from a 2.7 V supply. The chip is fabricated using a 0.35 /spl mu/m 45 GHz SiGe BiCMOS process.

Abstracts

Low power phase quantizing demodulators for a zero-IF Bluetooth receiver

S. Samadian, R. Hayashi and A.A. Abidi. "Low power phase quantizing demodulators for a zero-IF Bluetooth receiver." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 49-52.

This paper presents low-complexity detectors for a zero-IF Bluetooth receiver based on phase-domain A/D conversion. Complexity and power issues are addressed and a technique is used to reduce power and complexity at the same time. At an E/sub b//N/sub o/ of 13 dB, the bit error rate of the demodulators is 10/sup -3/.

Abstracts

State-of-the-art 60 GHz, 3.6 k-ohm transimpedance amplifier for 40 Gb/s and beyond

K.W. Kobayashi. "State-of-the-art 60 GHz, 3.6 k-ohm transimpedance amplifier for 40 Gb/s and beyond." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 55-58.

A 3.6 k/spl Omega/ InP HBT transimpedance amplifier (TIA) has been demonstrated with a bandwidth of 60 GHz. Gain flatness of /spl plusmn/2 dB and DC power of 271 mW has also been obtained. This TIA benchmarks the best gain-bandwidth product (GBP) of 1.9 THz, the highest transimpedance-bandwidth product (TZ-BWP) of 216 /spl Omega/-THz, and the highest TZ-BWP per DC power efficiency of +797 /spl Omega/-GHz/mW obtained for a 40 Gb/s transimpedance amplifier. These results are discussed in context with prior state-of-the-art 40 Gb/s TIAs implemented with various technologies and circuit topologies. 40 Gb/s photo-receiver requirements, TIA technology and topology trades, and future directions are reviewed.

Abstracts

SiGe 43.2 Gb/s 4:1 multiplexor and clock multiplier for OC-768 fiber communications

C. Bourde, F. Fuernhammer and G. Gutierrez. "SiGe 43.2 Gb/s 4:1 multiplexor and clock multiplier for OC-768 fiber communications." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 59-62.

We have developed a clock multiplying unit and 4 to 1 multiplexor (CMU/MUX 4:1) that operates up to 47 Gb/s. The on board VCO is LC tuned and the output clock jitter is 6 pspp. The eye diagram of the output is 400 mV swing with rise and fall times of less than 9 ps. This integrated circuit was processed in a 120 GHz BiCMOS 0.25 /spl mu/m process. Power dissipation is only 1 W for a chip area of 2 mm/sup 2/.

Abstracts

4-bit multiplexer/demultiplexer chip set for 40-Gbit/s optical communication systems (2003 [RFIC])

K. Ishii, H. Nosaka, M. Ida, K. Kurishima, S. Yamahata, T. Enoki, T. Shibata and E. Sano. "4-bit multiplexer/demultiplexer chip set for 40-Gbit/s optical communication systems (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 63-66.

We have designed and fabricated a low-power 4:1 multiplexer (MUX), a 1:4 demultiplexer (DEMUX), and a 1:4 DEMUX with a clock and data recovery (CDR) circuit using undoped-emitter InP/InGaAs heterojunction bipolar transistors (HBTs). Our HBTs exhibit an f/sub T/ of about 150 GHz and an f/sub max/ of about 200 GHz at a collector current density of 50 kA//spl mu/m/sup 2/ and a collector-to-emitter voltage of 1.2 V. Error-free operations at bit rates of up to 50 Gbit/s have been confirmed for the 4:1 MUX and 1:4 DEMUX, which dissipate 2.5 W and 2.6 W, respectively. In addition, 40-Gbit/s error-free operation for the full clock rate 1:4 DEMUX with the CDR has been achieved for the first time.

Abstracts

Compact high-gain lumped differential 40 Gb/s driver amplifiers in production 0.15 /spl mu/m PHEMT technology

Y. Baeyens, P. Paschke, V. Houtsma, A. Leven, R. Hocke, S. Weisser, P. Roux and Y.K. Chen. "Compact high-gain lumped differential 40 Gb/s driver amplifiers in production 0.15 /spl mu/m PHEMT technology." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 67-70.

High-performance and very compact 40 Gb/s driver amplifiers were realized in mature 0.15 /spl mu/m depletion PHEMT technology. The 3-stage lumped differential drivers feature a large differential 40 Gb/s output swing of up to 7.5 V/sub pp/, RMS jitter of less than 800 fs, rise and fall times of less than 10 ps and more than 27 dB gain. The small size (1.4/spl times/1.7 mm) and ability to have DC coupled in- and output, enable compact and cost-effective optical 40 Gb/s long-haul transmitters with system grade NRZ and RZ eye diagrams.

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The development of 40 Gb/s limiting-distributed modulator drivers in InP HBTs

M. Yu, Zhihao Lao, Shing Lee, V. Radisic, Muliang Xu, V. Hoe, K. Guinn and K.C. Wang. "The development of 40 Gb/s limiting-distributed modulator drivers in InP HBTs." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 71-73.

The development of monolithic modulator drivers designed in InP SHBT technologies for 40-Gb/s optical communications is presented. The drivers consist of a differential limiting pre-driver and a differential distributed post-amplifier to achieve sufficient gain-bandwidth product, and feature cross-point control and output amplitude adjustments to ensure sufficient output extinction ratio. The drivers have achieved output swings of 2.6 Vp-p at each side with a 0.5 Vp-p single-sided input, and consume 1.72 W power.

Abstracts

Performance review of integrated CMOS VCO circuits for wireless communications

M. Rachedine, D. Kaczman, A. Das, M. Shah, J. Mondal and C. Shurboff. "Performance review of integrated CMOS VCO circuits for wireless communications." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 77-80.

This paper reviews monolithically integrated CMOS voltage controlled oscillators (VCO) for wireless communications. The key challenges in VCO development include: design of a high Q tank on a substrate tailored for CMOS, multiband operation using a single VCO, enhanced manufacturability using digital frequency tuning, and optimization of the overall VCO topology for low power operation. Recent developments in each of these areas are examined and a comparison of various VCO topologies versus figure of merit (FOM) is presented.

Abstracts

A first digitally-controlled oscillator in a deep-submicron CMOS process for multi-GHz wireless applications

R.B. Staszewski, D. Leipold, Chih-Ming Hung and P.T. Balsara. "A first digitally-controlled oscillator in a deep-submicron CMOS process for multi-GHz wireless applications." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 81-84.

A novel digitally-controlled oscillator (DCO) architecture for multi-GHz RF applications is proposed and demonstrated. It deliberately avoids any use of an analog tuning voltage control line. Fine frequency resolution is achieved through high-speed dithering. This enables use of fully-digital frequency synthesizers in the most advanced deep-submicron digital CMOS processes which allow almost no analog extensions. It promotes cost-effective integration with the digital back-end on to a single silicon die. The demonstrator test chip has been fabricated in a digital 0.13 /spl mu/m CMOS process together with a DSP. The DCO core consumes 2.3 mA from a 1.5 V supply and has a very large tuning range of 500 MHz. The phase noise is -112 dBc/Hz at 500 kHz offset.

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Analysis on resonator coupling and its application to CMOS quadrature VCO at 8 GHz

Donghyun Baek, Taeksang Song, Sangsoo Ko, Euisik Yoon and Songcheol Hong. "Analysis on resonator coupling and its application to CMOS quadrature VCO at 8 GHz." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 85-88.

A low phase noise CMOS quadrature VCO is presented. A transformer resonator coupling is analyzed. It is found that the coupled resonator has high frequency selectivity. The Q factor of a coupled resonator is (1+k) times higher than a single LC resonator. This enhancement leads to low phase noise and low power consumption of a VCO. The VCO is implemented using 0.18 /spl mu/m CMOS technology. Two VCOs are linked to generate I-Q signals by the direct current modulation method. The VCO shows low phase noise performances of -110 and -117 dBc/Hz at the offset frequencies of 600 kHz and 1 MHz respectively. The oscillation frequency is 8 GHz. The tuning range of 250 MHz is achieved with a control voltage from 0 to 1 V. The VCO draws 8 mA in core circuits with 3 V supply.

Abstracts

A high figure of merit and area-efficient low-voltage (0.7-1 V) 12 GHz CMOS VCO

T.K.K. Tsang and M.N. El-Gamal. "A high figure of merit and area-efficient low-voltage (0.7-1 V) 12 GHz CMOS VCO." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 89-92.

This paper presents the design and experimental results of an area-efficient LC-based voltage controlled oscillator (VCO) which can operate from a supply voltage as low as 0.7 V (2 mW in power), while being suitable for RF applications. A transformer coupling technique is used to reduce the required silicon area by more than a factor of two, compared to earlier designs, while reducing the phase noise. A VCO occupying a 0.24 mm/sup 2/ of area was fabricated in a standard 0.18 /spl mu/m CMOS process. With a 1 V supply, the 12 GHz VCO consumes 7.7 mW with a measured phase noise of -102.2 dBc/Hz at a 600 kHz offset. A tuning range of 400 MHz is achieved without using varactors. The VCO has an excellent figure of merit (FOM) of -183.4 dBc/Hz, compared to recent designs.

Abstracts

High performance SOI and bulk CMOS 5GHz VCOs

Tae Youn Kim, A. Adams and N. Weste. "High performance SOI and bulk CMOS 5GHz VCOs." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 93-96.

This paper presents a comparison of two 5 GHz VCOs. One is implemented in an SOI process and the other in a conventional bulk CMOS process. The SOI design presents the lowest reported power (1.65 mW, -110 dBc/Hz @ 1 MHz) in a 5 GHz VCO, while the bulk device presents the lowest phase noise achieved in a 5 GHz VCO (17.25 mW, -126 dBc/Hz @ 1 MHz). The design tradeoffs are discussed.

Abstracts

23GHz front-end circuits in SiGe BiCMOS technology

Yinggang Li, Mingquan Bao, M. Ferndahl and A. Cathelin. "23GHz front-end circuits in SiGe BiCMOS technology." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 99-102.

This paper reports a monolithic 23GHz low-noise converter (LNC) and its blocks implemented in commercial SiGe BiCMOS process featuring 70GHz f/sub T/ and 90GHz f/sub max/. In general, measurement and simulation show close correspondence. For low-noise amplifier, 43dB noise figure (NF) and 22dB gain are typically obtained. For mixers, 13.5-15.5dB single sideband NF, 2-6dB gain and 2-8dBm IIP3 are measured, depending on whether or not linearizer is applied. The LNC converts an RF signal around 23GHz down to an IF of 1GHz. Its performance is described and related questions are discussed at the end of this paper.

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A 0.6-22-GHz broadband CMOS distributed amplifier

Ren-Chieh Liu, Kuo-Liang Deng and Huei Wang. "A 0.6-22-GHz broadband CMOS distributed amplifier." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 103-106.

A CMOS distributed amplifier (DA) covering 0.6 to 22 GHz is presented in this paper. Cascode gain cells and m-derived matching sections are used to enhance the gain and bandwidth performance. The DA chip achieves measured gain of 7.3 /spl plusmn/ 0.8 dB with chip area of 0.9 /spl times/ 1.5 mm/sup 2/ including testing pads. The amplifier was fabricated in a standard 0.18-/spl mu/m CMOS technology and demonstrated the highest frequency and bandwidth of operation among previously reported amplifiers using regular CMOS processes to date.

Abstracts

Highly linear RF CMOS amplifier and mixer adopting MOSFET transconductance linearization by multiple gated transistors

Tae Wook Kim, Bonkee Kim and Kywro Lee. "Highly linear RF CMOS amplifier and mixer adopting MOSFET transconductance linearization by multiple gated transistors." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 107-110.

A highly linear CMOS RF amplifier and mixer circuits adopting MOSFET transconductance linearization by linearly superposing several common-source FET transistors in parallel, combined with some additional circuit techniques such as cascode for amplifier and harmonic tuning for mixer, are reported. Experimental result designed using above techniques shows IP3 improvements at given power consumption by as large as 10 dB for RF amplifier at 900 MHz and 7 dB for Gilbert cell mixer at 2.4 GHz without sacrificing other features such as gain and NF.

Abstracts

A low-power UHF differential LNA in 0.35-/spl mu/m SOI CMOS

E. Zencir, Te-Hsin Huang, N.S. Dogan and E. Arvas. "A low-power UHF differential LNA in 0.35-/spl mu/m SOI CMOS." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 111-114.

A low-power 435-MHz differential low-noise amplifier was implemented in a 0.35-/spl mu/m Silicon On Insulator (SOI) CMOS process. This LNA is intended for use in a UHF receiver under development for deep space communications. The differential LNA has a measured noise figure of 3.25 dB, input 1-dB compression point of -14.18 dBm, input third-order intercept point of -5 dBm, and small-signal gain of 18.74 dB. Total power dissipation is 16.5 mW from a 2.5-V supply. LNA occupies a die area of 1 mm /spl times/ 1.4 mm. This is the first UHF differential LNA implemented in an SOI CMOS process.

Abstracts

A novel LC-tank ESD protection design for Giga-Hz RF circuits

Ming-Dou Ker, Chien-I Chou and Chien-Ming Lee. "A novel LC-tank ESD protection design for Giga-Hz RF circuits." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 115-118.

To further decrease the power gain loss and noise figure of an RF LNA circuit from the on-chip ESD protection circuit, novel LC-tank RF ESD protection circuits is proposed in this paper which has been successfully verified in a 0.25-/spl mu/m CMOS process with top thick metal. With the resonance of the LC-tank, the LC-tank RF ESD protection circuit can reduce the power gain loss and noise figure of the ESD at the operation frequency. From the experimental results, the 4.5 circles inductor of the LC-tank is the best choice for he requirement of 2 kV HBM ESD level. The proposed LC-tank ESD protection circuit will be one of the most effective ESD protection solutions for RF circuits in the higher frequency band (>10 GHz).

Abstracts

Switched capacitor bandpass filter tuned by ring VCO in CMOS 0.35 /spl mu/m

J.-M. Paillot, A. El Oualkadi, H. Guegnaud and R. Allam. "Switched capacitor bandpass filter tuned by ring VCO in CMOS 0.35 /spl mu/m." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 119-122.

Recently Switched-Capacitor filtering capabilities have grown to the Megahertz frequency range. This paper describes an original association of a switched capacitor (SC) bandpass filter and its command circuit made up by a ring voltage controlled oscillator (VCO) with "exclusive-or" (XOR) gates. Implemented in a standard BiCMOS 0.35 /spl mu/m technology, this circuit is attended to be employed in a subset of mobile phone applications using the Tetrapol standard of EADS-TELECOM, which requires a frequency range between 380 and 520 MHz. The results presented for this first design are a tunable center frequency range equal to 220 MHz (320 MHz-540 MHz), with a quality factor greater than 300.

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A 1-V 2GHz VLSI CMOS low noise amplifier

T. Taris, J.B. Begueret, H. Lapuyade and Y. Deval. "A 1-V 2GHz VLSI CMOS low noise amplifier." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 123-126.

A new LNA topology is presented in this paper. Compatible with VLSI technology the architecture is dedicated to the UMTS third generation mobile phone. Operating under 1 V supply voltage the circuit provides a more than 11 dB gain at 2.1 GHz. With a -11 dBm ICP1, the power consumption is lower than 4 mW, making the architecture well suited to very low power applications. The noise figure of 1.8 dB takes advantage of the inductive degeneration technique. The 0 dBm IIP3 fulfils the UMTS requirement whose the circuit is dedicated to.

Abstracts

A novel power amplifier module for quad-band wireless handset applications (2003 [RFIC])

Shuyun Zhang, P. Bretchko, J. Mokoro and R. McMorrow. "A novel power amplifier module for quad-band wireless handset applications (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 129-132.

This paper presents a novel power amplifier module (PAM) designed for GSM850MHz, GSM900MHz, DCS1800MHz and PCS1900MHz handset applications. The module combines an InGaP HBT GSM/DCS/PCS power amplifier IC, two integrated couplers, a dual-band logarithmic RF power detector/controller and some additional passive components. The logarithmic RF power detector was implemented in the module to accomplish linear-in-dB output power dependency. The module features closed loop automatic power control, fully integrated impedance matching at input and output ports with DC blocks and plastic encapsulated on a 10mm/spl times/10mm GTek substrate. The module offers higher accuracy of output power (Pout) control, smaller size, lower bill-of-materials and a shorter Pout calibration time to handset manufacturers. Compared with other conventional power amplifier modules in the market, due to higher accuracy our novel design significantly reduces the power consumption during normal operation. It is a very desirable RF PAM to handset designers because of its unique features. Our design makes it possible for the handset manufacturers to calibrate Pout at one or two points, with error as low as +/-0.3dB, thus reducing test time in mass production. Under a low single supply voltage of 3.2V, the PAM provides 35dBm output power, 55% PAE in GSM900 band and 33dBm and 50% PAE in DCS1800 band.

Abstracts

Differential SiGe power amplifier for 3GPP WCDMA

P. Juurakko, V. Saari, J. Ryynanen and K. Halonen. "Differential SiGe power amplifier for 3GPP WCDMA." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 133-136.

An integrated differential two-stage power amplifier (PA) operating at the 2 GHz frequency range is introduced. The implemented power amplifier uses 2.7 V supply voltage and was fabricated with 0.35/spl mu/m SiGe BiCMOS technology. The measured output power at the -1 dB compression point is 21 dBm, but the amplifier is capable of providing 26.7 dBm output power at the -5 dB gain compression. The measured linear gain is 22 dB. The chip area is 2.36 mm/sup 2/ including bonding pads. The linearity performance of the power amplifier was measured with 3GPP WCDMA basestation signal. The power amplifier fulfilled the 3GPP WCDMA Adjacent Channel Leakage Ratio (ACLR) specifications (ACLR1=45 dB and ACLR2=50 dB) with 11.65 dBm average channel output power.

Abstracts

Bias-switching quasi-Doherty-type amplifier for CDMA handset applications

Seongjun Bae, Junghyun Kim, Inho Nam and Youngwoo Kwon. "Bias-switching quasi-Doherty-type amplifier for CDMA handset applications." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 137-140.

A new approach of "quasi-Doherty" type amplifier based on bias switching has been developed for CDMA handset applications. By dividing the mode of operation according to the output power requirement, the efficiency was optimized in the low-power region while the linearity was improved in the high-power region. In this way, the proposed bias-switching Doherty amplifier could meet the stringent ACPR specification of the CDMA systems over the entire power region while improving the low-power efficiencies. Biasing to the peak amplifier has been switched according the mode of operation for this purpose. Prototype 0.5-W power amplifier module has been designed and fabricated to demonstrate the concept. In the low power mode, PAE of 17% and ACPR of -51.8 dBc were achieved at output power of 16 dBm. In high power mode, PAE of 32% and ACPR of -50 dBc were achieved at output power of 25 dBm.

Abstracts

A 1-Watt doubly balanced 5GHz flip-chip SiGe power amplifier

N. Tanzi, J. Dykstra and K. Hutchinson. "A 1-Watt doubly balanced 5GHz flip-chip SiGe power amplifier." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 141-144.

A doubly balanced 5GHz flip-chip SiGe power amplifier with Low Temperature Co-Fired Ceramic (LTCC) matching networks is described. A doubly balanced amplifier features two balanced amplifiers connected in a push-pull configuration using 180-degree hybrids. The amplifier achieves a saturated output power and power added efficiency (PAE) of 31.5dBm and 24% respectively. At its 1dB compression point, the amplifier delivers 29.6dBm to a 50/spl Omega/ load, and has a PAE of 18.5%. At 5GHz, the amplifier's small-signal gain is 20.6dB, with input and output return losses in excess of 10dB. The amplifier's 1dB power bandwidth is 700MHz.

Abstracts

A CMOS power amplifier with power control and T/R switch for 2.45-GHz Bluetooth/ISM band applications

P.B. Khannur. "A CMOS power amplifier with power control and T/R switch for 2.45-GHz Bluetooth/ISM band applications." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 145-148.

The design and performance of a 2.45-GHz power amplifier with 3-bit digital power control (30-dB control in 5-dB step) and T/R switch for 2.45-GHz Bluetooth and ISM band applications using 0.18-/spl mu/m, single-poly six-metal standard CMOS process with thick top-metal (2-/spl mu/m) and metal-insulator-metal (MIM) capacitor option are presented in this paper. The proposed design uses single-stage Class-AB topology for the power amplifier. In-house extracted models were used for active and passive components to achieve success on silicon for the first time. The power output is +3.5 dBm at 2.45-GHz after the T/R switch. The drain efficiency is 16% including insertion loss of the T/R switch. The circuit operates from a single 1.8V /spl plusmn/ 10% supply and draws total drain current of 8 mA. The operating temperature range is from -40/spl deg/C to +85/spl deg/C.

Abstracts

Outstanding noise characteristics of SiGe:C HBT allow flexibility in high-frequency RF designs

F.K. Chai, R. Reuter, T. Baker, D. Zupac and J. Kirchgessner. "Outstanding noise characteristics of SiGe:C HBT allow flexibility in high-frequency RF designs." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 151-154.

The noise characteristics of Motorola's SiGe:C eHBT (enhanced HBT) are reported with a focus on three key frequencies, 2 GHz, 5 GHz and 24 GHz. Besides achieving extremely low minimum noise figures of 0.34 dB at 2 GHz and 2 dB at 24 GHz, key noise characteristics crucial for RF wireless designs such as noise resistance, noise matching, input and output matching, are detailed at each frequency. A simple LNA with 1 nH emitter degeneration operating at 2 GHz is demonstrated with a noise figure of 0.59 dB, maximum available gain of 16.8 dB and the amplifier is unconditionally stable. The ease in simultaneously optimizing noise, gain and input return loss at 24 GHz for emerging high-frequency RF applications is demonstrated based on measured noise characteristics.

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A silicon bipolar technology for high-efficiency power applications up to C-band

T. Biondi, F. Carrara, A. Scuderi and G. Palmisano. "A silicon bipolar technology for high-efficiency power applications up to C-band." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 155-158.

This paper presents the large-signal characterization and modeling of a 0.8-/spl mu/m 46-GHz-f/sub T/ silicon bipolar technology for RF power applications up to C-band. A series of devices with optimized layout and vertical structure was fabricated for on-wafer load-pull testing at 1.9 GHz, 2.4 GHz, and 5.2 GHz. Under continuous-wave operation, a 56% power-added efficiency and 11-dB large-signal gain were achieved at a 22-dBm output power level by an 80-/spl mu/m emitter length device (180-/spl mu/m/sup 2/ emitter area) operating at 5.2 GHz with a 2.7-V supply voltage. A modified Gummel-Poon model was extracted from DC and multibias S-parameter measurements and validated by comparisons with load-pull results. Close agreement was found between simulated and measured large-signal performance up to power levels well above the 1-dB compression point.

Abstracts

Robust and performing RF LDMOS device integrated in a VLSI BCD silicon technology

L. Labate, A. Moscatelli and R. Stella. "Robust and performing RF LDMOS device integrated in a VLSI BCD silicon technology." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 159-162.

A high performance RF LDMOS device suitable for RF power amplifier handsets applications has been successfully integrated in a 0.35 /spl mu/m pure silicon BCD technology. In this paper, device architecture, DC, small signal and load pull performances are shown, together with device model description and accuracy.

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High frequency noise characteristics of RF MOSFETs in subthreshold region

Kun-Hin To, Young-Bog Park, T. Rainer, W. Brown and M.W. Huang. "High frequency noise characteristics of RF MOSFETs in subthreshold region." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 163-166.

High frequency noise characteristics of 0.13um and 0.18um n-type MOSFET across a full range of bias conditions is presented in this paper. Focus is mainly on nMOSFET's behavior in "off" state, which is not predicted accurately by existing commercial models. This is a region especially important for full-chip RFCMOS design. In this paper, noise parameters (NFmin, RN, /spl Gamma/opt) up to 6GHz are investigated in detail. From the device perspective, the power spectral density of channel noise and induced gate noise is also studied to understand how MOSFETs actually operate from strong inversion to weak inversion and depletion.

Abstracts

High-power and high-efficiency AlGaN/GaN HEMT operated at 50 V drain bias voltage

T. Kikkawa, M. Nagahara, N. Adachi, S. Yokokawa, S. Kato, M. Yokoyama, M. Kanamura, Y. Yamaguchi, N. Hara and K. Joshin. "High-power and high-efficiency AlGaN/GaN HEMT operated at 50 V drain bias voltage." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 167-170.

We describe high power 70 W CW operation at 52 V drain bias voltage (Vds) using 24-mm gate-periphery AlGaN/GaN HEMTs on SiC substrate. A 48 W output power with the drain efficiency of 60% was also obtained at Vds of 50 V under the efficiency-matched condition near class-B. At 40 V, the drain efficiency reached 68%. Vds dependence of third order-intermodulation (IM3) was also characterized at Vds up to 50 V. This is the first report about IM3 profile characterization for a large gate-periphery device at Vds of 50 V. We also investigated RF-stress life test at Vds up to 40 V. The AlGaN/GaN HEMT in this study exhibited good reliability over 100 h.

Abstracts

A fully-integrated Bluetooth synthesizer using digital pre-distortion for PLL-based GFSK modulation

B. Huff and D. Draskovic. "A fully-integrated Bluetooth synthesizer using digital pre-distortion for PLL-based GFSK modulation." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 173-176.

Traditionally, GFSK modulation has been implemented using either I-Q up-conversion or by direct open-loop modulation of the VCO. The up-conversion approach is susceptible to an undesired image signal, and is costly in analog area and power. The open-loop modulation approach is prone to VCO frequency drift and gain errors. The approach described in this paper is a closed-loop modulation of a Delta-Sigma PLL with self-calibrated predistortion filtering. Prior examples of the pre-distortion approach have required either precision loop filter components or custom PLL response tuning. Our approach uses on-chip calibration algorithms which program digital filter coefficients to compensate for PLL loop gain and loop filter variations. This paper describes the fully integrated (including loop filter) 2.4 GHz Delta-Sigma frequency synthesizer, the digital pre-distortion filtering used to cancel the PLL's response, and the calibration algorithms used to adapt the pre-distortion filter coefficients. The synthesizer is implemented as part of a 0.25 /spl mu/m CMOS Bluetooth radio, and uses approximately 35 mA on 4 mm/sup 2/ die area.

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A 3-bit 4/sup th/-order /spl Sigma/-/spl Delta/ modulator with metal-connected multipliers for fractional-N frequency synthesizer

Kun-Seok Lee and Byeong-Ha Park. "A 3-bit 4/sup th/-order /spl Sigma/-/spl Delta/ modulator with metal-connected multipliers for fractional-N frequency synthesizer." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 177-180.

This paper presents a 3-bit 4/sup th/-order /spl Sigma/-/spl Delta/ modulator for fractional-N frequency synthesizer. The modulator employs an interpolative architecture with multiple feedback paths and metal-connected multipliers to implement the feedback coefficients, resulting in a simple hardware complexity. A frequency synthesizer with the proposed modulator exhibits lower out-of-band phase noise, a frequency resolution of 6-Hz, and fast switching time. The experimental results show -82 dBc/Hz in-band phase noise and -140 dBc/Hz out-of-band phase noise at 1 MHz offset frequency. The fractional spurs are less than -80 dBc. A prototype has been implemented in 0.5-/spl mu/m BiCMOS technology.

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A 16mW, 2.23-2.45GHz fully integrated /spl Sigma//spl Delta/ PLL with novel prescaler and loop filter in 0.35/spl mu/m CMOS

Keliu Shu, E. Sanchez-Sinencio, J. Silva-Martinez and S.H.K. Embabi. "A 16mW, 2.23-2.45GHz fully integrated /spl Sigma//spl Delta/ PLL with novel prescaler and loop filter in 0.35/spl mu/m CMOS." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 181-184.

A 3mW inherently glitch-free phase-switching prescaler and a loop filter with a 0.2mW capacitance multiplier are proposed for a /spl Sigma//spl Delta/ PLL synthesizer in 0.35/spl mu/m CMOS. The /spl Sigma//spl Delta/ noise folding is minimized by optimal design of /spl Sigma//spl Delta/ modulator and minimized PLL nonlinearities. The synthesizer has a 9.4% tuning range of 2.23-2.45GHz. The phase noise is -90dBc/Hz at 10kHz, and -128dBc/Hz at 10MHz offset.

Abstracts

A 18 mW triple 2 GHz CMOS PLL for 3G mobile systems with -113 dBc/Hz GSM in-band phase noise and dual-port GMSK modulation

M. Guenais, S. Colomines, H. Beaulaton and P. Gorisse. "A 18 mW triple 2 GHz CMOS PLL for 3G mobile systems with -113 dBc/Hz GSM in-band phase noise and dual-port GMSK modulation." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 185-188.

A PLL for 3G systems achieves -113-dBc/Hz close-in phase noise in the GSM Band and consumes 18 mW (2 mA for the 5 V charge-pump and 4mA under 1.875 Volts for the remaining blocks). The GMSK Dual-Port modulation system achieves 1.2/spl deg/ rms phase error and a noise level of -67dBc at 400 kHz offset from carrier in a 30 kHz BW. Three PLLs are integrated on the same die and are synchronized to avoid crosstalk issues.

Abstracts

A 10 mW, 4 GHz CMOS phase-locked loop with dual-mode tuning technique and partly-integrated loop filter

G. Konstanznig and R. Weigel. "A 10 mW, 4 GHz CMOS phase-locked loop with dual-mode tuning technique and partly-integrated loop filter." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 189-192.

This publication presents the design of a 4 GHz Integer-N frequency synthesizer with dual-mode tuning technique. The 3/sup rd/ order loop filter is partly integrated. The intended application is a direct conversion UMTS transmitter. The design has been realized using a 0.12 /spl mu/m standard CMOS-process. The proposed advanced dual-mode tuning technique is based on digital coarse-tuning with subsequent analog fine-tuning. Therefore, the voltage controlled oscillator (VCO) features both, a digital and an analog tuning interface. This results in eight equidistant frequency bands. During coarse-tuning a digital control unit selects the correct frequency band for a certain frequency channel. The remaining frequency deviation is canceled through fine tuning, which is done by a conventional charge pump phase-locked loop (PLL). This results in lower spurious emission due to the smaller VCO gain. Lock-in times of 125 /spl mu/s were achieved. The output frequency can be tuned from 3.8 GHz to 4.05 GHz with a channel spacing of 400 kHz. Except for the VCO with a supply voltage of 2.2 V and a current consumption of 1.9 mA to achieve higher output swing, the synthesizer is biased at 1.5 V consuming 4 mA. Thus, the overall power consumption can be stated with 10.2 mW.

Abstracts

High P/sub 1dB/ and low quiescent current SiGe HBT power amplifier MMIC using self base bias control circuit for 5.8 GHz ETC terminals

S. Shinjo, H. Ueda, T. Sugano, M. Nakanishi, M. Inoue and N. Suematsu. "High P/sub 1dB/ and low quiescent current SiGe HBT power amplifier MMIC using self base bias control circuit for 5.8 GHz ETC terminals." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 195-198.

A 5.8 GHz high P/sub 1dB/ and low quiescent current SiGe HBT three-stage power amplifier (PA) MMIC using a self base bias control circuit is described. The self base bias control circuits are applied to the second and the final stage PA's, and automatically control the base current/voltage according to the output power level. As a result, high P/sub 1dB/ is obtained at a low quiescent current condition. The simulated results show that the proposed three-stage PA MMIC achieves P/sub 1dB/ improvement of 1.7 dB compared with a conventional PA using a constant base voltage bias circuit at the same quiescent current condition. The fabricated PA MMIC achieves P/sub 1dB/ of 15.3 dBm, gain of 19.6 dB with the quiescent current of 22.2 mA at 5.8 GHz.

Abstracts

A fully-integrated 1.8-V, 2.8-W, 1.9-GHz, CMOS power amplifier

I. Aoki, S. Kee, D. Rutledge and A. Hajimiri. "A fully-integrated 1.8-V, 2.8-W, 1.9-GHz, CMOS power amplifier." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 199-202.

This paper demonstrated the first 2-stage, 2.8 W, 1.8 V, 1.9 GHz fully-integrated distributed active transformer (DAT) power amplifier with 50 /spl Omega/ input and output matching using 0.18 /spl mu/m CMOS transistors. It has a small-signal gain of 27 dB. The amplifier provides 2.8 W of power into a 50 /spl Omega/ load with a PAE of 50%.

Abstracts

The origin and suppression of limit cycles in digitally controlled RF PA loops

P. Pratt. "The origin and suppression of limit cycles in digitally controlled RF PA loops." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 203-206.

The origin of limit cycles in digitally controlled RF PA loops is analysed using the theory of Describing Functions and is shown to result from a code dependent gain caused by DAC quantisation. The effects of the limit cycle in terms of spec compliance for the particular case of the GSM protocol are examined. It is shown how compliance can be maintained even in the presence of limit cycles by carefully specifying the control slope of the PA. Finally, in the case where the PA control slope cannot be constrained, it is shown how the introduction of an intentional nonlinearity into the loop can be exploited to suppress the limit cycle.

Abstracts

A 17 GHz linear 50 /spl Omega/ output driver in 0.12 /spl mu/m standard CMOS

R. Thuringer, M. Tiebout, W. Simburger, C. Kienmayer and A.L. Scholtz. "A 17 GHz linear 50 /spl Omega/ output driver in 0.12 /spl mu/m standard CMOS." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 207-210.

This work presents the design of a monolithically integrated CMOS RF tuned output amplifier for an operating frequency of 17 GHz. The linear output amplifier consists of 2 push-pull stages working in A-class and is processed in 1.5 V, 0.12 /spl mu/m standard CMOS technology. Measurement results show that the amplifier achieves a gain of 11 dB, a 1 dB compression point of 5 dBm and a third order intercept point of 15 dBm, both referred to the output. The circuit consumes 80 mA DC current at a supply voltage of 1.5 V.

Abstracts

A fully integrated class-E CMOS amplifier with a class-F driver stage

Chien-Chih Ho, Chin-Wei Kuo, Chao-Chih Hsiao and Yi-Jen Chan. "A fully integrated class-E CMOS amplifier with a class-F driver stage." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 211-214.

This paper presents a fully integrated two-stage 1.9 GHz class-E amplifier, implemented by 0.18 /spl mu/m CMOS technologies. By using the switching operation mode of a class-E amplifier, the DC power dissipation can be reduced, and this amplifier delivers a 16.3 dBm output power at 1.9 GHz, with a maximum power-added efficiency (PAE) of 70% from a 2-V DC supply voltage. This monolithic amplifier includes the matching and biasing circuit, where no external components are required.

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The high voltage/high power FET (HiVP)

A.K. Ezzeddine and H.C. Huang. "The high voltage/high power FET (HiVP)." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 215-218.

A new device configuration is presented: the High-Voltage/High-Power device (HiVP). This original configuration can dramatically improve the power and decrease the complexity of designing power amplifiers, leading to low cost and higher power. The HiVP uses a new concept, never achieved before, to simultaneously bias a semiconductor device at high voltage while maintaining an optimum output matching impedance close to 50 Ohms. The concept could be applied to many device technologies such as the GaAs MESFET, HEMT, and the Si MOSFET, to combine the power of several devices to achieve higher power output over broader bandwidth.

Abstracts

5.7 GHz 0.18 /spl mu/m CMOS gain-controlled LNA and mixer for 802.11a WLAN applications

Yuan-Kai Chu, Che-Hong Liao and Huey-Ru Chuang. "5.7 GHz 0.18 /spl mu/m CMOS gain-controlled LNA and mixer for 802.11a WLAN applications." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 221-224.

A 5.7 GHz 0.18 /spl mu/m CMOS gain-controlled differential LNA and a single-ended CMOS mixer for 802.11a WLAN applications are presented. The differential LNA, fabricated with the 0.18 /spl mu/m 1P6M standard CMOS process, uses a current-reuse technology to increase linear gain and save power consumption. The single-ended CMOS mixer uses a single balance topology. Measurements of the CMOS components are performed by using a FR-4 PCB test fixture. The LNA exhibit noise figure of 3.7 dB, linear gain of 12.5 dB, P/sub 1dB/ of -11dBm, and gain tuning range of 6.9 dB. The mixer with a 280 MHz IF has a conversion gain -4.5 dB, input P/sub 1dB/ 0 dBm, and noise figure 14.6 dB. LO-RF isolation is 20 dB and LO-IF isolation is 24 dB. The power consumption of the differential LNA is 14.4 mW and that of the mixer is 10.4 mW from a 1.8 V power supply.

Abstracts

A 5 GHz 56 dB voltage gain 0.18 /spl mu/m CMOS LNA with built-in tunable channel filter for direct conversion 802.11a wireless LAN receiver

Hau-Yiu Tsui and J. Lau. "A 5 GHz 56 dB voltage gain 0.18 /spl mu/m CMOS LNA with built-in tunable channel filter for direct conversion 802.11a wireless LAN receiver." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 225-228.

A 5 GHz, 56 dB voltage gain Low Noise Amplifier with built-in tunable center frequency and 30 MHz bandwidth channel selection filter was implemented using 0.18 /spl mu/m CMOS process. Using compact high quality-factor 3-dimensional solenoid on-chip inductors, the LNA drains 0.9 mA current from the 1.5 V power supply and has 6.5 dB noise figure. The power consumption can be further reduced if a smaller gain is desirable.

Abstracts

A 0.8 dB insertion-loss, 23 dB isolation, 17.4 dBm power-handling, 5 GHz transmit/receive CMOS switch

T. Ohnakado, S. Yamakawa, T. Murakami, A. Furukawa, K. Nishikawa, E. Taniguchi, H. Ueda, M. Ono, J. Tomisawa, Y. Yoneda, Y. Hashizume, K. Sugahara, N. Suematsu and T. Oomori. "A 0.8 dB insertion-loss, 23 dB isolation, 17.4 dBm power-handling, 5 GHz transmit/receive CMOS switch." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 229-232.

The highest performance to date of any switch using a CMOS process, with a 0.8 dB insertion-loss, 23 dB isolation and 17.4 dBm power-handling capability at 5 GHz, is accomplished with an optimized single-pole double-throw (SPDT) transmit/receive (T/R) switch using depletion-layer-extended transistors (DETs) in a 0.18 /spl mu/m CMOS process. The effects of junction capacitance decrease and substrate resistance increase in the DET, the adoption of low-loss shielded-pads, and several layout optimizations, lead to the realization of this low insertion-loss. Moreover, the combined effect of the adoption of the source/drain DC biasing scheme and the high substrate resistance in the DET contributes to the high power-handling capability.

Abstracts

A high-power-handling GSM switch IC with new adaptive-control-voltage-generator circuit scheme

K. Numata, Y. Takahashi, T. Maeda and H. Hida. "A high-power-handling GSM switch IC with new adaptive-control-voltage-generator circuit scheme." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 233-236.

We propose a high-power-handling switch circuit using a new adaptive-control-voltage-generator circuit (AVG). This AVG enables the internal control node voltages to be automatically increased in high-input-power conditions. This switch circuit results in high-power-handling, low-insertion-loss, small chip size and low voltage control. The developed IC demonstrated a handling power of 36.5 dBm and an insertion loss of 0.31 dB with 40% chip size reduction.

Abstracts

A 1.4 mA & 3 mW, SiGe90, BiFET low noise amplifier for wireless portable applications

Pingxi Ma, M. Racanelli, Jie Zheng and M. Knight. "A 1.4 mA & 3 mW, SiGe90, BiFET low noise amplifier for wireless portable applications." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 237-240.

A 3 mW silicon-based LNA has been built using a novel cascoded Bipolar/mosFET (BiFET) configuration in SiGe90, a SiGe BiCMOS process optimized for next-generation wireless applications. Ultra-low current (1.4 mA) and power consumption (3 mW) is achieved with a 16 dB power gain, a 1.6 dB minimum noise figure and -6.5 dBm IIP3 operating in the PCS band. By using this cascoded configuration, the BiFET LNA can operate up to 5 V and reach a high power gain of over 20 dB. This LNA has been packaged and measured through an input & output 50 ohm PC board match. To the best of our knowledge, this is the lowest current silicon-based LNA reported to date which maintains good PCS band performance.

Abstracts

Experimental results and die area efficient self-shielded on-chip vertical solenoid inductors for multi-GHz CMOS RFIC

Hau-Yiu Tsui and J. Lau. "Experimental results and die area efficient self-shielded on-chip vertical solenoid inductors for multi-GHz CMOS RFIC." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 243-246.

On-chip circular vertical solenoid inductors have been designed and fabricated using standard 6-metal layer CMOS process. Compared to the 4.1 nH circular planar spiral inductor on the same chip, the 4.8 nH solenoid inductor gives about 20% increase in maximum quality-factor (QF) and 50% increase in self-resonant frequency (SRF), but only occupies 20% of the area. The inductor impedance can be modeled by a simple RLC circuit valid beyond 20 GHz.

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Characterization and modeling of the substrate noise and its impact on the phase noise of VCO

Huailin Liao, S.C. Rustagi, Jinglin Shi and Yong Zhong Xiong. "Characterization and modeling of the substrate noise and its impact on the phase noise of VCO." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 247-250.

This paper presents a simple scheme for estimating the digital switching noise at the sensitive RF nodes with the help of a lumped element model for the substrate network. The model parameters have been extracted from the 2-port RF measurements. The efficacy of different isolation schemes such as grounded P+ guard bars and deep N-well has been investigated using phase noise of a VCO as a figure of merit.

Abstracts

MagPEEC: extended PEEC modeling for 3D arbitrary electro-magnetic devices with application for m-cored inductors

Haibo Long, Zhenghe Feng, Haigang Feng, A. Wang and Tianling Ren. "MagPEEC: extended PEEC modeling for 3D arbitrary electro-magnetic devices with application for m-cored inductors." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 251-254.

This paper presents magPEEC, a new 3D electro-magnetic modeling technique that extends existing PEEC approach to analyze arbitrary conductor-magnet structures by accounting for fictitious magnetized currents on magnetic material surface. Applications of magPEEC for magnetic-cored RF IC inductors are discussed with examples of stacked spiral inductors in 0.18 /spl mu/m CMOS. The observed upper-limit effect of enhancing inductance by increasing magnetic permeability is also discussed.

Abstracts

S-parameter formulation of quality factor for a spiral inductor in generalized two-port configuration (2003 [RFIC])

T.S. Horng, K.C. Peng, J.K. Jau and Y.S. Tsai. "S-parameter formulation of quality factor for a spiral inductor in generalized two-port configuration (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 255-258.

In this paper, we present the most rigorous S-parameter formulation of quality (Q) factor that has ever been seen for a spiral inductor in generalized two-port configuration. The derivation employs a complex power concept and can reduce to the conventional Q-factor expression based on one-port inductor model with the second port grounded. The Q factor of a tank circuit that connects the spiral inductor with an ideally lossless capacitor in series or in parallel can be also predicted successfully using this Q-parameter formulation.

Abstracts

A comprehensive explanation on the high quality characteristics of symmetrical octagonal spiral inductor

Ban-Leong Ooi, Dao-Xian Xu and Pang-Shyan Kooi. "A comprehensive explanation on the high quality characteristics of symmetrical octagonal spiral inductor." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 259-262.

Conventional non-symmetrical spiral inductor, which is commonly used in GaAs technology, has limited achievable quality factor when used in silicon LC tanks circuit. As a result, the research of symmetrical, arbitrarily-shaped spiral inductor for silicon technology becomes very important and challenging. However, the detailed mechanism of how the symmetrical, arbitrarily-shaped spiral inductor can achieve a high quality factor is still a mystery. In this paper, we attempt to give a detailed explanation on how the symmetrical, arbitrarily-shaped spiral inductor helps to improve the overall quality factor over that of a traditional, non-symmetrical arbitrarily-shaped spiral inductor. Experimental results are presented to verify our theory. It is hope with this new understanding, alternate forms of symmetrical spiral inductor of high quality factor can be derived.

Abstracts

Multilevel approach for the investigation of substrate parasitics in mixed-signal IC's from full-wave analysis

S. Wane, D. Bajon, H. Baudrand and P. Gamand. "Multilevel approach for the investigation of substrate parasitics in mixed-signal IC's from full-wave analysis." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 263-266.

This paper presents an original Multilevel approach of Substrate Parasitics in Mixed-Signal IC's from full-wave analysis based on a Transverse Waves Formulation. The concept of layout "approximation" is introduced to analyse the effects of "details" at different scales on the global coupling between pads. Realistic examples of typical BiCMOS structures are presented and results obtained by a home-made EM simulator are successfully compared to published measurements and to those of Moment Method approaches (SONNET Software). An original patterned grounded shield is proposed and demonstrates high isolation capability in presence of buried epitaxial layers.

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Abstracts

25 GHz inductorless VCO in a 45 GHz SiGe technology

N. Saniei, Jr., H. Djahanshahi and C.A.T. Salama. "25 GHz inductorless VCO in a 45 GHz SiGe technology." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 269-272.

This paper discusses the design and implementation of a 25 GHz VCO in a 45 GHz SiGe process. The VCO is based on a full-wave rectification frequency-doubling technique applied to a 13 GHz differential ring-type VCO. The VCO occupies an area of 150 /spl mu/m /spl times/ 150 /spl mu/m, consumes a dc power of 240 mW, exhibits a phase noise better than -87 dBc/Hz at 1 MHz offset and features a remarkably high ratio (25/45) of the VCO frequency to the process f/sub t/.

Abstracts

Optimization of SiGe HBT VCOs for wireless applications

T.K. Johansen and L.E. Larson. "Optimization of SiGe HBT VCOs for wireless applications." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 273-276.

This paper describes the optimization of phase noise performance in fully integrated SiGe HBT differential LC-tuned voltage-controlled oscillators (VCOs) for wireless applications. An accurate expression for phase noise in SiGe HBT LC-tuned VCOs is presented which takes the nonlinear operation of the oscillator into account. Design methods are shown which minimize the different sources of phase noise toward the intrinsic limit set by the resonator quality factor. A set of 2 GHz SiGe HBT VCOs have been implemented in a 0.5 /spl mu/m, 47 GHz SiGe BiCMOS process to provide experimental verification of the benefits of the design methods presented in this paper.

Abstracts

Differential VCO and frequency tripler using SiGe HBTs for the 24 GHz ISM band

M. Danesh, F. Gruson, P. Abele and H. Schumacher. "Differential VCO and frequency tripler using SiGe HBTs for the 24 GHz ISM band." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 277-280.

A frequency source generator chip was designed and built in a commercial SiGe process for an integrated front-end transceiver operating in the 24 GHz ISM band. It consists of a negative resistance cross-coupled differential VCO, oscillating at 8 GHz with a 150 MHz tuning range, having an output power of 0 dBm and a phase noise of -90 dBc/Hz at 100 kHz offset. The VCO drives a differential amplifier used as a frequency tripler which results in an overall voltage control frequency source operating at a nominal frequency of 23.5 GHz with a 420 MHz tuning range. It has a -10 dBm output power and consumes 180 mW. Its phase noise is -80 dBc/Hz at 100 kHz. The total chip area measures 600 /spl times/ 300 /spl mu/m/sup 2/.

Abstracts

X band BiCMOS SiGe 0.35 /spl mu/m voltage controlled oscillator in parallel and reflection topology and external phase noise improvement solution

W. Wong, G. Cibiel, J.-G. Tartarin, E. Tournier, R. Plana and O. Llopis. "X band BiCMOS SiGe 0.35 /spl mu/m voltage controlled oscillator in parallel and reflection topology and external phase noise improvement solution." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 281-284.

This paper reports the design of two X band voltage controlled oscillators (VCO) implemented in the same ST Microelectronics SiGe BiCMOS technology and using the same active device. One VCO design is based on a parallel topology while the other one is based on a serial topology. The chips work with a single supply voltage of 3.3 V, and the measured phase noise performance for the feedback VCO is -85 dBc/Hz @ 100 kHz offset with a tuning range of 0.5 GHz and the simulated phase noise for the negative resistance VCO is -92 dBc/Hz @ 100 kHz offset with a tuning range of 1.1 GHz. Finally, an off chip solution is proposed to improve the phase noise performance.

Abstracts

A fast settling, low phase noise, digitally controlled 2.4 GHz CMOS 12-bit /spl Sigma//spl Delta/ fractional-N synthesizer with programmable step sizes

R.S. Rana and A.C. Patel. "A fast settling, low phase noise, digitally controlled 2.4 GHz CMOS 12-bit /spl Sigma//spl Delta/ fractional-N synthesizer with programmable step sizes." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 285-287.

Frequency synthesizer has been a key element in various communication systems covering a wide range of applications. The requirements on step sizes, channel selection, offset in output frequency and frequency resolution vary with application, data transmission speed and data modulation scheme etc. The recent evolutions have encouraged development of integrated fractional-N synthesizer that features application versatility. A 2.4 GHz CMOS 12-bit /spl Sigma//spl Delta/ fractional-N synthesizer using 0.35 /spl mu/m CSM process is designed. Unlike to the conventional architectures, it is based on two input data words and features programmable step sizes (18.4 kHz to 0.5 MHz), programmable channels (64), programmable output frequency offsets (0 to 37 MHz), 19 mA current consumption @ 3V Supply, phase noise of -110 dBc/Hz @1 MHz, settling time <37 /spl mu/S, %32/33 DMP and 4.2 mm/sup 2/ die area.

Abstracts

A 1.8 V monolithic CMOS nested-loop frequency synthesizer for GSM receivers at 1.8 GHz

R. Murji and M. Jamal Deen. "A 1.8 V monolithic CMOS nested-loop frequency synthesizer for GSM receivers at 1.8 GHz." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 291-294.

A low-power, integrated 1.8 GHz nested-loop frequency synthesizer for GSM at 1.8 GHz in a 0.18 /spl mu/m CMOS technology is presented. The synthesizer consists of two voltage-control oscillators (VCOs) and uses band switching MIM capacitors and analog tuning circuits using pMOS capacitors. Both VCOs and loop-filters are integrated on-chip. The IF VCO phase noise is -131 dBc/Hz@600 kHz from a 450 MHz carrier and the RF VCO phase noise is -121 dBc/Hz@600 kHz from a 1.8 GHz carrier. The power consumption of this nested-loop frequency synthesizer is 36 mW@1.8 V and has a die size of 3000 /spl mu/m /spl times/ 2000 /spl mu/m.

Abstracts

A new 6 GHz fully integrated low power low phase noise CMOS LC quadrature VCO

Jae-Hong Chang, Yong-Sik Youn, Mun-Yang Park and Choong-Ki Kim. "A new 6 GHz fully integrated low power low phase noise CMOS LC quadrature VCO." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 295-298.

A new fully integrated low power and low phase noise 6 GHz quadrature VCO is designed and fabricated in standard commercial 0.18 /spl mu/m single-poly, 6-metal CMOS process. The one VCO-core draws only 1.6 mA of current from a 1.8 V supply. Total power consumption - include two VCO-cores and two VCO-buffers -for generating quadrature signal is 18 mW. Measured phase noise at 1 MHz offset from the center frequency is -115 dBc/Hz. It has tuning range of 1.2 GHz with low phase noise performance throughout the tuning range. It meets the requirements for IEEE802.11a and HiperLAN type 2 standards. Low power and low phase noise have been achieved simultaneously by the use of new proposed cascode coupling topology.

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Local oscillator generation scheme in 0.18 /spl mu/m CMOS for low-IF and direct conversion architectures

S. Dosanjh, W. Kung, T. Manku and C. Snyder. "Local oscillator generation scheme in 0.18 /spl mu/m CMOS for low-IF and direct conversion architectures." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 299-302.

A fully-integrated, ratio-based local oscillator (LO) generation scheme using regenerative division is described. Using 0.18 /spl mu/m CMOS technology, the core LO system consumes 27 mW from a 1.8 V supply. The entire chip is fully integrated, including on-chip spiral inductors; harmonic rejection mixers are also employed to suppress unwanted mixing products to better than -36 dBc. Across a bandwidth of 150 MHz, centered at 1.63 GHz, a quadrature phase error of less than 2 and a maximum image suppression of 36 dB is achieved. Using a 4/3 multiplication factor to generate the local oscillator, LO-RF interactions are reduced and an LO-RF leakage of -86 dBm has been measured at the mixer input. This system can be utilized in low-IF or direct conversion architectures.

Abstracts

An all-digital frequency locked loop (ADFLL) with a pulse output direct digital frequency synthesizer (DDFS) and an adaptive phase estimator

A. Gothandaraman and S.K. Islam. "An all-digital frequency locked loop (ADFLL) with a pulse output direct digital frequency synthesizer (DDFS) and an adaptive phase estimator." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 303-306.

An algorithm for frequency synthesizing all-digital frequency locked loops (ADFLLs) with fast frequency acquisition is presented in this paper. A Pulse Output Direct Digital Frequency Synthesizer (DDFS) with reduced hardware cost and architecture, full digitization, easy design and implementation is proposed. An adaptive phase estimator is also proposed. The DDFS has 16-bit binary weighted control and the simulations show that the ADFLL can operate in the frequency range between 50 MHz and 500 MHz.

Abstracts

A low power and low noise frequency synthesizer with a integrated quadrature VCO

Seon-Ho Han, Yong-Sik Youn, Hyun-Kyu Yu and Mun-Yang Park. "A low power and low noise frequency synthesizer with a integrated quadrature VCO." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 307-310.

A frequency synthesizer including a integrated quadrature VCO and a few novel circuits is presented in a 0.18 um CMOS technology. A 16/17 dual modulus prescaler operates up to 5.1 GHz due to the fast (about 10 GHz) operation of the proposed complementary clocking (CC) dynamic flip-flop. Also, a phase frequency detector (PFD) utilizing the charge pump current feedback, generates low spurious tones irrespective of the temperature or supply variations. The measured reference spur is less than -120 dBc with a second order loop-filter of which bandwidth equals f/sub REF//50. The measured out- and in-band phase noise of the quadrature VCO is -140 dBc@8 MHz and -82dBc@10 kHz, respectively. With a 1.8 V power supply, the current consumption of the overall frequency synthesizer is only 7.5 mA except 50 /spl Omega/ driving buffers.

Abstracts

An innovative open-loop CDR based on injection-locked oscillator for high-speed data link applications

J.-B. Begueret, Y. Deval, C. Scarabello, J.-Y. Le Gall and M. Pignol. "An innovative open-loop CDR based on injection-locked oscillator for high-speed data link applications." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 313-316.

A new fully integrated clock and data recovery (CDR) architecture based on an injection-locked oscillator is presented in this paper. Two circuits, implemented in CMOS VLSI technology and dedicated to 1 Gbps point-to-point networks, are detailed. This open-loop CDR topology is compared with classical ones (high-Q filter, phase-locking, ...) in term of power consumption, silicon area and complexity. Our circuits exhibit some major advantages versus traditional CDRs: no external component needed, low consumption and low locking time. It is a very simple way to achieve clock extraction and data regeneration for high-speed data link applications.

Abstracts

A 10 Gb/s CDR in SiGe BiCMOS commercial technology with multistandard capability

F. Centurelli, A. Golfarelli, J. Guinea, L. Masini, D. Morigi, M. Pozzoni, G. Scotti and A. Trifiletti. "A 10 Gb/s CDR in SiGe BiCMOS commercial technology with multistandard capability." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 317-320.

A 10 Gb/s CDR in SiGe BiCMOS technology featuring multistandard compliance with SDH/SONET and 10 Gb Ethernet specs and generated jitter below 65 mUIpp is presented. The CDR features a 20 mV-sensitivity limiting amplifier, a 2-DFF-based decision circuit to maximize CPM and a dual loop PLL architecture with external reference clock and a novel PD topology. Power consumption is below 780 mW from 2.5 and 3.3 V supplies.

Abstracts

A SiGe 10-Gb/s multi-pattern bit error rate tester

R. Malasani, C. Bourde and G. Gutierrez. "A SiGe 10-Gb/s multi-pattern bit error rate tester." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 321-324.

In this paper we present a monolithic IC that is capable of generating and evaluating multiple pseudo random bit sequences (PRBS) from DC to 10 Gb/s. This IC could be used as a low cost substitute for more expensive bit error rate test (BERT) systems.

Abstracts

Novel high gain and broadband GaAs MMIC distributed amplifiers with traveling-wave gain stages

Kuo-Liang Deng, Tian-Wei Huang and Huei Wang. "Novel high gain and broadband GaAs MMIC distributed amplifiers with traveling-wave gain stages." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 325-328.

Using the concept of traveling-wave gain stages, novel GaAs MMIC distributed amplifiers are designed to achieve high-gain over several octaves of bandwidth. The cascaded single-stage distributed amplifiers (CSSDAs) are used as traveling-wave gain stages to improve the gain performance of conventional distributed amplifier (CDA). By selecting the low pass filter (LPF) topology for the CDA and CSSDA and tuning the gain shape of CDA and CSSDA, a wide-band performance of the broadband amplifier, called CDA-CSSDA-2 is obtained. The CDA-CSSDA-2 achieves 22 /spl plusmn/ 1.5 dB small signal gain from 0.1 to 40 GHz with a chip size of 1.5 /spl times/ 2 mm/sup 2/. This distributed amplifier produces gain-bandwidth product (GBW) of 503 which is the highest among all GaAs based distributed amplifiers. The flat group delay of the proposed distributed amplifier also proves the feasibility of this methodology for digital optical communications and broadband pulse applications.

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A power-efficient 33 GHz 2:1 static frequency divider in 0.12-/spl mu/m SOI CMOS

J.-O. Plouchart, Jonghae Kim, H. Recoules, N. Zamdmer, Yue Tan, M. Sherony, A. Ray and L. Wagner. "A power-efficient 33 GHz 2:1 static frequency divider in 0.12-/spl mu/m SOI CMOS." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 329-332.

A 2:1 static frequency divider was fabricated in a 0.12-/spl mu/m SOI CMOS technology. The divider exhibits a maximum operating frequency of 33 GHz. When the power consumption is scaled down to 2.7 mW, a maximum operating frequency of 25 GHz is measured.

Abstracts

1.14-GHz self-aligned vibrating micromechanical disk resonator

Jing Wang, Zeying Ren and C.T.-C. Nguyen. "1.14-GHz self-aligned vibrating micromechanical disk resonator." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 335-338.

Micromechanical radial-contour mode disk resonators featuring new self-aligned stems have been demonstrated with record resonance frequencies up to 1.14 GHz and measured Q's at this frequency >1,500 in both vacuum and air. In addition, a 733-MHz version has been demonstrated with Q's of 7,330 and 6,100 in vacuum and air, respectively. For these resonators, self-alignment of the stem to exactly the center of the disk it supports allows balancing of the resonator far superior to that achieved by previous versions (where separate masks were used to define the disk and stem), allowing the present devices to retain high Q while achieving frequencies in the GHz range for the first time. In addition to providing measured results, this paper formulates an equivalent electrical circuit model that accurately predicts the performance of this disk resonator.

Abstracts

Characterizing and optimizing high Q inductors for RFIC design in silicon processes

F. Rotella, D. Howard, M. Racanelli and P. Zampardi. "Characterizing and optimizing high Q inductors for RFIC design in silicon processes." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 339-342.

A novel metric for assessing inductor performance of advanced silicon RF process technology is proposed. The metric makes use of measured data and a verified physical model to generate a design space involving quality factor, inductance and area. Examples for technologies with top metal thickness ranging from 3 /spl mu/m to 6 /spl mu/m and dielectric thickness ranging from 4.5 /spl mu/m to 8.5 /spl mu/m are presented. Conclusions are drawn regarding the usefulness of thicker dielectrics and metal layers for RF applications in the 900 MHz to 10 GHz range.

Abstracts

A highly efficient noise suppression technique for Si-based RFIC

Tung-Sheng Chen, Chih-Yuan Lee, Chin-Hsin Kao, Der-Sheng Deng, Chung-Hsun Wu, Guo-Wei Huang and Kun-Ming Chen. "A highly efficient noise suppression technique for Si-based RFIC." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 343-346.

A highly efficient CMOS process technique for suppressing the transmission of high-frequency noise induced by fast-switching MOS gates and/or spiral inductors through silicon substrate has been attained. The isolated n/sup +/-pocket structure designed in this work has proven to be very effective in guarding vulnerable devices from remnant high-frequency noise roaming in the substrate. The protecting structures shall become a decisive measure in future success of Si-based RFIC applications.

Abstracts

A systematic study of ESD protection structures for RF ICs

Guang Chen, Haigang Feng and A. Wang. "A systematic study of ESD protection structures for RF ICs." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 347-350.

We report the first systematic investigation of various ESD protection structures, e.g., diodes, ggNMOS, gcNMOS, ggPMOS, SCR and multi-mode SCR's in a 0.35 /spl mu/m production BiCMOS technology, for RF ICs up to 100 GHz by mixed-mode ESD simulation. Typical circuit parameters for RF ICs, e.g., parasitic resistances, capacitances, noise figures and S-parameters were studied. The comparison study suggests that compact SCR-type structures and diode strings may be solutions to RF ESD protection.

Abstracts

RF modeling of ball grid array packages using a coupled transmission line model

Yeong-Lin Lai, Chia-Long Wu and K. Chiang. "RF modeling of ball grid array packages using a coupled transmission line model." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 351-354.

A novel method for radio-frequency (RF) modeling of ball grid array (BGA) packages is presented. A new analytical method is developed to extract the inductance characteristics of the package bond wires. With the extracted bond wire data, a cascaded multi-section coupled transmission line model is setup to describe the physical trace structures of the BGA packages. The multi-section /spl pi/ model representing the coupled transmission line effect of the signal traces is used for the RF modeling of the BGA packages. The BGA packages with open-path, short-path, through-path, and through-ground test configurations are studied. The simulated S parameter results exhibit very good agreement with the measured ones for the BGA packages.

Abstracts

A simple 4-port parasitic de-embedding methodology for high-frequency characterization of SiGe HBTs (2003 [RFIC])

Qingqing Liang, J.D. Cressler, G. Niu, Yuan Lu, G. Freeman, D. Ahlgren, R.M. Malladi, K. Newton and D.L. Harame. "A simple 4-port parasitic de-embedding methodology for high-frequency characterization of SiGe HBTs (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 357-360.

A new 4-port S-parameter de-embedding methodology is presented. This de-embedding technique considers distributed on-wafer parasitics in the millimeter wave band (f > 30 GHz). The procedure is based on simple analytical calculations and requires no equivalent circuit modeling or electromagnetic simulations. Using both EM theory and HP-ADS simulations, we show that this technique can be used to accurately extract the S-parameters to frequencies higher than 100 GHz for state-of-the-art SiGe HBTs with a maximum cutoff frequency of 180 GHz. This method is also valid for use in decoupling package parasitic.

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Transient analysis of nonlinear microwave circuits using small-signal scattering parameters

Pingshan Wang, V.S. Kaper, S.J. Richard and E.C. Kan. "Transient analysis of nonlinear microwave circuits using small-signal scattering parameters." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 361-364.

A transient analysis method for nonlinear microwave circuit analysis is described in this paper. S-parameter microwave circuit theory and measurement-based small-signal scattering parameters of nonlinear devices are used directly to construct the large signal response of the circuits. This consistent modeling and analysis approach retains all the frequency-dependence information of the measured small-signal parameters. The method is applied to predict the large signal performance of a discrete AlGaN/GaN high electron mobility transistor (HEMT), biased in the common source amplifier mode. Reasonable agreement between the simulated and measured results is obtained. This method does not have limitations on the number of input carrier frequencies or the total number of frequencies. It is expected to be a useful and efficient tool in waveform engineering applications.

Abstracts

A non-quasi-static small-signal MOSFET model for radio and microwave frequencies including spreading gate resistances and capacitances

W.J. Kordalski and T. Stefanski. "A non-quasi-static small-signal MOSFET model for radio and microwave frequencies including spreading gate resistances and capacitances." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 365-368.

A new physically consistent, fully analytical non-quasi-static (NQS) small-signal MOSFET model for analysis and simulation of radio and microwave frequency circuits is proposed. Some results of a 3D analysis of spreading gate resistances and capacitances, main features and experimental verification of the new NQS four-terminal model are presented in this report. The validity of this model is experimentally proved up to 27 GHz.

Abstracts

Broadband small-signal model and parameter extraction for deep sub-micron MOSFETs valid up to 110 GHz

M.T. Yang, P.P.C. Ho, Y.J. Wang, T.J. Yeh and Y.T. Chia. "Broadband small-signal model and parameter extraction for deep sub-micron MOSFETs valid up to 110 GHz." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 369-372.

A broadband small-signal model suitable for deep sub-micron MOSFET high frequency applications and its parameter extraction have been proposed and demonstrated. Using a 110 GHz millimeter wave S-Parameter measurement, we directly extracted the parameters and fitted very well within a broad range from 45 MHz up to 110 GHz. This is a state-of-the-art technique that demonstrates the model up to 110 GHz and can be considered as an initial method for an optimization procedure to be used for more complete models.

Abstracts

The minimum noise figure and mechanism as scaling RF MOSFETs from 0.18 to 0.13 /spl mu/m technology nodes

C.H. Huang, K.T. Chan, C.Y. Chen, A. Chin, G.W. Huang, C. Tseng, V. Liang, J.K. Chen and S.C. Chien. "The minimum noise figure and mechanism as scaling RF MOSFETs from 0.18 to 0.13 /spl mu/m technology nodes." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 373-376.

As scaling down the RF MOSFET from 0.18 to 0.13 /spl mu/m technology nodes, the f/sub T/ increases but the NF/sub min/ becomes worse by increasing /spl sim/0.2 dB. A small NF/sub min/ of 0.93 dB is measured at 5.8 GHz in 0.18 /spl mu/m MOSFET using 50 fingers but increases as either increasing or decreasing finger number. This abnormal dependence and higher noise at 0.13 /spl mu/m is accurately analyzed by equivalent circuit model and due to the combined gate resistance and substrate effect.

Abstracts

Reliability evaluation of voltage controlled oscillators based on a device degradation sub-circuit model

Wei-Cheng Lin, Long-Jei Du and Ya-Chin King. "Reliability evaluation of voltage controlled oscillators based on a device degradation sub-circuit model." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 377-380.

This paper presents a method for circuit reliability evaluation. Based on the study of device reliability, a sub-circuit describing the device degradation after high-voltage stress is proposed. This model allows circuit reliability of VCOs to be evaluated and provides higher degree of freedom for circuit designers.

Abstracts

Polaris Total Radio/sup TM/, a highly integrated RF solution for GSM/GPRS and EDGE

B. Wilkins. "Polaris Total Radio/sup TM/, a highly integrated RF solution for GSM/GPRS and EDGE." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 383-386.

This paper describes how the constant goal to achieve higher functionality at lower cost drives innovation in chip set architectures and accomplishments in integration in RF semiconductors. This paper will discuss a complete GSM/GPRS radio system that has been implemented by use of highly integrated circuits that exhibit levels of integration and features unparallel in the industry. A new, proven radio architecture and it's performance will be shown including the integration of VCOs and associated loop filters, system oscillator, power management, power amplifier power control circuitry, auxiliary DACs and more. System details will be show how the elimination of IF filters is supported by the use of either zero IF (ZIF) or very low IF (VLIF) radio architectures. A comparison between ZIF and VLIF is presented. The use of a fractional N synthesizer based digital GMSK modulator and DSP based digital channel filters will be discussed. Additionally, the benefits derived by use of digital radio-to-baseband interfaces are discussed and the implications to the industry are presented.

Abstracts

Architecture and performance overview of a highly integrated 13/spl times/13 mm Single-Package Radio (SPR) module for dualband EGSM900/GSM1800 applications

E. Ngompe, M. Ayvazian, M. Glasbrener, M. Megahed, N. Vakilian and W. Domino. "Architecture and performance overview of a highly integrated 13/spl times/13 mm Single-Package Radio (SPR) module for dualband EGSM900/GSM1800 applications." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 387-390.

The RF system architecture and the performance overview for a very highly-integrated Single Package Radio (SPR) module for dual-band EGSM900/GSM1800 applications is presented. The module realizes all the RF functions required for the dual-band GSM application. These functions as well as their implementations are described. The integrated LO generation consists of reference oscillator circuitry, a UHF oscillator, and delta-sigma fractional-N synthesizer. The receiver is based on a direct-conversion (zero-IF) architecture with the front-end selectivity performed by the two integrated SAW filters. The transmitter is comprised of an upconversion-loop transmit chain with two high-power transmit oscillators, a dual-band power amplifier, detector-based transmit power control, transmit/receive switch, duplex filter and all other necessary filters. Diverse die technologies are utilized to apply the optimum process for each function. The SPR module is implemented on a low cost 4-layer laminate substrate and overall dimensions are 13/spl times/13/spl times/1.8 mm. Measured results against GSM specifications are presented.

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Abstracts

A dual-band tri-mode CDMA IF receiver with programmable channel-match filter

J. Cho, P. Good, M. Kamat, E. McCarthy, K. Rampmeier, W. Cops, A. El Moznine, Hiep Truong, Yong He, D. Yates, G. Taskov, Chang-hyeon Lee, Dongsoo Koh and S. Lloyd. "A dual-band tri-mode CDMA IF receiver with programmable channel-match filter." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 391-394.

An integrated dual-band tri-mode CDMA IF receiver with programmable channel-match filter is presented. The cascaded VGA and filter chain provides maximum voltage gain of 93 dB with noise figure of <7.5 dB. It also provides >88 dB of gain control range. The IF VCO, which operates at 2/spl times/LO for PCS mode and 4/spl times/LO for AMPS/CDMA mode, achieves -131 dBc/Hz of phase noise at 900 kHz offset with an external tank. An area-efficient combined channel-match filter chain for both CDMA/PCS and AMPS mode is realized by changing the clock frequency of a switched-capacitor filter and by switching-in and -out capacitors for the continuous time and switch-cap filters depending on the mode of operation. The filter chain meets all the blocker requirements for both CDMA/PCS and AMPS modes. Combining the CDMA/PCS and AMPS filter saves 30% die area compared to separate filter chains. The IC is fabricated in Jazz's 35 GHz ft silicon BiCMOS process and packaged into a 48-pin 6 mm/spl times/6 mm land grid array (RF-LGA/spl trade/) chipscale package.

Abstracts

Fully differential direct conversion receiver for W-CDMA using an active harmonic mixer

H. Yoshida, T. Kato, T. Toyoda, I. Seto, R. Fujimoto, T. Kimura, O. Watanabe, T. Arai, T. Itakura and H. Tsurumi. "Fully differential direct conversion receiver for W-CDMA using an active harmonic mixer." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 395-398.

A fully differential direct conversion receiver IC for W-CDMA is presented. The receiver IC consists of a complete active portion of a W-CDMA receiving system, such as an LNA, quadrature demodulator, low-pass filter (LPF), and variable gain amplifier (VGA). In order to suppress the DC offset, which is the most important issue in a direct conversion system, an active harmonic mixer is applied to the quadrature demodulator. Furthermore, the receiving system, including an LNA and RF filter, adopts a differential architecture to reduce local signal leakage, which generates DC offset. The performance of the entire receiving system was evaluated and the DC offset in steady state was measured at only 40 mV. Moreover, the DC offset variation in the LNA gain change, which has the largest affect on the receiving performance, was limited to 60 mV, which is less than -10 dB compared to the desired signal strength. It was confirmed by computer simulation that the DC offset variation in the LNA gain change did not degrade the bit error rate (BER) performance at all.

Abstracts

W-CDMA 1 chip SiGe TX-IC with high dynamic range and accurate temperature compensation VGA

H. Nakamizo, T. Ueda, K. Ninomiya, Y. Takahashi, Y. Matsunami, H. Joba, K. Itoh, T.S. Malhi and T. Wang. "W-CDMA 1 chip SiGe TX-IC with high dynamic range and accurate temperature compensation VGA." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 399-402.

This paper demonstrates the 1chip SiGe TX-IC for W-CDMA mobile terminals. For the TX-IC, a novel architecture of a variable gain amplifier is proposed to improve temperature compensation of gain and distortion. And current consumption of variable gain amplifier can be reduced with power control level and it is constant over temperature. The current consumption of the TX-IC is 84 mA with output power of +7 dBm, and it is reduced to 63 mA with output power of -83.5 dBm. With the 0.25 /spl mu/m SiGe BiCMOS technology, this TX-IC achieved high dynamic range over 100dB within /spl plusmn/2.5 dB accuracy over temperature.

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Highly linear upconverter MMIC designs with complete package and test board effects for CDMA applications

J.M. Wu, J.K. Jau, T.S. Horng and C.C. Tu. "Highly linear upconverter MMIC designs with complete package and test board effects for CDMA applications." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 405-408.

1.9 GHz upconverter MMICs are designed and implemented using GaAs HBT foundry process. A crucial goal for the design is to achieve the high linearity required in CDMA systems with low idle currents. In addition, complete package and test board effects need to be considered rigorously. The proposed design adopts a class-AB input stage in a Gilbert cell to enhance the linearity. Another design based on the conventional emitter degeneration technique is also implemented on the same chip for comparison. The chip is finally housed in a 24-pin bump-chip carrier (BCC) package and surface-mounted on a test board. Both RF and LO ports are internally matched to 50 /spl Omega/ on chip. A single supply voltage of 3V is used. The measured results show that with a reference input power of -10 dBm for IS-95 CDMA applications, the class-AB design achieves an adjacent channel power ratio (ACPR) of -44.9 dBc with a consumed current of 15 mA, while the emitter degeneration design achieves an ACPR of -43.8 dBc with a consumed current of 28.5 mA.. Package and test board effects are analyzed using the 3-D EM simulation tool and transformed into the equivalent-circuit elements. The simulation including package and test board effects can predict the measured results quite well.

Abstracts

A low noise vector modulator with integrated basebandfilter in 120 nm CMOS technology

M. Simon and R. Weigel. "A low noise vector modulator with integrated basebandfilter in 120 nm CMOS technology." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 409-412.

A low noise vector modulator for cellular systems with integrated baseband filter has been developed in 120 nm CMOS technology. The baseband filter is an anti-aliasing filter for the digital to analogue converter of the baseband that has been build around a differential amplifier with 3/sup rd/ order butterworth low pass characteristic. High linearity and low output noise can be achieved for the modulator due to the current interface between the baseband filter and the mixer cells. The GSM specification for emitted noise into the receive band can be fulfilled without using a duplex filter behind the power amplifier output.

Abstracts

High linearity, low noise IF transmitter for WCDMA application

P. Filoramo, A. Granata, T. Chiarillo, P. Aliberti, G. Scuderi, P. De Vita and S. Cosentino. "High linearity, low noise IF transmitter for WCDMA application." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 413-416.

An integrated IF transmitter with on-chip synthesizer for W-CDMA application is presented. It was designed to comply with UMTS standard on a low cost application board. The 5-MHz ACLR is better than -60 dBc while output noise at maximum and minimum gain setting is -147 dBm/Hz and -167 dBm/Hz respectively, which is the minimum reported to date. Furthermore, the gain control curve linearity exceeds 3GPP requirements with a dynamic range higher than 80 dB.

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A Si/SiGe BiCMOS mixer with 3rd-order nonlinearity cancellation for WCDMA applications (student paper)

Liwei Sheng and L.E. Larson. "A Si/SiGe BiCMOS mixer with 3rd-order nonlinearity cancellation for WCDMA applications (student paper)." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 417-420.

This paper presents a general analysis of the 3rd-order nonlinearity of a differential common-emitter (CE) radio frequency (RF) amplifier and an improved way to cancel the 3rd-order nonlinearity. A SiGe BiCMOS mixer is designed, based on the 3rd-order cancellation scheme. The mixer achieves +6 dBm IIP3, 15 dB gain and 7.7 dB DSB NF with only 2.2 mA current at 2.1 GHz. This performance exceeds that of previously reported active mixers in this frequency range.

Abstracts

High linearity CMOS SOI mixer

D. Lovelace, D. Losser and D. Kelly. "High linearity CMOS SOI mixer." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 421-424.

This paper describes the design of a single-ended CMOS SOI mixer with very high linearity. The mixer delivers +23dBm of IIP3 with a conversion loss of 6.5dB at an RF frequency of 1.9GHz, at an LO drive of 0dBm and a bias current of 6.3mA at 3V/sub DC/. The mixer is fabricated in a 0.5 /spl mu/m CMOS SOI process and operates over a frequency range of 900MHz to 2.4GHz drawing 6-8mA of supply current (dependant on LO drive) at a DC supply of only 3V. The chip size is 466 /spl mu/m /spl times/ 606 /spl mu/m and is housed in a six lead SOT-23 package.

Abstracts

A CMOS dual-band tri-mode chipset for IEEE 802.11a/b/g wireless LAN

S. Mehta, M. Zargari, S. Jen, B. Kaczynski, M. Lee, M. Mack, S. Mendis, K. Onodera, H. Samavati, W. Si, K. Singh, M. Terrovitis, D. Weber and D. Su. "A CMOS dual-band tri-mode chipset for IEEE 802.11a/b/g wireless LAN." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 427-430.

This paper presents the design of a dual-band, tri-mode wireless LAN chipset for IEEE 802.11a/b/g. The chipset, designed in 0.25/spl mu/m standard CMOS, features a 5GHz RF transceiver, a 2.4GHz RF transceiver, and a baseband processor with media access controller. The overall design achieves a measured sensitivity of at least -70dBm at 54Mbps and -92dBm at 6Mbps for IEEE 802.11a/g as well as -94dBm at 1Mbps for 802.11b.

Abstracts

An RF CMOS transmitter integrating a power amplifier and a transmit/receive switch for 802.11b wireless local area network applications

R. Point, Zhenbiao Li, W. Foley, B. Ingersoll, J. Borelli, D. Segarra, D. Donoghue, C. Liss, M. Mendes, J. Feigin, A. Georgiadis, M. Valery, E. Dawe, D. Losanno, R. Quintal, M. Nikitin, R. Jabor, M. Morin, K.K. O and G. Dawe. "An RF CMOS transmitter integrating a power amplifier and a transmit/receive switch for 802.11b wireless local area network applications." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 431-434.

A transmitter integrating a passive FET Quad up-conversion mixer, a power amplifier with output P/sub 1dB/ of 23 dBm, a transmit/receive (T/R) switch with an insertion loss of 1.1 dB and output P/sub 1dB/ of 21 dBm has been implemented in a 0.25-/spl mu/m foundry CMOS process. The transmitter at the output power level of 16.5 dBm is compliant to the 802.11b specifications at 11 Mbps. This circuit is the first 802.11b transmitter to have the entire function integrated including a PA and a T/R switch.

Abstracts

5-6 GHz monolithically integrated calibratable low-noise downconverter for smart antenna arrays

T. Brauner, R. Vogt and W. Bachtold. "5-6 GHz monolithically integrated calibratable low-noise downconverter for smart antenna arrays." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 435-438.

An integrated downconverter for active antenna arrays is presented. From 5.125 GHz to 5.875 GHz the downconverter shows more than 20 dB conversion gain and a noise figure of less than 3.8 dB with a minimum of 3.3 dB. Input 1 dB compression point is -18 dBm. Image rejection better than 35 dB is achieved using an integrated lumped-element bandpass filter. A switchable symmetric input amplifier is proposed to calibrate amplitude and phase errors without degrading the noise figure.

Abstracts

A fully integrated variable gain 5.75-GHz LNA with on chip active balun for WLAN

M.K. Raja, T.T.C. Boon, K.N. Kumar and Wong Sheng Jau. "A fully integrated variable gain 5.75-GHz LNA with on chip active balun for WLAN." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 439-442.

A 5.75-GHz variable gain Low Noise Amplifier (LNA) using 0.18 /spl mu/m CMOS process is described. A novel gain control technique is proposed which does not affect the matching at the input and output and the gain flatness of the LNA when the gain is varied. Usage of Gain control to achieve low noise figure and high IIP3 simultaneously without increasing the power consumption is demonstrated. Another feature of this LNA is that it also acts as an active balun for converting the single-ended input to a differential output. The LNA does not need any off-chip components and is matched to 50-Ohm. Measured results of this LNA in commercial SOC-16 package include a gain of 21 dB, noise figure of 4.4 dB, gain variation of 10.5 dB and an IIP3 of -6.5 dBm. It draws 9 mA from 1.8 V power supply. The chip area excluding the pads is 0.5 mm /spl times/ 0.6 mm.

Abstracts

A 4.9mW 270MHz CMOS frequency synthesizer/FSK modulator

Hyokjae Choi, Sangho Shin, Yeonwoo Ku, Mooil Jeong and Kwyro Lee. "A 4.9mW 270MHz CMOS frequency synthesizer/FSK modulator." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 443-446.

A 270 MHz frequency synthesizer/FSK modulator for low-rate WPAN is implemented. It consumes only 4.9 mW, adopting a current re-use technique, self-DC biasing scheme, and appropriate divider architecture. The 3/sup rd/-order feedback type DSM and the high performance charge pump are designed for wide loop bandwidth, which enables the design of a low power and low noise frequency synthesizer. The implemented prototype offers 500 kHz-loop bandwidth and -104dBc/Hz in-band noise. It also plays a role as an FSK modulator which shows only 1.1 dB degradation at 10/sup -3/ symbol BER compared with the ideal FSK-modulator.

Abstracts

A broadband upconverter unit for a cable-modem double-conversion receiver

K. Stadius, A. Malinen, P. Paatsila and K. Halonen. "A broadband upconverter unit for a cable-modem double-conversion receiver." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 449-452.

A broadband upconverter unit for double-conversion receivers used in cable modems is presented in this paper. The unit includes a variable-gain low-noise amplifier, a double-balanced mixer, a three-stage VCO bank for LO generation and a divide-by-two circuit for driving an external PLL. The unit upconverts a 6- or 8-MHz channel from 47-862 MHz input band to around 1575 MHz intermediate frequency. In experimental testing the unit measures over 20 dB gain with 8-dB noise figure and 15-dB gain tuning. The unit is implemented in a 0.9-/spl mu/m SiGe bipolar process.

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A 5-GHz monolithic silicon bipolar down-converter with a 3.2-dB noise figure

A. Italia, E. Ragonese, G. Girlando and G. Palmisano. "A 5-GHz monolithic silicon bipolar down-converter with a 3.2-dB noise figure." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 453-456.

A monolithic 5-GHz down-converter consisting of a low noise amplifier (LNA) and a double-balanced mixer was designed using a 46-GHz-f/sub T/ silicon bipolar process. The down-converter exhibits a SSB noise figure as low as 3.2 dB, a 24-dB power gain, and an input compression point of -23 dBm. It was assembled in a 4 /spl times/ 4 mm = low-cost QFN 16-lead plastic package and draws only 18 mA from a 3-V power supply.

Abstracts

A high-performance low-power CMOS double-balanced IQ down-conversion mixer for 2.45-GHz ISM band applications

Chun Geik Tan. "A high-performance low-power CMOS double-balanced IQ down-conversion mixer for 2.45-GHz ISM band applications." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 457-460.

A 2.45GHz CMOS double-balanced IQ downconversion switching passive mixer achieves low noise figure (NF) of 16dB, high input third-intercept point (IIP3) of 2dBm, high conversion gain (CG) of 13dB, while consuming only 4-mA from a 1.8V supply. This paper also proposes a new technique for stabilizing CG, IIP3, and NF of a CMOS passive mixer from the power supply (V/sub DD/), threshold voltage (V/sub TH/), and temperature variations. The proposed technique dissolves the undesired variations by providing dynamic DC biasing voltages. Measurement of various test chips shows that the CG of the mixers are all within /spl plusmn/0.1dB for 10% V/sub DD/ variations, and within /spl plusmn/0.75dB for temperature of -40 to 90/spl deg/C.

Abstracts

A 17-GHz direct down-conversion mixer in a 47-GHz SiGe process

M.W. Lynch, C.D. Holdenried and J.W. Haslett. "A 17-GHz direct down-conversion mixer in a 47-GHz SiGe process." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 461-464.

Future wireless data access will involve gigabit-per-second radios operating at RF frequencies above 10 GHz. This paper presents the design, simulation and measurement of a 17 GHz direct down-conversion mixer intended for these systems. The mixer was fabricated in a low-f/sub T/ (47 GHz) SiGe process, achieving a midband conversion gain of 12 dB and a double sideband noise figure of 11.5 dB, while consuming 17.8 mW from a 3.3 V supply.

Abstracts

A differential implementation of the CMOS active-load body-effect mixer

T. Taris, J.-B. Begueret, H. Lapuyade and Y. Deval. "A differential implementation of the CMOS active-load body-effect mixer." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 465-468.

This paper describes the implementation of a new mixer topology. The two input signals applied respectively to the back gate and the gate of two transistors achieve the mixing thanks to the active load body effect. The theoretical study of this effect is presented. Owing to the differential structure, the final circuit provides a conversion gain of more than 10 dB and reaches a 14 dB NF. The linearity is better than -5 dBm IIP3 while the architecture draws only 12 mW. Implemented in a 0.18 /spl mu/m CMOS VLSI technology, the circuit, dedicated to 3G mobile phone operates at 1.8V voltage supply.

Abstracts

A high speed dual modulus divider in SOI CMOS with stacked current steering phase selection architecture

K. Mistry, W. Redman-White, J. Benson and N. D'Halleweyn. "A high speed dual modulus divider in SOI CMOS with stacked current steering phase selection architecture." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 471-474.

This work describes a high frequency dual modulus divider designed and fabricated in a 0.35 /spl mu/m PDSOI process, employing a stacked topology phase switching scheme. SOI CMOS technology is exploited to allow current re-use in a higher supply voltage than dictated by single device breakdown. Measurements show the circuit operating at 3GHz (Vdd = 6.8V.).

Abstracts

A 2.4GHz dual-modulus divide-by-127/128 prescaler in 0.35 /spl mu/m CMOS technology

Ram Singh Rana and Zhang Chen Jian. "A 2.4GHz dual-modulus divide-by-127/128 prescaler in 0.35 /spl mu/m CMOS technology." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 475-478.

High speed design solution for high divide-by-value dual modulus prescaler remains a challenge in designing high frequency synthesizers in CMOS technology. This paper presents a dual-modulus divide-by-127/128 prescaler implemented in 0.35 /spl mu/m CMOS technology operating at 2.4GHz frequency. Unlike the conventional topologies, this design is based on a novel way of dual-modulus division using four transmission gates in critical path. It consumes 4.8mW power from a 3V supply. Measurement results are provided.

Abstracts

A 17 GHz dual-modulus prescaler in 120 nm CMOS

H.-D. Wohlmuth, D. Kehrer, R. Thuringer and W. Simburger. "A 17 GHz dual-modulus prescaler in 120 nm CMOS." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 479-482.

A completely integrated 17 GHz prescaler with programmable ratios of 4 and 5 is presented. The prescaler uses high speed differential current-mode logic and merged AND-gates. Over a band of 15 GHz the prescaler features an enhanced input sensitivity of less than 0 dBm. The circuit draws 47 mA from a single 1.5 V supply. An output buffer is also included in the circuit to drive 50 /spl Omega/ loads. The circuit is manufactured in a 120 nm CMOS technology.

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A 5.84 GHz tunable SAW oscillator with frequency doubler for a DSRC system

J. Steinkamp, F. Henkel, U. Stehr, C. Eube, P. Waldow, H. Uda, H. Hayashi, R. Kimura and K. Mizuno. "A 5.84 GHz tunable SAW oscillator with frequency doubler for a DSRC system." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 483-486.

A varactor tuned oscillator with an external SAW resonator and integrated frequency doubler is developed on a low cost 0.8 /spl mu/m SiGe BiCMOS technology for a DSRC application. The measured phase noise is -95.5 dBc/Hz at 10 kHz offset on a single-ended 50 /spl Omega/ load. A PMOS accumulation-mode varactor is used for the fine tuning of the oscillation frequency within a tuning range of 800 kHz. Furthermore a 2/sup nd/ not tunable oscillator is fabricated with an improved phase noise of -105.65 dBc/Hz at 10 kHz offset. Frequency doubling is achieved by using two unbalanced emitter coupled pairs with a fundamental frequency rejection of better than 20 dBc.

Abstracts

Monolithic millimeterwave frequency tripler using a 0.35 /spl mu/m BiCMOS SiGe technology

A. Coustou, D. Dubuc, J. Graffeuil, E. Tournier, O. Llopis, C. Boulanger, R. Plana and I. Telliez. "Monolithic millimeterwave frequency tripler using a 0.35 /spl mu/m BiCMOS SiGe technology." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 487-490.

In this paper, we present a 10/30 GHz MMIC tripler using a 0.35 /spl mu/m, 60 GHz-f/sub MAX/ BiCMOS SiGe technology. It exhibits a conversion gain in the -5-3 dB range, a fundamental rejection between -12 and -24 dB over an input dynamic range of -5 dBm. A low additive phase noise of -143 dBc/Hz at a frequency offset of 100 kHz is anticipated. The DC power consumption is 440 mW. The chip surface is 800/spl times/650 /spl mu/m/sup 2/ (0.4 mm/sup 2/ only without the probe pads area). In order to drive this tripler, the design of a MMIC SiGe X-band VCO and its measured performance (0.8 GHz tuning range, -5 dBm output power and -87 dBc/Hz phase noise at 100 kHz off carrier) is also reported.

Abstracts

Ultrawideband - the next step in short-range wireless (2003 [RFIC])

D.G. Leeper. "Ultrawideband - the next step in short-range wireless (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 493-496.

Forces of economics and laws of physics have been driving the growth of short-range wireless technologies such as IEEE 802.116/a, Bluetooth/spl trade/, and most recently, ultrawideband. Developed initially for defense-related communications, ultrawideband offers data rates of 100-500 Mbps at distances of 2-10 meters, using an average radiated power of about 200 microwatts. With its low cost, low power, and small size, ultrawideband looks attractive for inter-connecting portable data-driven devices without wires as well as maximizing wireless spatial capacity measured in terms of bits/sec/square-meter.

Abstracts

Challenges for ultra-wideband (UWB) CMOS integration (2003 [RFIC])

G.R. Aiello. "Challenges for ultra-wideband (UWB) CMOS integration (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 497-500.

Various methods of utilizing the UWB spectrum have been developed to date, characterized by specific modulation schemes, such as pulse position, pulse amplitude or bi-phase modulation. A new method emerging today utilizes a multi-band approach, where information is encoded in multiple RF subbands at staggered time, each occupying 500 MHz bandwidth. A description of multi-band modulation schemes for UWB is included in the paper. The long term vision for UWB-based products is to enable personal devices with integrated wireless connectivity. This requires 110, 200 and 480 Mbps at 10 m, and reasonably low power consumption. UWB requires CMOS designs in order to achieve low power and low cost integration with other devices, and to fulfil the vision of integrated connectivity. One of the design challenges is the high operating frequencies (3.1-10.6 GHz), an additional challenge is that low Q systems are more sensitive to parasitics, especially in pads and wire bonds. Some UWB receiver architectures require good isolation among subbands. They also require quick switching between subbands at different frequencies. Example transmitter and receiver architectures are described in the paper.

Abstracts

UWB path loss characterization in residential environments (2003 [RFIC])

S.S. Ghassemzadeh and V. Tarokh. "UWB path loss characterization in residential environments (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 501-504.

In this paper, we describe a simple method for measurement of the Ultra-Wideband Band (UWB) frequency response for evaluation of the path loss and impulse response of the UWB indoor channel. We propose a simple statistical path loss model for the residential channel that is based on over 300,000 frequency response measurements. The probability distributions of the model parameters for different locations are presented.

Abstracts

Ultra wide band 24 GHz automotive radar front-end (2003 [RFIC])

I. Gresham, A. Jenkins, R. Egri, C. Eswarappa, F. Kolak, R. Wohlert, J. Bennett and J.-P. Lanteri. "Ultra wide band 24 GHz automotive radar front-end (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 505-508.

The recent approval granted by the FCC for the use of Ultra Wide Band (UWB) signals for vehicular radar applications has provided a gateway for production of these sensors as early as in 2004. However, the rules governing the allowable spectral occupancy create significant constraints on the sensors operation. The implications for waveform design and the consequent limitation on system architecture, including antenna design and receiver architecture are discussed. Other practical considerations such as available semiconductor technology with low-cost plastic packaging are reviewed. This is developed into a methodology for developing a single board sensor with integrated antenna. Results are presented for a specification compliant antenna, and a low-cost plastic package for 24 GHz ICs. Finally, the required IC architecture for a transceiver is presented, along with measured results of a single-chip homodyne I/Q down-conversion receiver fabricated in SiGe.

Abstracts

1.25 Gbps wireless Gigabit ethernet link at 60 GHz-band (2003 [RFIC])

K. Ohata, K. Maruhashi, M. Ito, S. Kishimoto, K. Ikuina, T. Hashiguchi, K. Ikeda and N. Takahashi. "1.25 Gbps wireless Gigabit ethernet link at 60 GHz-band (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 509-512.

A 1.25 Gbps 60 GHz-band full duplex wireless Gigabit Ethernet link has been developed. Direct ASK modulation and demodulation scheme is adopted for the 60 GHz-band transceiver. CPW MMIC's and planar filters are flip-chip mounted in TX and RX LTCC MCM's. The wireless Gigabit Ethernet link has the function of converting an optical fiber link to a wireless link seamlessly combining a 60 GHz-band transceiver with a 1000Base-SX optical in/out module. The size is 159/spl times/97/spl times/44 mm/sup 3/.

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Fully integrated sigma-delta synthesizer suitable for "indirect VCO modulation" in 2.5G application (2003 [RFIC])

B. Bisanti, S. Cipriani, L. Carpineto, F. Coppola, E. Duvivier, N. Mouralis, D. Ercole, G. Puccio, V. Roussel and S. Cercelaru. "Fully integrated sigma-delta synthesizer suitable for "indirect VCO modulation" in 2.5G application (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 515-518.

A fully integrated /spl Sigma//spl Delta/ fractional synthesizer (included VCO, Loop Filter, Xtal oscillator negative impedance) is implemented in a 0.4 /spl mu/m, 45 GHz SiGe BiCMOS process. The measured close in phase noise is -106 dBc/Hz at 900 MHz using 26 MHz comparison frequency and frequency resolution less than 5 Hz is achieved. The VCO's inductors are not integrated in order to test the PLL performance on different frequency's range. Using a 200 kHz close loop bandwidth the level of the tones generated, when critical channels are synthesized, exceed the GSM transmitter specifications without applying any dithering technique. The very low close in phase noise and low level of tone generation, make it suitable for "indirect GMSK VCO modulation" application.

Abstracts

An antenna switch MMIC using E/D mode p-HEMT for GSM/DCS/PCS/WCDMA bands application (2003 [RFIC])

H. Tosaka, T. Fujii, K. Miyakoshi, K. Ikenaka and M. Takahashi. "An antenna switch MMIC using E/D mode p-HEMT for GSM/DCS/PCS/WCDMA bands application (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 519-522.

A monolithic antenna switch IC using enhancement and depletion (E/D) -mode AlGaAs/InGaAs pseudomorphic high electron mobility transistors (p-HEMTs) has been developed for GSM/DCS/PCS/WCDMA band digital mobile communication systems. This antenna switch MMIC achieves a low insertion loss and small chip size using a single pole double throw (SPDT) switch for GSM and single pole 4 throw (SP4T) switch for other band configurations, as well as internal logic circuits with an E/D mode p-HEMTs process. This MMIC achieves an insertion loss of 0.21 dB at 915 MHz and 0.53 dB at 1785 MHz. The isolation to the RX ports is more than 30 dB, and the input power at 0.1 dB compression is over 36 dBm at +2.7 V operation.

Abstracts

New results on MMIC six-port's used in Ka band direct conversion receivers (2003 [RFIC])

S.O. Tatu, E. Moldovan, G. Brehm, Ke Wu and R.G. Bosisio. "New results on MMIC six-port's used in Ka band direct conversion receivers (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 523-526.

New results obtained on two Ka band Monolithic Microwave Integrated Circuit (MMIC) six-port junction circuits realized in GaAs PHEMT technology at TriQuint Texas Foundry are presented in this paper. Comparative results of simulated and measured S parameters are shown for both designs. The proposed MMIC six-port circuit is used to realize the QPSK demodulator of a Ka band direct conversion receiver.

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Design and analysis of on-chip symmetric parallel-plate coupled-line balun for silicon RF integrated circuits (2003 [RFIC])

H.Y.D. Yang and J.A. Castaneda. "Design and analysis of on-chip symmetric parallel-plate coupled-line balun for silicon RF integrated circuits (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 527-530.

In this paper, we present the design and analysis of an on-chip transformer balun for silicon RFICs. High-performance on-chip transformer baluns for low-noise amplifiers and power amplifiers on multi-layer radio-frequency integrated circuits are constructed. Single-end primary and differential secondary are constructed on different dielectric surface planes. The metal windings of the primary and secondary are in parallel to form coupled lines. Both the primary and the secondary are designed symmetrically for differential operation. Additional layer interfaces and vias are used to provide bridges to assure the geometric symmetry. Examples of designs with test results are discussed.

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Abstracts

Analysis and verification on side effect of anti-backlash delay in phase-frequency detector (2003 [RFIC])

Xiaopin Zhang. "Analysis and verification on side effect of anti-backlash delay in phase-frequency detector (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 531-534.

The side effect of the anti-backlash delay in digital phase-frequency detector is analyzed. It is shown that the frequency tracking ability of the detector is decreased by the delay, so that the lock-in transition time will increase. Furthermore, it is shown that the side effect is mainly caused by the delay to the front edge of the reset pulse. Both computer simulation and experimental verification shows the analysis is correct. The work gives an insight view of the detector's working principle and will be useful for its design.

Abstracts

A CMOS voltage-to-frequency linearizing preprocessor for parallel plate RF MEMS varactors (2003 [RFIC])

M.S. McCorquodale, Mei Kim Ding and R.B. Brown. "A CMOS voltage-to-frequency linearizing preprocessor for parallel plate RF MEMS varactors (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 535-538.

A generalized parallel plate radio frequency microelectromechanical systems (MEMS) varactor is presented and studied. Its application in an RF oscillator is described and the nonlinear relationship between tuning voltage and realized output frequency is derived. A low power CMOS integrated circuit is proposed to linearize the response. The circuit consumes at most 100 /spl mu/W of power while linearizing the voltage-to-frequency response to a correlation coefficient (R/sup 2/) of 0.9988. The described circuit and theory can be employed in any application where the nonlinear response associated with parallel plate RF MEMS varactors must be compensated.

Abstracts

Third generation wireless signal profiling (2003 [RFIC])

Chi Yung Ho, T. Kwok, Kiu Lam and Van Nguyen Tran. "Third generation wireless signal profiling (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 539-542.

This paper is about third generation, PCS and other cellular signal profiling in a built-up area such as Melbourne CBD. The purpose of this investigation is to determine the variation of the signal strength between a transmitter, 1218-BV lockable oscillator 900-2000MHz general radio, mounted on top of a RMIT University building and a portable receiver, Protek 3201, covering the streets below the transmitter. It is divided into sectors and the points of data collection are marked in steps of 10 meter. The transmission paths between the transmitter and receiver can be varied from direct line-of-sight to those fully blocked by a tree or a building. 3G systems require site-specific propagation modeling due to the high speed signal such as video-conferencing and video streaming. They require reliable and continuous service. Signal profiting is essential for service reliability.

Abstracts

Characterization and modeling of size effect on the performances of 0.10 /spl mu/m RF MOSFETs for SOC applications (2003 [RFIC])

Yo-Sheng Lin, Hsin-Yuan Tu, Hong-Wei Chiu and Shey-Shi Lu. "Characterization and modeling of size effect on the performances of 0.10 /spl mu/m RF MOSFETs for SOC applications (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 543-546.

In this paper, we demonstrate the size effect on the DC and RF performances of 0.10 /spl mu/m RF MOSFETs for SOC applications. Our results show that for RF MOSFETs, the input impedance can be represented by a series RC circuit at low frequencies and a "shifted" parallel RC circuit at high frequencies. In addition, the output impedance can be represented by a "shifted" series RC circuit at low frequencies and a "shifted" parallel RC circuit at high frequencies. The appearance of the kink phenomenon of scattering parameters S/sub 11/ and S/sub 22/ in a Smith chart is caused by this inherent ambivalent characteristic of the input and output impedances. It was found that an increase of device's width (or g/sub m/) enhances the kink effect of S/sub 11/ and S/sub 22/. The present study enables RF engineers to understand the behaviors of S-parameters more deeply, and hence are helpful for them to create a fully scalable CMOS model for SOC applications.

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Design and modeling of a high-Q on-chip hairpin inductor for RFIC applications (2003 [RFIC])

Wan Ni, Xiaojuen Yuan, Y.V. Tretiakov, R. Groves and L.E. Larson. "Design and modeling of a high-Q on-chip hairpin inductor for RFIC applications (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 547-550.

The design and modeling of a high Q hairpin inductor is presented. The inductor is designed and fabricated using the thick top-level metal (4/spl mu/m thickness, 14/spl mu/m away from the substrate) in an IBM 0.5/spl mu/m SiGe BiCMOS process to provide very high peak Q, approaching 27 from 2 to 4GHz, specifically for integrated voltage-controlled-oscillator (VCO) applications. A broadband lumped-element model is also developed for this structure. The modeling methodology is verified using commercial field solvers (IE3D and ADS Momentum) and hardware measured data, the results show that the derived model correlates with the EM simulation data.

Abstracts

Design techniques to combat process, temperature and supply variations in Bluetooth RFIC (2003 [RFIC])

Y.T. Tee, Y.H. Seng, L.P. Boon, T.K. Hung, S. Tachi, K.S. Ling, T. Murakami, S.J. Hui, L.C. Tiong, T.L. Choon, W.W. Kheng, X.Q. Jun, L.C. Meng, L.S. Hwi, X. Wei and M. Itoh. "Design techniques to combat process, temperature and supply variations in Bluetooth RFIC (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 551-554.

A fully integrated Bluetooth RF transceiver with sensitivity up to -85 dBm with /spl plusmn/2 dB process variation has been achieved. The sensitivity only varies /spl plusmn/1 dB from 2.7 to 3.3V and /spl plusmn/1.5 dB from -10 to +90/spl deg/C. This RFIC is fabricated using a 0.35/spl mu/m CMOS process and can withstand a maximum input power of +5 dBm for 0.1% BER.

Abstracts

Wideband CMOS integrated RF combiner for LINC transmitters (2003 [RFIC])

S. Hamedi-Hagh and C.A.T. Salama. "Wideband CMOS integrated RF combiner for LINC transmitters (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 555-558.

The design of a novel wideband RF signal combiner suitable for LINC transmitters in CMOS technologies is presented in this paper. Compared to the conventional narrowband design, the wideband architecture achieves a small reflection coefficient (less than 0.3) suitable-for wideband spread spectrum multi-user mobile systems. A 0.18/spl mu/m CMOS wideband signal combiner, designed to add two 8GHz signals and deliver 1.5W to the antenna from 1V class F power amplifiers, is presented and compared to a narrowband design.

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Second order nonlinearity analysis of Gilbert mixer (2003 [RFIC])

Sanghoon Kang and Bumman Kim. "Second order nonlinearity analysis of Gilbert mixer (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 559-562.

Second order nonlinearity of Gilbert mixer is analyzed. The harmonic generations at each part of the mixer are analyzed and are combined to predict the over-all mixer behavior. We include non-ideal tail current source and nonlinear current gain of BJT, which have been neglected in previous works but have significant effects.

Abstracts

Improving the isolation of GPS receivers for integration with wireless communication systems (2003 [RFIC])

S. Spiegel, A. Thiel, S. Nussbaumer, I. Kovacs and M. Durler. "Improving the isolation of GPS receivers for integration with wireless communication systems (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 563-566.

The impact of the inter-system and the intra-system isolations on the performance of GPS receivers is analyzed. The grounding, shielding and de-coupling structures were optimized to minimize the level of intra-system interference in the receiver. By reducing the intra-system interference, high sensitivity and high immunity to jamming signals were simultaneously achieved. The sensitivity value below the -141dBm and CW power level of 4dBm, 2dBm and 2dBm in the DCS1800, IS-95 and WCDMA frequency ranges respectively for 3dB degradation of the carrier to noise ratio were obtained.

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An improved but reliable model for MESFET parasitic capacitance extraction (2003 [RFIC])

B.L. Ooi and J.Y. Ma. "An improved but reliable model for MESFET parasitic capacitance extraction (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 567-570.

The conventional parasitic capacitance extraction always produces bias-dependent C/sub pd/, even though from the underlying physic, the parasitic capacitance is known to be bias-independent. In this paper, an improved model is thus proposed to evaluate the parasitic capacitances of GaAs MESFET transistor from the cold-FET S-parameters measurement. The resulting C/sub pd/ is found to be independent of V/sub gs/ when V/sub gs/ < V/sub p/. In our approach, model parameters can be uniquely determined by using only two sets of cold-FET S-parameters under different Vgs biasing condition.

Abstracts

Straightforward transient & noise analysis for /spl Sigma//spl Delta/ PLL-based synthesizers of multiple feedback and feedforward structures (2003 [RFIC])

K.S.H. Tsang and T.S. Ng. "Straightforward transient & noise analysis for /spl Sigma//spl Delta/ PLL-based synthesizers of multiple feedback and feedforward structures (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 571-574.

This paper presents a noise analysis model, which allows basic phase noise calculations of a /spl Sigma//spl Delta/ PLL fractional-N synthesizer. Calculation results on various /spl Sigma//spl Delta/ orders of multiple architectures, feedback and feedforward, and on transient process, which provides quick visualization of the design methods used to minimize the required settling-time, will be presented.

Abstracts

RF circuit design in reliability (2003 [RFIC])

Enjun Xiao and J.S. Yuan. "RF circuit design in reliability (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 575-578.

A methodology for designing reliable RF circuits is proposed. A model to predict hot carrier and soft breakdown effects on CMOS device parameters in RF circuits is developed. Hot carrier and soft breakdown effects are evaluated experimentally with 0.16 /spl mu/m CMOS technology. Device stress measurement and SpectreRF simulation are conducted to evaluate the impact of hot carrier and soft breakdown effects on RF circuits such as low noise amplifier and voltage-controlled oscillator performance. Two design techniques to build reliable RF circuits are proposed and verified.

Abstracts

Piecewise continuous linear interpolation of the sine function for Direct Digital Frequency Synthesis (2003 [RFIC])

J.M.P. Langlois and D. Al-Khalili. "Piecewise continuous linear interpolation of the sine function for Direct Digital Frequency Synthesis (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 579-582.

This paper discusses the design of Direct Digital Frequency Synthesizers (DDFS) based on the linear interpolation of the sine function. The problem of approximating the sine function within a desired error bound is specifically considered. The use of linear segments is favorable for hardware implementation because of the low processing complexity requirements. A relation between the minimum number of linear segments, the resolution with which segment slopes are expressed, and the achievable precision is derived. Tradeoffs between memory storage requirements and computational complexity are identified, and architectural and implementation issues are discussed. Example designs achieving 8, 10 and 12 bits of amplitude resolution with 59, 77 and 86 dBc of Spurious Free Dynamic Range (SFDR) are presented.

Abstracts

An integrated wideband-IF-receiver architecture for mobile terminals (2003 [RFIC])

R. Richter and H.-J. Jentschel. "An integrated wideband-IF-receiver architecture for mobile terminals (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 583-586.

A wideband-IF receiver architecture is described for use in mobile terminals capable of receiving multiple standards like GSM, UMTS, DECT, etc. The architecture uses a single down-conversion and digitizes the wanted signal at high intermediate frequencies. The wideband nature of the architecture ensures a great adaptability to various mobile standards. It denotes a step into the direction of a fully reconfigurable software radio due to the shift of the ADC to higher frequencies. The paper is focused on the realization of the analog part of the receiver.

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Multiple-chip module design optimizations using a novel layout parameterization technique (2003 [RFIC])

C.-W.P. Huang, G.S. Dow, Jianwen Bao, S. Kuran and J. Sercu. "Multiple-chip module design optimizations using a novel layout parameterization technique (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 587-590.

A novel layout parameterization technique for multi-chip module design optimizations is presented. This technique is based on a quasi-static method of moments and multi-dimensional interpolation, which can reduce a 12-minute electromagnetic layout simulation to 5.3 seconds. Excellent CDMA power amplifier (PA) module performance is achieved based on this technique.

Abstracts

High-performance three-dimensional on-chip inductors in SOI CMOS technology for monolithic RF circuit applications (2003 [RFIC])

Jonghae Kim, J.-O. Plouchart, N. Zamdmer, N. Fong, Liang-Hung Lu, Yue Tan, K.A. Jenkins, M. Sherony, R. Groves, M. Kumar and A. Ray. "High-performance three-dimensional on-chip inductors in SOI CMOS technology for monolithic RF circuit applications (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 591-594.

This paper presents high-Q and high-inductance-density on-chip inductors fabricated on high-resistivity substrate (HRS) using a 0.12 /spl mu/m SOI CMOS technology with 8 copper metal layers. A peak Q of 52 is obtained at 5 GHz for a 0.6 nH STP (Single-Turn, multiple metal levels in Parallel) inductor. An inductance density of 5302 fH//spl mu/m/sup 2/ is obtained for a 42 nH MTS (Multi-Turn, multiple metal layers in Series) inductor.

Abstracts

Non-ideality analysis of clock-jitter suppressing sampler for wideband /spl Sigma//spl Delta/ analog-to-digital converters (2003 [RFIC])

A. Strak and H. Tenhunen. "Non-ideality analysis of clock-jitter suppressing sampler for wideband /spl Sigma//spl Delta/ analog-to-digital converters (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 595-598.

As CMOS processes evolve into smaller and smaller feature sizes, the ability to clock circuits at higher rates and the need of integrating analog and digital systems on a single chip arises. This makes it suitable to use a wideband /spl Sigma//spl Delta/ Analog-to-Digital Converter (ADC), due to its high digital content and robustness against circuit imperfections, as part of a front end for a 3/sup rd/ or 4/sup th/ generation mobile communications system. One type of /spl Sigma//spl Delta/ that would be appropriate for such an application is suggested by Rusu and Tenhunen (2002). However, wideband operation sets tough jitter constraints on the clock since the oversampling ratio (OSR) is lower than for traditional /spl Sigma//spl Delta/ ADCs. Previously, we have proposed a sampling circuit topology which helps to reduce the effects of non-uniform sampling by averaging. This topology's jitter suppressing properties are based on certain assumptions which, in reality, are non-ideal. This paper describes an analysis of those non-idealities and their impact on the topology's jitter suppressing features on a circuit level.

Abstracts

Symmetric 3D passive components for RF ICs application (2003 [RFIC])

Wei-Zen Chen and Wen-Hui Chen. "Symmetric 3D passive components for RF ICs application (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 599-602.

This paper proposes novel 3-D symmetric RF passive components, including inductors, transformers, and baluns. Layout areas of these components are drastically reduced by means of stacked structure while the symmetry of input and output ports is also maintained. The area saving of 3-D inductor is up 70 %. The 1:1 transformer shows less than 0.1 % inductance mismatch in a 18 GHz range, and K is up to 0.87 at 17 GHz. The 3-D balun manifests less than 0.8 dB gain mismatch from 5.25 GHz to 6 GHz and phase error is about 4/spl deg/ at 5.25 GHz according to measurement results. All the components are fabricated in a 0.18 /spl mu/m standard CMOS process.

Abstracts

Monolithic supply modulated RF power amplifier and DC-DC power converter IC (2003 [RFIC])

S. Abedinpour, I. Deligoz, J. Desai, M. Figiel and S. Kiaei. "Monolithic supply modulated RF power amplifier and DC-DC power converter IC (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 603-606.

Mobile communication systems require highly efficient, linear, and integrated power amplifiers. This paper reports the results of a monolithic envelope following system implemented in a 0.18 /spl mu/m SiGe BiCMOS process technology. The monolithic envelope following system consists of a synchronous buck DC-DC converter, which is integrated with and provides the power supply for a 900 MHz power amplifier while tracking the envelope of the RF input signal.

Abstracts

Toroidal inductors for integrated radio frequency and microwave circuits (2003 [RFIC])

J. Suryanarayanan, W.Y. Liu, J. Nath, B.N. Johnson, S. Mohammadi, L.P.B. Katehi and M.B. Steer. "Toroidal inductors for integrated radio frequency and microwave circuits (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 607-610.

A toroidal inductor has been developed that confines flux and eliminates eddy currents. A printed circuit and micromachined RFIC-compatible implementations of the inductor are presented.

Abstracts

CMOS-compatible RF-MEMS tunable capacitors (2003 [RFIC])

A. Oz and G.K. Fedder. "CMOS-compatible RF-MEMS tunable capacitors (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 611-614.

New CMOS-MEMS tunable capacitors have been designed, fabricated and tested. Large-tuning range and high quality factor, Q, are achieved. The structures were made from the CMOS interconnect stack using a maskless CMOS micromachining process. Our tunable capacitor designs can be classified into two categories based on their tuning schemes as gap and area tuning and gap-only tuning. The capacitors with gap and area tuning were fabricated using Austria Microsystems (AMS) 0.6 /spl mu/m and Agilent 0.5 /spl mu/m CMOS processes. These devices have a measured nominal capacitance of 209 fF and a measured Q of 28 at 1.5 GHz. The capacitance change is measured from 209 fF to 294 fF within a 24 V control voltage, and 72.4 mW power at 1.5 GHz. The capacitors with gap-only tuning were fabricated in the TSMC 0.35 /spl mu/m CMOS process and have larger tuning range and more power efficiency than the 1st generation designs. For these new designs, 3.52 to 1 tuning range has been measured with tuning from 42 fF to 148 fF within a 12 V control voltage and 34 mW power and Q of 52 at 1.5 GHz. The tuning mechanism uses electro-thermal actuation. The essential differences between this work and prior work are the CMOS compatibility and more area efficiency at several gigahertz. Wide-range VCOs can be designed by using these MEMS tunable capacitors, inductors and CMOS or SiGe electronics on the same chip. Parasitic losses can be minimized and phase noise performance can be improved.

Abstracts

The performance comparison of CMOS vs biploar VCO in SiGe BiCMOS technology (2003 [RFIC])

D. Wang and Xudong Wang. "The performance comparison of CMOS vs biploar VCO in SiGe BiCMOS technology (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 615-618.

Two 2.3 GHz VCO monolithic ICs using CMOS and bipolar topology respectively for WCDMA transmitter application are designed and fabricated in IBM 0.25 /spl mu/m SiGe BiCMOS technology. The design trade-offs of each design topology are discussed. The results indicated that the CMOS version has better phase noise, more power efficient, but more sensitive to temperature and process than that of the bipolar counter partner.

Abstracts

A high isolation CMFB downconversion micromixer using 0.18-/spl mu/m deep n-well CMOS technology (2003 [RFIC])

C.C. Meng, S.K. Xu, T.H. Wu, M.H. Chao and G.W. Huang. "A high isolation CMFB downconversion micromixer using 0.18-/spl mu/m deep n-well CMOS technology (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 619-622.

CMOS deep n-well technology can eliminate body effects of NMOS transistors and improve LO-IF and LO-RF isolation in a Gilbert micromixer. A 37 dB LO-IF and 38 dB LO-RF isolation downconversion micromixer with 19 dB conversion gain, IP/sub 1dB/=-19.5 dBm and IIP/sub 3/=-12.5 dBm when RF=2.4 GHz and LO=2.25 GHz is demonstrated in this paper by using 0.18 /spl mu/m deep n-well CMOS technology. The input return loss and output return loss are better than 15 dB for frequencies up to 6 GHz. On the other hand, a downconversion micromixer without deep n-well has almost identical power performance but achieves only 20 dB LO-IF isolation and 21 dB LO-RF isolation even if two kinds of mixers are fabricated in adjacent areas of the same wafer. The downconversion micromixer used here has an intrinsically single-to-differential input stage and active differential PMOS loads to increase IF differential gain while CMFB is used to stabilize bias points. An IF differential amplifier converts differential output into a single-ended output. Finally, an off-chip rat-race coupler provides balanced LO signals to facilitate isolation measurement.

Abstracts

The design of 5 GHz voltage controlled ring oscillator using source capacitively coupled current amplifier (2003 [RFIC])

R. Tao and M. Berroth. "The design of 5 GHz voltage controlled ring oscillator using source capacitively coupled current amplifier (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 623-626.

A 5 GHz voltage controlled ring-oscillator (VCO) has been designed using 0.18 /spl mu/m CMOS technology. Source Capacitively Coupled Current Amplifier (SC3A) is adopted to realize this VCO. Because of the band-pass characteristic of the SC3A, this VCO exhibits the low noise performance with a large tuning range. It can operate from 4.3 GHz up to 6.1 GHz with a phase noise of about -85 dBc/Hz at 1 MHz frequency offset. For the 2 V supply voltage, the power consumption is about 80 mW.

Abstracts

Reducing phase noise by proper sizing of MOSFETs in LC tuned VCOs (2003 [RFIC])

Ye-Ming Li and J.A. Connelly. "Reducing phase noise by proper sizing of MOSFETs in LC tuned VCOs (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 627-630.

This work identifies the relationships between the sizes of the oscillator's core MOSFETs and the phase noise in the 1/f region. Three packaged 1 GHz VCOs with the same LC lank circuit, but different gate lengths were designed and fabricated in a standard digital 0.6 /spl mu/m CMOS technology. The minimum gate length (L/sub min/) of the core MOSFETs does not result in the minimum phase noise. Instead, the minimum phase noise occurs when the gate length is L/sub opo/ and L/sub opt/ = /spl eta//spl middot/L/sub min/ where /spl eta/ is a parameter that depends upon fabrication process and bias current. From measured results, the phase noise can be further decreased by 2 dBc/Hz at 600 kHz offset from 1 GHz center frequency by using the optimal sizes of the core MOSFETs.

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Single-ended differential amplifier and mixer circuits utilizing complementary RF characteristics of both NMOS and PMOS (2003 [RFIC])

Ilku Nam, Bonkee Kim and Kwyro Lee. "Single-ended differential amplifier and mixer circuits utilizing complementary RF characteristics of both NMOS and PMOS (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 631-634.

Design and fabrication results for single-ended differential circuit topologies that utilize the complementary RF characteristic of both NMOS and PMOS are reported. The complementary CMOS parallel push-pull amplifier gives an order of magnitude improvement in IP/sub 2/ at similar power consumption, and single-balanced complementary resistive mixer that functions effectively as double-balanced one, improves similar order of magnitude better in IP/sub 2/, LO-to-IF and LO-to-RF isolations than NMOS counterparts.

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A Widlar-bandgap based intermediate-frequency voltage-controlled oscillator for GSM/DCS transceiver Ics (2003 [RFIC])

A. Dec, K. Suyama, Y. Kimura and T. Ichinose. "A Widlar-bandgap based intermediate-frequency voltage-controlled oscillator for GSM/DCS transceiver Ics (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 635-638.

This paper presents an intermediate-frequency voltage-controlled oscillator using a Widlar-bandgap for stable operation over supply and temperature variations without degrading the phase noise performance. The design is fabricated in a 0.35 /spl mu/m SOI BiCMOS process and is packaged in a QFN24 plastic package. The VCO operates at 1 GHz with a tuning range of 250 MHz and achieves a phase noise of -113 dBc/Hz at 400 kHz offset from the carrier. The VCO core and buffer consume 4 mA and 11 mA from a 2.7 V power supply, respectively. The IF-VCO is suitable for GSM/DCS transceiver IC applications.

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Abstracts

A 110 MHz 84 dB CMOS programmable gain amplifier with RSSI (2003 [RFIC])

Chun-Pang Wu and Hen-Wai Tsao. "A 110 MHz 84 dB CMOS programmable gain amplifier with RSSI (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 639-642.

This paper describes a CMOS programmable gain amplifier that maintains a 3 dB bandwidth greater than 110 MHz and can provide 84 dB gain control range in 1 dB steps. The PGA can also be operated in a low power mode with 3 dB bandwidth greater than 71 MHz. Integrated with this PGA is a CMOS successive logarithmic detecting amplifier with a /spl plusmn/0.7 dB logarithmic accuracy over 80 dB dynamic range. It achieves a sensitivity of -83 dBm. The amplifier consumes 13 mA from a single 3V supply in high power mode. The chip area including pads occupies 1.5/spl times/1.5 mm/sup 2/.

Abstracts

PSK to ASK converter for RF digital communications

J.M. Lopez-Villegas, J.G. Macias, J. Cabanillas, J.J. Sieiro, J.A. Osorio, J. Samitier, J. Bausells, J. Montserrat and E. Cabruja. "PSK to ASK converter for RF digital communications." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 643-646.

This work presents a new circuit for the conversion of Binary Phase Shift Keying signals (BPSK) into Amplitude Shift Keying signals (ASK). The basic principles of the conversion method are the super harmonic injection of oscillator circuits and interference phenomena. The first one is used to synchronize the oscillators while the second is used to generate an amplitude interference pattern that reproduces the original phase modulation. When combined with an envelope detector, the proposed circuit allows the coherent demodulation of BPSK signals without need of carrier recovery system. Two prototypes of the converter have been implemented. The first one is a hybrid version working in the 300-400 MHz frequency range. The second has been implemented using Multi Chip Module (MCM) technology, and is intended for working in the range of 1.8-2.0 GHz. The time response of the converter to phase changes of the input signal is about 100 ns for the hybrid version and scales down to about 15 ns for the MCM version, giving upper limits for the modulation rate of about 5 Mbits/s and 30 Mbits/s, respectively.

Abstracts

A 5.3 GHz phase shift tuned I/Q LC oscillator with 1.1 GHz tuning range (2003 [RFIC])

J. van der Tang and A. van Roermund. "A 5.3 GHz phase shift tuned I/Q LC oscillator with 1.1 GHz tuning range (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 647-650.

In this paper phase shift tuning of a 5.3 GHz quadrature LC oscillator is investigated. By varying the phase shift of the circuits that couple two LC oscillator stages, a 1.1 GHz tuning range is achieved. Dependency of tuning range and phase noise on the quality factor of the LC resonators is explored on the behavioral level. Expressions are given for the tuning range and an effective quality factor, as a function of the resonator quality, its phase shift and its resonance frequency. The oscillator is realized in a mainstream 30 GHz f/sub T/ BiCMOS process and dissipates 45 mW (nominal) with 2.7 V supply voltage. The dependency of the tuning range on the resonator quality is measured by varying the quality factor of a varactor incorporated in the LC resonators of the I/Q oscillator. Measured /spl Lscr/(2 MHz) is -108 dBc/Hz at 5.6 GHz.

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A multilayer active hybrid-ring using ground-slot coupling technique (2003 [RFIC])

S.C. Hui, B.-L. Ooi, M.S. Leong and P.S. Kooi. "A multilayer active hybrid-ring using ground-slot coupling technique (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 651-654.

A ground-slot coupling technique is applied to design a novel multilayer active hybrid-ring power divider. The prototype consists of three ground slots to couple signal between circuit layers, and two single-stage HEMT amplifiers to boost the coupled signal. It is tested in C-band with 40% -3 dB bandwidth. At 5 GHz center frequency, it has 8 dB small-signal gain and 10 dBm output P1 dB.

Abstracts

A packaged 2.3 GHz SiGe VCO with parallel-branch inductors (2003 [RFIC])

Ja-Yol Lee, Dongwoo Suh, Sang-Heung Lee, Seung-Yun Lee, Chan-Woo Park, Sang Hoon Kim, Kyu-Hwan Shim, Jin-Young Kang, Kyoung-Ik Cho and Seung Hyeub Oh. "A packaged 2.3 GHz SiGe VCO with parallel-branch inductors (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 655-658.

In this paper, a 2.3 GHz VCO with parallel-branch inductors was designed and fabricated using 0.8-/spl mu/m SiGe HBT process technology. Their Q-factors were higher than those of the conventional inductors. A good phase noise of -122 dBc/Hz was measured at 4 MHz offset frequency, and harmonics were suppressed by -28 dBc. The manufactured VCO core consumed 3.7 mA at 2 V supply voltage, and the VCO occupied 1.8 mm /spl times/ 1.2 mm chip areas.

Abstracts

A low power wideband 2.6 GHz CMOS injection-locked ring oscillator prescaler (2003 [RFIC])

R. Dehghani and S.M. Atarodi. "A low power wideband 2.6 GHz CMOS injection-locked ring oscillator prescaler (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 659-662.

A high speed and low power prescaler based on injection-locked ring oscillator is presented. The proposed prescaler uses an adaptive biasing to increase the locking range and to eliminate the sensitivity of the locking phenomena to temperature and process variation. The designed circuit can be used in a fractional-N frequency synthesizer. Prescaler operates properly in temperature range of -20/spl deg/C to +100/spl deg/C and input frequency range from 2.2 GHz to 2.6 GHz in all process corners while its maximum power dissipation is 2 mW at supply voltage of 1.5 V.

Abstracts

Gate oxide breakdown on low noise and power amplifier performance (2003 [RFIC])

Hong Yang, W. Smith and J.S. Yuan. "Gate oxide breakdown on low noise and power amplifier performance (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 663-666.

This paper, for the first time, studies the influence nMOSFET gate oxide breakdown (BD) has on the performance of CMOS low noise amplifiers (LNA) and power amplifiers (PA) using an equivalent RF circuit model. Cascode LNAs are found to be more reliable than common source LNAs in terms of gate oxide reliability. It is shown for a Class-E PA oxide breakdown effects lead to an increase in the switching transistor's "on" voltage, which, in turn leads to substantial decreases in the output power and drain efficiency.

Abstracts

A fully integrated, single-chip handset power amplifier in SiGe BiCMOS for W-CDMA applications (2003 [RFIC])

I. Rippke, J. Duster and K. Kornegay. "A fully integrated, single-chip handset power amplifier in SiGe BiCMOS for W-CDMA applications (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 667-670.

A fully integrated, single-chip power amplifier has been designed to meet the requirements of W-CDMA mobile handsets. The circuit was designed in IBM's 47 GHz f/sub T/ SiGe BiCMOS process with all passive components and matching circuits included on-chip. The design achieves 24 dBm output power with 30% PAE and excellent linearity. The power amplifier draws 42 mA of quiescent current from a 3.3 V source. The fabricated circuit occupies a die area of 1.8 mm /spl times/ 1.25 mm, offering at least 10/spl times/ improvement in chip/board area over current designs, allowing for increased levels of transmitter integration.

Abstracts

Ku-band low noise amplifier with using short-stub ESD protection (2003 [RFIC])

Chang-Kun Park, Min-Gun Kim, Chung-Han Kim and Songcheol Hong. "Ku-band low noise amplifier with using short-stub ESD protection (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 671-674.

A Ku-band ESD-protected low noise amplifier is designed using 0.15um pHEMT process. The input ESD protection is implemented with short-circuited stub. Since a short-circuited stub is used as an ESD protection as well as a matching element, there are no additional components and parasitic components associated with ESD protection. This endures 4400V (ESD tester limit) HBM test signal. The LNA has the noise figure of 1.24 dB and 24.5 dB gain at the frequency of 11.7-12.75 GHz.

Abstracts

A SiGe active sub-harmonic front-end for 5-6 GHz direct-conversion receiver applications (2003 [RFIC])

R. Svitek and S. Raman. "A SiGe active sub-harmonic front-end for 5-6 GHz direct-conversion receiver applications (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 675-678.

This paper describes the design and measurement of a fabricated SiGe RF front-end for use in direct-conversion receivers for the Unlicensed National Information Infrastructure (U-NII) bands. The front-end is composed of an LNA, I and Q /spl times/2 sub-harmonic mixers (SHMs), and an LO conditioning chain. The receiver is completely differential and is designed for operation from a 3.3 V supply. The current consumption is /spl sim/6 mA for the LNA and /spl sim/5 mA for each mixer. The I/Q mixer pair alone (front-end without LNA) demonstrates /spl sim/8-10 dB gain and an IIP2 of /spl sim/+29 dBm in the lower U-NII bands. Measured receiver performance (with LNA) shows 18-20 dB conversion gain in the lower two U-NII bands, -16 dBm input compression point, and >10 dB return loss across all three U-NII bands.

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High-speed, spurious-free sequential phase frequency detector and dual-modulus prescalers for RF frequency synthesis (2003 [RFIC])

M. Sie, G. Cibiel, E. Tournier, R. Plana and J. Graffeuil. "High-speed, spurious-free sequential phase frequency detector and dual-modulus prescalers for RF frequency synthesis (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 679-682.

Original integrated 22-GHz dual-modulus static frequency dividers (4/5) realized in a Silicon Germanium BiCMOS technology dedicated for high volume production are presented. They operate at low bias voltage (3.3 V) and provide balanced output signals on 50 ohm loads. An optimized digital tri-state phase/frequency detector (PFD) is also reported. A new proposed architecture and original logic approach translate into excellent spurious immunity and high-speed detection: the proposed structure has the advantage to cancel the spurious which are present whatever the state of the comparator. Such features make these versatile circuits blocks essential for low noise, high-frequency PLL systems.

Abstracts

5-6 GHz SiGe VCO with tunable polyphase output for analog image rejection and I/Q mismatch compensation (2003 [RFIC])

D.I. Sanderson and S. Raman. "5-6 GHz SiGe VCO with tunable polyphase output for analog image rejection and I/Q mismatch compensation (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 683-686.

Image rejection and demodulation quality are adversely affected by in-phase and quadrature (I/Q) channel phase mismatch. This paper presents a 5-6 GHz Silicon Germanium (SiGe) voltage controlled oscillator (VCO) and integrated polyphase filter with I/Q phase imbalance compensation. The design of the VCO is discussed, including considerations for high inductor quality factor (Q) and low VCO phase noise. From a 2.5 V supply, the VCO core consumes 3 mA. The simulated phase noise at 1 MHz from the carrier is -114.6 dBc/Hz. The I/Q imbalance of the polyphase splitter is tunable by means of series output varactors. The polyphase network design can compensate for /spl plusmn/4/spl deg/ I/Q phase imbalance, which could provide approximately 15 dB improvement in image rejection in a Weaver architecture receiver.

Abstracts

A high power DPDT MMIC switch for broadband wireless applications (2003 [RFIC])

Zeji Gu, D. Johnson, S. Belletete and D. Fryklund. "A high power DPDT MMIC switch for broadband wireless applications (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 687-690.

A new type of dual-pole double-throw (DPDT) antenna switch IC for broadband wireless applications has been developed. The IC exhibits a low insertion loss of 0.9 dB up to 5.0 GHz and 1.1 dB at 6 GHz, high power handling with P1dB about 34.5 dBm with a control voltage of 0/3 V and high linearity with input IP3 about 53 dBm.

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Single-ended amplifier that substantially improves PAE and ultra-broadband performance (2003 [RFIC])

B.S. Virdee and A.S. Virdee. "Single-ended amplifier that substantially improves PAE and ultra-broadband performance (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 691-693.

A single-ended amplifier with a simple reactive matching is shown to provide stable operation with substantially improved amplifier power-added efficiency (PAE) (>30%) across an ultra-broadband frequency range (2-18 GHz). The amplifier employs a Double Pseudomorphic High Electron Mobility Transistor (DPHEMT) power device.

Abstracts

A pseudo-concurrent 0.18 /spl mu/m multi-band CMOS LNA (2003 [RFIC])

S.H.M. Lavasani, B. Chaudhuri and S. Kiaei. "A pseudo-concurrent 0.18 /spl mu/m multi-band CMOS LNA (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 695-698.

A novel multi-band LNA, which can switch between standards GSM800 MHz/GSM1.8 GHz or GSM800 MHz/WCDMA2.1 GHz, is presented. The LNA provides 22.4 dB gain at 800 MHz and 14.1 dB at 1.8 GHz. The device selects between GSM1.8 GHz/WCDMA2.1 GHz by means of a simple PMOS switch. The LNA is fabricated in 0.18 /spl mu/m technology using only CMOS transistors. Post-layout simulation results indicate a noise figure below 1.6 dB in all bands while drawing 8.5 mA from a 1.8 V power supply. To save die area, the input matching circuit is partially off-chip.

Abstracts

A novel IP3 boosting technique using feedforward distortion cancellation method for 5 GHz CMOS LNA (2003 [RFIC])

Min Lin, Yongming Li and Hongyi Chen. "A novel IP3 boosting technique using feedforward distortion cancellation method for 5 GHz CMOS LNA (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 699-702.

Low noise amplifier (LNA) in many wireless and wireline communication systems must have low noise, sufficient gain and high linearity performance. This paper presents a novel IP3 boosting technique using Feedforward Distortion Cancellation (FDC) method. Through this technique, the IIP3 of LNA can be boosted from +5 dBm, which is reported in most public literature to date, to +21 dBm, which is firstly reported here, without any noise and gain degradation. In addition, noise figure can be reduced about 0.4 dB and gain increased 0.4 dB due to the additional gain path.

Abstracts

Advanced design of broadband distributed amplifier using a SiGe BiCMOS technology (2003 [RFIC])

Gye-An Lee, Hyunseok Ko and F. De Flaviis. "Advanced design of broadband distributed amplifier using a SiGe BiCMOS technology (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 703-706.

In this paper, we present the design of an integrated distributed amplifier for optical communication applications using SiGe BiCMOS technology. The design of some of the passive devices of the circuit has been achieved from full-wave electromagnetic simulation and novel equivalent circuit. We considered discontinuity effects to reduce parasitics at high frequency. The designed SiGe BiCMOS exhibit an available power gain of 7 dB from 0.5 GHz to 22 GHz. The accurate electromagnetic consideration can be applied to System-On-Chip application in order to reduce parasitics.

Abstracts

Cancellation of third order intermodulation currents in a two-stage amplifier topology (2003 [RFIC])

S. Dardenne, C. Duvanaud, F. Robin, F. Huin, J.-M. Paillot and R. Allam. "Cancellation of third order intermodulation currents in a two-stage amplifier topology (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 707-710.

This paper gives a detailed description of a linearization technique using a two-stage amplifier. The first stage is used to generate third order intermodulation products (IMD3), which will be added to the input signal of the second stage In order to cancel the IMD3 at its output. The technique effectively improves the linearity of the system. To investigate the effect of IMD3 injection, analytical calculations of the drain currents for the fundamental frequencies f/sub 1/ and f/sub 2/ and for the third order intermodulation currents 2f/sub 1/-f/sub 2/ and 2f/sub 2/-f/sub 1/ are established without and with injection of intermodulation components at the input of the power stage. To evaluate the improvement provided by the proposed technique, a two-tone test at carrier frequency of 900 MHz is performed with a MESFET. The test procedure is described and measurements show a great improvement of IMD3. A carrier to third intermodulation ratio C/I3 of 55 dBc was achieved for a 19 dBm output power, compared with 25 dBc achieved without the first stage.

Abstracts

Neutralized differential amplifiers using mixed-mode S-parameters (2003 [RFIC])

B. Stengel and B. Thompson. "Neutralized differential amplifiers using mixed-mode S-parameters (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 711-714.

Distributed amplifiers offer very broadband operation, with the promise of a single all-band wireless solution. However, there are a number of distributed amplifier specific issues that have blocked practical implementation in a portable product. One of these is potential instability exacerbated by 20:1 antenna load impedance variation over a very broad frequency range of interest. This paper provides a neutralized differential amplifier implementation supported by mixed-mode S-parameters technology that offers a broadband stability solution for distributed amplifier application. Measurement results of a single section differential amplifier are included using Motorola's CDR1 BiCMOS technology.

Abstracts

Accurate power control technique for handset PA modules with integrated directional couplers (2003 [RFIC])

J. Madic, P. Bretchko, Shuyun Zhang, R. Shumovich and R. McMorrow. "Accurate power control technique for handset PA modules with integrated directional couplers (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 715-718.

This paper describes an accurate power control technique for handset PA modules (PAMs) with internal closed loop control. Our design approach is the first to include two integrated directional couplers in a handset RF PAM. It significantly improves power control accuracy over load variations. Directivity of the integrated couplers is also proved to be critical for establishing accurate power control over phase variations at high values of load VSWR. With our unique design we achieved directivity as high as 14.3 dB. When the load VSWR is equal to 6:1, we demonstrated that our design reduces output power variation to +/-1.2 dB. Under the same conditions, we measured two other major commercial modules that are not utilizing integrated directional couplers. They exhibited an output power variation of 5.5 dB.

Abstracts

A fully integrated 5.2 GHz GaInP/GaAs HBT upconversion micromixer with output LC current combiner and oscillator (2003 [RFIC])

C.C. Meng, S.K. Hsu, A.S. Peng, S.Y. Wen and G.W. Huang. "A fully integrated 5.2 GHz GaInP/GaAs HBT upconversion micromixer with output LC current combiner and oscillator (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 719-722.

A 5.2 GHz upconversion micromixer with output LC current combiner and integrated oscillator is demonstrated in 2 /spl mu/m GaInP/GaAs HBT technology in this paper. Micromixer has a single-ended input and a passive LC current combiner is used to convert mixer differential output into a single-ended output. A cross-coupled LC oscillator with oscillation frequency of 4.3 GHz and a cascode buffer amplifier are also integrated in the same chip. The die size is 1 mm/sup 2/. The fully integrated upconversion micromixer has conversion gain of -2.5 dB, OP/sub 1dB/ of -12.5 dBm and 40 dB RF-IF isolation when input IF=0.9 GHz and thus output RF=5.2 GHz. The IF input return loss is better than 25 dB for frequencies up to 6 GHz while RF output return loss is better than 12 dB for frequencies from 5.15 GHz to 5.35 GHz.

Abstracts

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"Index of Authors (2003 [RFIC])." 2003 Radio Frequency Integrated Circuits (RFIC) Symposium 3.1 (2003 [RFIC]): 723-727.

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Information for Authors (Dec. 2003 [J-LT])

"Information for Authors (Dec. 2003 [J-LT])." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 0_5-0_5.

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Guest Editorial: Microwave Photonics (Dec. 2003 [J-LT])

A.J. Seeds, C.H. Lee, E.E. Funk and M. Naganuma. "Guest Editorial: Microwave Photonics (Dec. 2003 [J-LT])." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 2959-2961.

Abstracts

Microwave photonic direct-sequence transmitter and heterodyne correlation receiver

E.E. Funk and M. Bashkansky. "Microwave photonic direct-sequence transmitter and heterodyne correlation receiver." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 2962-2967.

This paper proposes and demonstrates a new architecture for the transmission, heterodyne reception, and correlation of direct-sequence (DS) signals encoded onto an optical carrier. The approach is practical for pseudo-noise in-modulated laser radar and free-space optical-code-division multiple-access communications. Although the local oscillator is free running, we show that the received signal is free from laser phase noise. Furthermore, by applying DS coding to both the transmitted signal and the local oscillator, the delay required for correlation can be realized via a combination of electrical and optical means.

Abstracts

Sampled-grating DBR laser-based analog optical transmitters

L.A. Johansson, J.T. Getty, Y.A. Akulova, G.A. Fish and L.A. Coldren. "Sampled-grating DBR laser-based analog optical transmitters." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 2968-2976.

Sampled-grating distributed Bragg grating (SGDBR) laser-based widely tunable optical transmitters are investigated for application in high-performance analog links. More than 45 nm tuning range, 40 dB sidemode suppression ratio, and peak relative intensity noise below -153 dB/Hz is measured. SGDBR lasers integrated with semiconductor optical amplifiers and electroabsorption modulators (EAMs) are characterized with spurious free dynamic range of 125-127 dB/spl middot/Hz/sup 4/5/ over the wavelength tuning range. It is also shown how the modulation response of the EAM is affected by the optical power to limit the performance of the analog transmitter.

Abstracts

Circuit model for multiple transverse mode vertical-cavity surface-emitting lasers

T. Marozsak. "Circuit model for multiple transverse mode vertical-cavity surface-emitting lasers." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 2977-2982.

The modeling of multimode operation in vertical-cavity surface-emitting laser diodes is difficult because spatial interaction between modes makes the problem very complex. In this paper, a novel circuit model is presented for such lasers, which is based on spatially dependent rate equations, and thus spatial hole burning and carrier diffusion are taken into account. These effects are studied in direct-modulated microwave vertical-cavity surface-emitting lasers by showing linear and nonlinear simulation examples in both time and frequency domains.

Abstracts

Noise suppression of Nd:YVO/sub 4/ solid-state lasers for telecommunication applications

M. Csornyei, T. Berceli and P.R. Herczfeld. "Noise suppression of Nd:YVO/sub 4/ solid-state lasers for telecommunication applications." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 2983-2988.

This paper is intended to elaborate on the investigation and suppression of the relative intensity noise of a diode pumped Nd:YVO/sub 4/ microchip laser. In addition to noise suppression at the relaxation oscillations, noise analysis is also reported. For these investigations a very simple, rate-equation-based model of the laser transfer function was used.

Multisectional modeling of high-speed electrooptic modulators integrated in a microwave circuit CAD environment

M. Pirola, F. Cappelluti, G. Giarola and G. Ghione. "Multisectional modeling of high-speed electrooptic modulators integrated in a microwave circuit CAD environment." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 2989-2996.

We present a new multisectional model for high-speed electrooptic modulators, fully integrated within the framework of a microwave circuit computer-aided design (CAD) suite (MWOFFICE). Starting from geometrical and layout parameters, the model allows both simple (traveling-wave) and complex (phase reversal, periodically loaded) structures to be assembled, analyzed, and optimized from the standpoint of the electrical and electrooptic response (including chirp effects) both in small-signal (analog) and in large-signal (digital) operation, exploiting standard simulator tools. At no additional effort, parasitic and passive elements (such as optical or electrical delay paths) can be directly included in the modulator schematic, and the effect of transitions and package parasitics can be readily accounted for at a circuit level. Moreover, model integration within a circuit CAD suite enables one to seamlessly perform driver and modulator design and optimization within the same monolithic or hybrid circuit environment. Comparisons with experimental and literature data and design examples are presented to validate the approach and stress its potential in the design of high-speed electrooptic modulators.

Abstracts

Lightwave switching in semiconductor microring devices by free carrier injection

T.A. Ibrahim, W. Cao, Y. Kim, J. Li, J. Goldhar, P.-T. Ho and C.H. Lee. "Lightwave switching in semiconductor microring devices by free carrier injection." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 2997-3003.

Using a conventional microwave photonic technique, we demonstrate lightwave switching in laterally coupled GaAs-AlGaAs microring resonators by free carrier injection. The ring waveguide is optically pumped just above its bandgap energy, which results in a temporal tuning of the microring resonant wavelengths by the refractive index change due to the induced free carriers. Both the transmission and the phase function of the resonators are investigated and used to demonstrate all-optical switching. The switching time, limited by surface recombination of carriers, is 20 ps. A switching energy of a few picojoules shifts the microring resonance by 1.2 nm.

Abstracts

Analysis and characterization of traveling-wave electrode in electroabsorption modulator for radio-on-fiber application

Jiyoun Lim, Young-Shik Kang, Kwang-Seong Choi, Jong-Hyun Lee, Sung-Bock Kim and Jeha Kim. "Analysis and characterization of traveling-wave electrode in electroabsorption modulator for radio-on-fiber application." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3004-3010.

Comparing with a lumped electroabsorption modulator (EAM), we show the merits of a long EAM with traveling-wave electrode with high radio-frequency (RF) gain that could be used in high-frequency analog application. By terminating the RF output port with the characteristic impedance of 30 /spl Omega/, the device exhibited a large enhancement of 6 dB above 10 GHz in the electrical-to-optical response and a wide fractional bandwidth as estimated from simulation. In addition, an input impedance matching circuit of stub embedded on the device chip was found to be very effective for improving RF characteristics in the narrow band of frequency.

Abstracts

Analog characterization of low-voltage MQW traveling-wave electroabsorption modulators

Bin Liu, Jongin Shim, Yi-Jen Chiu, A. Keating, J. Piprek and J.E. Bowers. "Analog characterization of low-voltage MQW traveling-wave electroabsorption modulators." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3011-3019.

In this paper, high-speed traveling-wave electroabsorption modulators (TW-EAMs) with strain-compensated InGaAsP multiple quantum wells as the absorption region for analog optical links have been developed. A record-high slope efficiency of 4/V, which is equivalent to a Mach-Zehnder modulator with a V/sub /spl pi// of 0.37 V and a high extinction ratio of > 30 dB/V have been measured. A detailed study of the nonlinearity and the spurious-free dynamic range (SFDR) is presented. By optimizing the bias voltage and the input optical power, the SFDR can be improved by 10-30 dB. After minimizing the third-order distortion, an SFDR as high as 128 dB-Hz/sup 4/5/ is achieved at 10 GHz. A simple link measurement was made using this EAM and an erbium-doped fiber amplifier and a 50-/spl Omega/ terminated photodetector. At 10 GHz, a link gain of 1 dB is achieved at a detected photocurrent of 7.6 mA with higher gains at lower frequencies. The dependence of link gains on bias voltage, input optical, and radio frequency powers are investigated in detail.

Abstracts

Photonically assisted generation of arbitrary millimeter-wave and microwave electromagnetic waveforms via direct space-to-time optical pulse shaping

J.D. McKinney, Dongsun Seo, D.E. Leaird and A.M. Weiner. "Photonically assisted generation of arbitrary millimeter-wave and microwave electromagnetic waveforms via direct space-to-time optical pulse shaping." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3020-3028.

We present our work in optical generation of arbitrarily shaped millimeter-wave electromagnetic waveforms. Through a novel technique, which utilizes tailored optical pulse sequences from a direct space-to-time pulse shaper to drive a high-speed optical-to-electrical converter, we generate amplitude-equalized, arbitrarily phase- and frequency-modulated waveforms at center frequencies approaching 50 GHz. In addition, we demonstrate the extension of this technique to generation of arbitrary electromagnetic waveforms in the low-gigahertz range, through dispersive stretching of the pulse shaper output. In the dispersively stretched configuration, the duration of our electrical waveforms is tuned through simple alignment changes in our pulse-shaping apparatus.

Abstracts

Crosstalk, noise, and stability analysis of DWDM channels generated by injection locking techniques

B. Cai, L.A. Johansson, C.F.C. Silva, S. Bennett and A.J. Seeds. "Crosstalk, noise, and stability analysis of DWDM channels generated by injection locking techniques." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3029-3036.

In this paper, theory and experimental results for wavelength-division-multiplexing (WDM) channel generation, formed by multi-line optical injection locking, is presented. A small-signal model to deal with wide-spectral-band optical injection problems has been developed. Based on this model, the crosstalk noise of an injection-locked laser in a coherent WDM system is assessed analytically. Experimental results on locking range, stability, and crosstalk noise confirms the modeling results, which indicate that stable and low-noise channels can be generated by this approach.

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Abstracts

Coherence of pulsed microwave signals carried by two-frequency solid-state lasers

Ngoc Diep Lai, F. Bretenaker and M. Brunel. "Coherence of pulsed microwave signals carried by two-frequency solid-state lasers." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3037-3042.

This paper studies the coherence of the radio-frequency (RF) beat note between the two frequencies emitted by a two-eigenstate solid-state laser operating in pulsed regime. Depending on how the pulsed operation regime is obtained-passive Q switching using a saturable absorber or resonant amplitude modulation using pump-power modulation-we show theoretically and experimentally that the RF beat note loses or maintains its coherence from pulse to pulse. Namely, RF coherence is shown to be lost when the laser intensity vanishes between pulses, while it can be maintained if a slight amount of intensity remains inside the cavity between pulses. We give experimental demonstrations of these results for both Nd:YAG and Er-Yb:glass two-frequency pulsed lasers, in connection with applications to lidar-radar systems.

Abstracts

Optoelectronic millimeter-wave synthesis using an optical frequency comb Generator, optically injection locked lasers, and a unitraveling-carrier photodiode

S. Fukushima, C.F.C. Silva, Y. Muramoto and A.J. Seeds. "Optoelectronic millimeter-wave synthesis using an optical frequency comb Generator, optically injection locked lasers, and a unitraveling-carrier photodiode." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3043-3051.

This paper demonstrates multi-octave, milliwatt-class millimeter-wave synthesis using three key components: an optical frequency comb generator, an optical injection-locking filter, and a unitraveling-carrier photodiode. The experimental system synthesizes 10-110-GHz millimeter-wave signals with 3-dBm output at 60 GHz. Phase noise results are also presented.

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Stabilizing an optoelectronic microwave oscillator with photonic filters

D. Strekalov, D. Aveline, Nan Yu, R. Thompson, A.B. Matsko and L. Maleki. "Stabilizing an optoelectronic microwave oscillator with photonic filters." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3052-3061.

This paper compares methods of active stabilization of an optoelectronic microwave oscillator (OEO) based on insertion of a source of optical group delay into an OEO loop. The performance of an OEO stabilized with either a high-Q optical cavity or an atomic cell is analyzed. We show that the elements play a role of narrow-band microwave filters improving an OEO stability. An atomic cell also allows for locking the oscillation frequency to particular atomic clock transitions. This reports a proof-of-principle experiment on an OEO stabilization using the effect of electromagnetically induced transparency in a hot rubidium atomic vapor cell.

Abstracts

Ultra-wide-band traveling-wave photodetectors for photonic local oscillators

A. Stohr, A. Malcoci, A. Sauerwald, I.C. Mayorga, R. Gusten and D.S. Jager. "Ultra-wide-band traveling-wave photodetectors for photonic local oscillators." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3062-3070.

This paper reviews recent advances in the development of high-speed 1.55-/spl mu/m traveling-wave p-i-n photodetectors (TWPD) for photonic millimeter-wave and submillimeter-wave local oscillators. We first discuss the basic physics and performances of high-speed 1.55-/spl mu/m TWPD. Next, we present a frequency-domain optical-heterodyne measurement technique for ultra-wide-band characterization of the TWPD and photonic transmitter modules within the frequency range from almost dc up to more than 1 THz. We further demonstrate ultra-wide-band (0.02-0.7 THz) photonic transmitter modules consisting of a high-speed TWPD coupled to a broad-band bow-tie antenna as well as a narrow-band 0.46-THz photonic transmitter module producing output power levels sufficient to operate a superconductor-insulator-superconductor (SIS) astronomical receiver under optimum conditions. Finally, we will report on ultra-wide-band (0.06-1 THz) photonic transmitter modules consisting of high-speed TWPDs coupled to various rectangular metallic waveguides (WR10, WR8, and WR5).

Abstracts

Backward-wave cancellation in distributed traveling-wave photodetectors

S. Murthy, Seong-Jin Kim, T. Jung, Zhi-Zhi Wang, Wei Hsin, T. Itoh and M.C. Wu. "Backward-wave cancellation in distributed traveling-wave photodetectors." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3071-3077.

This paper describes the design, fabrication, and measurement of backward-wave-cancelled distributed traveling-wave photodetectors. One of the fundamental issues in traveling-wave photodetectors is the generation of backward-waves, which reduces bandwidth or, in the case of matched input termination, reduces their radio-frequency (RF) efficiencies by up to 6 dB. We report a traveling-wave photodetector with multisection coplanar strip transmission lines. The reflections at the discontinuities of the transmission line cancel the backward propagating waves exactly. The bandwidth reduction due to backward-waves is eliminated without sacrificing the RF efficiency. We have demonstrated a broadband backward-wave-cancelled traveling-wave photodetector with three discrete photodiodes. The photodetector is realized in InGaAs/InGaAsP/InP material systems and operates at 1.55 /spl mu/m. A 3-dB bandwidth of 38 GHz and a linear RF output of -1 dBm at 40 GHz have been achieved. The experimental results agree very well with the theoretical calculations.

Abstracts

A new high-efficiency optical-microwave mixing approach

G. Jaro and T. Berceli. "A new high-efficiency optical-microwave mixing approach." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3078-3084.

High sensitivity reception is a crucial problem of fiber radio links. A significant improvement is obtained by applying a new approach called optical-microwave double mixing. The new approach can provide as much as 30 dB of higher mixing product in a narrow-band compared with the direct detection applying only additional passive components. Detailed investigation of the optical-microwave double-mixing method is shown to get optimum adjustment for specific applications. The new method is advantageously used for the reception of subcarrier-multiplexed optical signals.

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Photonic time-stretched analog-to-digital converter: fundamental concepts and practical considerations

Y. Han and B. Jalali. "Photonic time-stretched analog-to-digital converter: fundamental concepts and practical considerations." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3085-3103.

Ultra-wide-band analog-to-digital (A/D) conversion is one of the most critical problems faced in communication, instrumentation, and radar systems. This paper presents a comprehensive analysis of the recently proposed time-stretched A/D converter. By reducing the signal bandwidth prior to digitization, this technique offers revolutionary enhancements in the performance of electronic converters. The paper starts with a fundamental-physics analysis of the time-wavelength transformation and the implication of time dilation on the signal-to-noise ratio. A detailed mathematical description of the time-stretch process is then constructed. It elucidates the influence of linear and nonlinear optical dispersion on the fidelity of the electrical signal. Design issues of a single-sideband time-stretch system, as they relate to broad-band operation, are examined. Problems arising from the nonuniform optical power spectral density are explained, and two methods for overcoming them are described. As proof of the concept, 120 GSa/s real-time digitization of a 20-GHz signal is demonstrated. Finally, design issues and performance features of a continuous-time time-stretch system are discussed.

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Photonic A/D conversion using low-temperature-grown GaAs MSM switches integrated with Si-CMOS

R. Urata, L.Y. Nathawad, R. Takahashi, Kai Ma, D.A.B. Miller, B.A. Wooley and J.S. Harris, Jr.. "Photonic A/D conversion using low-temperature-grown GaAs MSM switches integrated with Si-CMOS." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3104-3115.

By linking the unique capabilities of photonic devices with the signal processing power of electronics, photonically sampled analog-to-digital (A/D) conversion systems have demonstrated the potential for superior performance over all-electrical A/D conversion systems. We adopt a photonic A/D conversion scheme using low-temperature (LT)-grown GaAs metal-semiconductor-metal (MSM) photoconductive switches integrated with Si-CMOS A/D converters. The large bandwidth of the LT GaAs switches and the low timing jitter and short width of mode-locked laser pulses are combined to accurately sample input frequencies up to several tens of gigahertz. CMOS A/D converters perform back-end digitization, and time-interleaving is used to increase the total sampling rate of the system. In this paper, we outline the development of this system, from optimization of the LT GaAs material, speed and responsivity measurements of the switches, bandwidth and linearity characterization of the first-stage optoelectronic sample-and-hold, to integration of the switches with CMOS chips. As a final proof-of-principle demonstration, a two-channel system was fabricated with LT GaAs MSM switches flip-chip bonded to CMOS A/D converters. When operated at an aggregate sampling rate of 160 megasamples/s, the prototype system exhibits /spl sim/3.5 effective number of bits (ENOB) of resolution for input signals up to 40 GHz.

Abstracts

Optical down-sampling of wide-band microwave signals

P.W. Juodawlkis, J.J. Hargreaves, R.D. Younger, G.W. Titi and J.C. Twichell. "Optical down-sampling of wide-band microwave signals." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3116-3124.

Phase-encoded optical sampling allows radio-frequency and microwave signals to be directly down-converted and digitized with high linearity and greater than 60-dB (10-effective-bit) signal-to-noise ratio. Wide-band electrical signals can be processed using relatively low optical sampling rates provided that the instantaneous signal bandwidth is less than the Nyquist sampling bandwidth. We demonstrate the capabilities of this technique by using a 60-MS/s system to down-sample two different FM chirp signals: 1) a baseband (0-250 MHz) linear-chirp waveform and 2) a nonlinear-chirp waveform having a 10-GHz center frequency and a frequency excursion of 1 GHz. We characterize the frequency response of the technique and quantify the analog bandwidth limitation due to the optical pulse width. The 3-dB bandwidth imposed by a 30-ps sampling pulse is shown to be 10.4 GHz. We also investigate the impact of the pulse width on the linearity of the phase-encoded optical sampling technique when it is used to sample high-frequency signals.

Abstracts

Microwave V-I transmission matrix formalism for the analysis of photonic circuits: application to fiber Bragg gratings

J. Capmany, M.A. Muriel, S. Sales, J.J. Rubio and D. Pastor. "Microwave V-I transmission matrix formalism for the analysis of photonic circuits: application to fiber Bragg gratings." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3125-3134.

We propose the use of V-I matrices well known in microwave engineering to the analysis of photonic devices, especially those based on multilayer dielectrics. As an application we present a novel fast effective index method for the analysis of fiber Bragg gratings based on the use of V-I transmission matrices. It combines the exactitude of traditional effective index methods and the speed of coupled-mode methods.

Abstracts

Microwave photonic photorefractive smart filters

E. Vourc'h and D. Herve. "Microwave photonic photorefractive smart filters." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3135-3143.

This paper reviews our past and current work on microwave photonic photorefractive smart filters (MWP-PSFs). These devices rely on the generation of dynamic Bragg gratings inside InP:Fe 1.55-/spl mu/m photorefractive crystals. First, we concentrate on the applications of MWP-PSFs to optical measurements. We report a 15-pm resolution optical spectrum analyzer without mechanical tuning and a 0.2-nm passive wavelength spaced controller. Secondly, we describe the extension of the MWP-PSF concept to the radio modulation frequency control of fiber-wireless systems. Then, we outline the recent proposal of a wavelength self-tunable single-sideband (WST-SSB) filter in order to compensate for the effects of fiber chromatic dispersion in fiber-radio systems. The performance of the latter device is extensively examined in a fiber-radio 140-Mbit/s data transmission employing binary phase-shift keying modulation at 16 GHz without intermediate frequency. Finally, possible future developments such as the InGaAsP integration of MWP-PSFs and the use of a new photorefractive material are discussed.

Abstracts

High-resolution photonics-based interference suppression filter with wide passband

E.H.W. Chan and R.A. Minasian. "High-resolution photonics-based interference suppression filter with wide passband." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3144-3149.

A new topology for a photonic signal processor, which overcomes the basic recursive frequency response problem that limits the passband range, is presented. The structure is based on a new multiple-wavelength offset-cavity structure that is cascaded with a series of unbalanced delay line structures. This not only can synthesize a very narrow notch response with good shape factor but also permits a multifold extension of the free spectral range (FSR) and passband width. Results on the interference mitigation filter demonstrate a stopband of 1% of center frequency and a fourfold increase in the FSR and passband width, while also having a very small shape factor, in excellent agreement with predictions.

Abstracts

Harmonic suppressed photonic microwave filter

B. Vidal, V. Polo, J.L. Corral and J. Marti. "Harmonic suppressed photonic microwave filter." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3150-3154.

This paper proposes a photonic microwave filter based on wavelength-division multiplexing (WDM) of multiple optical carriers and dispersive media. Harmonic suppression is obtained using nonuniform tap spacing to extend the filter free spectral range by a Vernier effect. The experimental results presented are in excellent agreement with theory.

Abstracts

RF photonics signal processing in subcarrier multiplexed optical-label switching communication systems

Zuqing Zhu, V.J. Hernandez, Min Yong Jeon, Jing Cao, Zhong Pan and S.J.B. Yoo. "RF photonics signal processing in subcarrier multiplexed optical-label switching communication systems." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3155-3166.

This paper provides theoretical and experimental studies of radio-frequency (RF) photonics processing techniques applicable in subcarrier-multiplexed optical-label switching (OLS) communications systems. The paper provides an overview of various label-coding technologies and introduces subcarrier multiplexing (SCM) as an attractive technology for OLS networks. All-optical-label extraction using optical filters, such as fiber Bragg gratings (FBGs), provides an effective means to demodulate the SCM labels without inducing RF fading effects caused by fiber dispersion. Furthermore, the role of fiber nonlinearities in the RF fading effects are theoretically and experimentally verified. The all-optical label extraction and rewriting processes constitute optical-label swapping, wherein 2R data regeneration can take place. Scalable and cascadable OLS systems are feasible by applying viable RF photonics technologies in all-optical-label processing.

Abstracts

Optical heterodyne detection technique for densely multiplexed millimeter-wave-band radio-on-fiber systems

T. Kuri and K. Kitayama. "Optical heterodyne detection technique for densely multiplexed millimeter-wave-band radio-on-fiber systems." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3167-3179.

Even in millimeter-wave-band (mm-wave-band) radio-on-fiber (ROF) systems, wavelength-division multiplexing (WDM) combined with subcarrier multiplexing (SCM) is a practical and attractive way to increase the channel capacity in existing optical-frequency-interleaved fibers. In this paper, we propose a channel selection scheme for interleaved dense WDM/SCM mm-wave-band ROF signals that use optical heterodyne detection with dual-mode local light. The principle underlying this scheme is explained theoretically, and channel selection of the DWDM/SCM ROF signal after transmission over a 25-km-long standard single-mode optical fiber has been experimentally demonstrated.

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Abstracts

Adaptive CMOS predistortion linearizer for fiber-optic links

R. Sadhwani and B. Jalali. "Adaptive CMOS predistortion linearizer for fiber-optic links." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3180-3193.

Nonlinearity in the electrical-to-optical conversion limits the dynamic range for transmitting analog and multilevel signals over fiber-optic channels. We describe a complementary metal-oxide-semiconductor (CMOS) predistortion linearizer that extends the dynamic range of both direct and externally modulated links. The linearizer achieves 13-24-dB suppression for both second- and third-order distortions.

Abstracts

Simultaneous three-band modulation and fiber-optic transmission of 2.5-Gb/s baseband, microwave-, and 60-GHz-band signals on a single wavelength (Dec. 2003 [J-LT])

K. Ikeda, T. Kuri and K. Kitayama. "Simultaneous three-band modulation and fiber-optic transmission of 2.5-Gb/s baseband, microwave-, and 60-GHz-band signals on a single wavelength (Dec. 2003 [J-LT])." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3194-3202.

Simultaneous modulation of 2.5-Gb/s baseband, microwave-band, and 59.6-GHz 155.52-Mb/s differential phase-shift keying signals on a single wavelength, using a single 60-GHz-band electroabsorption modulator (EAM), and fiber-optic transmission over a 40-km-long dispersion-shifted fiber (DSF) was experimentally demonstrated. The optimum operating conditions for three-band modulation and transmission were theoretically investigated. Degradation due to the nonlinearity of the EAM for the millimeter-wave signal is discussed theoretically. The fading problem due to the fiber dispersion of the standard single-mode fiber and the DSF was also investigated.

Abstracts

BER improvement effect of optical delay insertion in ROF ubiquitous antenna architecture for wireless CDMA system

H. Ohtsuki, K. Tsukamoto and S. Komaki. "BER improvement effect of optical delay insertion in ROF ubiquitous antenna architecture for wireless CDMA system." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3203-3208.

This paper proposes an application of optical delay insertion to a radio-on-fiber ubiquitous antenna architecture for the wireless code-division multiple-access system. The proposed system separates each component of independent signals passing through the multipath in radio and optical links even though a mobile terminal exists anywhere in the service area, so the macrodiversity effect is obtained all over the area. As a result, bit error rate performance is improved by setting up the delay time difference between each optical link and the number of taps in the RAKE receiver appropriately.

Abstracts

Direct optical switching code-division multiple-access system for fiber-optic radio highway networks

K. Tsukamoto, T. Higashino, T. Nakanishi and S. Komaki. "Direct optical switching code-division multiple-access system for fiber-optic radio highway networks." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3209-3220.

Recently, microwave photonics techniques have significantly progressed to realize a new type of communication system enhancing the synergetic effect of wireless easy access and photonic broadbandness. This paper describes the concept of radio highway networks configured by radio on fiber links, which are transparent for various types of radio formats. Also as an effective candidate for a multiple-access method of radio signal into the radio highway network, this paper reports direct optical switching code-division multiple-access system and shows its performance theoretically and experimentally.

Abstracts

Optical subcarrier label swapping by semiconductor optical amplifiers

E. Udvary and T. Berceli. "Optical subcarrier label swapping by semiconductor optical amplifiers." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3221-3225.

The semiconductor optical amplifier (SOA) can be used as an efficient high-speed modulator. This paper presents optical subcarrier multiplexed label swapping/reinsertion utilizing this device associated to the wavelength converter block in packet-switched all-optical networks. For that purpose, the modulation response and nonlinear behavior of SOAs are analyzed and experimentally demonstrated.

Abstracts

Distortion in angle-modulated links induced by ripple in fiber-Bragg-grating reflectance and delay characteristics

T.G. Ulmer. "Distortion in angle-modulated links induced by ripple in fiber-Bragg-grating reflectance and delay characteristics." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3226-3236.

Ripple in the reflectance and delay characteristics of a linearly chirped fiber Bragg grating is shown to produce significant distortion in a wide-band angle-modulated fiber-optic link. Experimental results for a 7-GHz 39.4-km link where dispersion is compensated with a linearly chirped fiber Bragg grating show that the residual ripple in both the reflectance and delay contributes to harmonic and intermodulation distortion. Numerical modeling shows that the distortion is dominated by the random component of the delay ripple. The distortion is further quantified as a function of the ripple, the modulation index, and the modulation frequency.

Abstracts

Toward terabit-per-second capacities over multimode fiber links using SCM/WDM techniques

E.J. Tyler, P. Kourtessis, M. Webster, E. Rochart, T. Quinlan, S.E.M. Dudley, S.D. Walker, R.V. Penty and I.H. White. "Toward terabit-per-second capacities over multimode fiber links using SCM/WDM techniques." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3237-3243.

This paper outlines the progress made on the use of subcarrier multiplexing (SCM) for high-speed datacommunications links over multimode fiber. Results include the demonstration of penalty-free transmission of 2.5 Gb/s data over worst case multimode fiber (MMF). A complete link demonstration of an SCM transmission system is reported, based on a quadrature phase-shift keying modulator and demodulator capable of a record 5.1 Gb/s per subcarrier data transmission. Superior performance compared with conventional baseband modulation techniques is shown. It is also demonstrated that when SCM is combined with dense wavelength-division multiplexing (WDM), aggregate data capacity of 200 Gb/s is feasible. Preliminary results demonstrate the possibility of 20-GHz WDM channel spacings, which if scaled show the potential for 1-Tb/s aggregate rates with a bandwidth-length product of 3 Tb/s/spl middot/km.

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System-level modeling and Simulation of the 10G optoelectronic interconnect

M. Kahrs, S.P. Levitan, D.M. Chiarulli, T.P. Kurzweg, J.A. Martinez, J. Boles, A.J. Davare, E. Jackson, C. Windish, F. Kiamilev, A. Bhaduri, M. Taufik, Xingle Wang, A.S. Morris, J. Kruchowski and B.K. Gilbert. "System-level modeling and Simulation of the 10G optoelectronic interconnect." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3244-3256.

Mixed-signal multidomain systems present a challenge for computer-aided design tools. Optical and electronic simulation tools are available as separate entities. However, to date, successful system-level cosimulation has not been implemented, leading to expensive refabrication. We present a unique system-level simulation tool for mixed electrooptical systems. We apply our tool Chatoyant to the simulation of an optical high-speed free-space interconnect system designed for 10-GHz speeds. The 10G free-space optical interconnect module has optical, optoelectronic, and microwave components and thus is an ideal vehicle to use as a test system. We demonstrate how Chatoyant, a mixed-signal multidomain simulator, has been used to evaluate end-to-end performance of this complex system, including the exploration of design tradeoffs and mechanical tolerancing.

Abstracts

Single-chip integrated electro-optic polymer photonic RF phase shifter array

J. Han, Byoung-Joon Seo, SeongKu Kim, Hua Zhang and H.R. Fetterman. "Single-chip integrated electro-optic polymer photonic RF phase shifter array." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3257-3261.

This paper demonstrates a four-element integrated photonic radio-frequency (RF) phase shifter array in a single chip with an advanced configuration. These devices are integrated using electrooptic polymer materials and involve several novel technologies. Measurements of this configuration showed that our four outputs were independent and had highly linear RF phases over 360/spl deg/ with negligible RF power fluctuation at the modulation frequency of 20 GHz. This significant improvement is capable of removing one of the major problems in using this type of phase shifter architecture.

Abstracts

Multiple-beam fiber-optic beamformer with binary array of delay lines

S. Granieri, M. Jaeger and A. Siahmakoun. "Multiple-beam fiber-optic beamformer with binary array of delay lines." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3262-3272.

A multibeam optical beamformer capable of controlling a phased-array antenna in receive/transmit mode is proposed. The processor can be programmed to sweep the antenna aperture following an independent angular sequence for each radio-frequency (RF) beam. A two-beam two-channel 3-bit version of the beamformer has been experimentally demonstrated. The optical beamformer processes two independent RF beams, for eight different angular directions, and it is based on a binary array of three delay lines. Each delay line is composed of four fiber Bragg gratings whose center wavelengths are channels 30 to 33 of the International Telecommunications Union (ITU) grid. Measurements are performed for both receive and transmit modes and for RF values between 0.5 and 1.5 GHz. We present beam-pattern results showing the squint-free performance of the beamformer within this frequency range. In the transmit mode, two RF beams are steered and characterized for a broadside target position. In the receive mode, the beamformer performance is characterized by detecting two simultaneous RF beams.

Abstracts

Magnetic near-field measurements over LSI package pins by fiber-edge magnetooptic probe

M. Iwanami, E. Yamazaki, K. Nakano, T. Sudo, S. Hoshino, S. Wakana, M. Kishi and M. Tsuchiya. "Magnetic near-field measurements over LSI package pins by fiber-edge magnetooptic probe." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3273-3281.

To establish a method for investigating hidden radiation sources and their mechanisms in a printed circuit board, we performed preliminary measurements of one-dimensional magnetic near-field distribution over pins of a large-scale integrated circuit (LSI) package by means of an optical method: the fiber-edge magnetooptic (FEMO) probing technique. The FEMO probe consists of fiber optics and a magnetooptic crystal glued at a fiber edge. Its planar spatial resolution is approximately 100 /spl mu/m. It was found that a magnetic field generated from each LSI pin could be distinguished and some radiation was generated from ground and power supply lines. We compared the measured results with corresponding radiated electric field strength that was separately measured. The frequency of interest was the tenth harmonic of the output signal. We observed a strong correlation between those two experimental results, which suggests the effectiveness of our proposed method for near-field investigation. One of the beneficial features of the FEMO probe is its small probe head, due to which one can perform detailed near-field evaluations in a microscopic region. Furthermore, we tried to specify a major electromagnetic interference source by additional measurements of near-field distributions and frequency dependence of magnetooptic signals. It was suggested that the short-through current flowing in the power-supply system of the input/output circuits caused high-level radiated emission.

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Application of an ultrafast photonic technique to study polarization switching dynamics of thin-film ferroelectric capacitors

J. Li, H. Liang, B. Nagaraj, W. Cao, C.H. Lee and R. Ramesh. "Application of an ultrafast photonic technique to study polarization switching dynamics of thin-film ferroelectric capacitors." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3282-3291.

We demonstrate the use of jitter-free ultrafast rise-time electrical pulses generated by a semiconductor photoconductive switch with femtosecond laser illumination to study the fast polarization switching process in fully integrated, ferroelectric PNZT thin-film capacitors. The necessary conditions for high-speed polarization switching detection are presented. The switching behavior for various sizes of capacitors and various rise-times of applied voltage pulses are investigated. Circuit influence on the activation field, /spl alpha/, as well as application of the Inshibashi-Merz model, are discussed.

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Performance evaluation of fiber-edge magnetooptic probe

S. Wakana, E. Yamazaki, S. Mitani, H. Park, M. Iwanami, S. Hoshino, M. Kishi and M. Tsuchiya. "Performance evaluation of fiber-edge magnetooptic probe." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3292-3299.

The performance (bandwidth, sensitivity, and spatial resolution) of a fiber edge magnetooptic (FEMO) probe developed for observing three-dimensional magnetic-field distributions was evaluated. A gigahertz bandwidth was achieved without any magnetic bias by using the magnetization rotation in a magnetooptic crystal. The ferromagnetic resonance restricted the observation bandwidth to around 10 GHz. Precise adjustment of the polarization and efficient use of the optical amplifier enhanced the magnetic field sensitivity, enabling an electric current of less than 0.05 mA to be detected. The concept of "sensitive volume" was used to measure the spatial resolution in three-dimensional space; reducing the sensitive volume improved the spatial resolution. Magnetic fields above a microwave patch antenna and around a 10-/spl mu/m-class circuit board were observed using FEMO probes. The FEMO probe should thus be effective for evaluating microwave and miniature circuits.

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Analysis of penalty due to low-frequency intensity modulation in optical transmission systems

Jin-Serk Baik, Kun-Youl Park, Tae-Won Oh and Chang-Hee Lee. "Analysis of penalty due to low-frequency intensity modulation in optical transmission systems." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3300-3307.

The low-frequency intensity modulation in optical transmission systems can occurred by optical performance monitoring or dynamic devices such as acoustooptic tunable filters. Using a conventional receiver model, we derived the optical signal-to-noise ratio (OSNR) and Q penalties due to the low-frequency intensity modulation. The penalty is a function of the extinction ratio, OSNR, the modulation index, and the number of pilot-tone signals. The analytic results show good agreement with the experimental results.

Abstracts

Capacity analysis for WDM fiber-radio backbones with star-tree and ring architecture incorporating wavelength interleaving

C. Lim, A. Nirmalathas, D. Novak and R. Waterhouse. "Capacity analysis for WDM fiber-radio backbones with star-tree and ring architecture incorporating wavelength interleaving." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3308-3315.

We present a model based on link budget calculations to investigate the capacity of a wavelength-division-multiplexed (WDM) fiber-radio backbone incorporating a wavelength-interleaving technique. The wavelength-interleaving technique improves the optical spectral efficiency of the millimeter-wave fiber-radio systems incorporating optical single sideband with carrier modulation. In this paper, we investigate the capacity limitations of WDM fiber-radio backbones incorporating both wavelength interleaving and optical single sideband with carrier modulation for star-tree and ring architecture. The analysis provides an estimation of the overall system capacity and an insight into the network layout and performance limitations.

Abstracts

Extended optical fiber line testing system using new eight-channel L/U-band crossed optical waveguide coupler for L-band WDM transmission

N. Araki, H. Izumita, N. Honda and M. Nakamura. "Extended optical fiber line testing system using new eight-channel L/U-band crossed optical waveguide coupler for L-band WDM transmission." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3316-3322.

This paper describes the system design for an extended optical fiber line testing system that uses a new L/U-band crossed optical waveguide coupler and a fiber Bragg grating filter for L-band wavelength-division multiplexing transmission. We describe the reflection characteristic required for optical filters located in central offices in order to suppress the ghost signal caused by multireflection in the optical time-domain reflectometry (OTDR) trace. We design and evaluate an eight-channel crossed optical waveguide coupler with a new thin dielectric film filter that separates a 1650-nm test light from the L-band communication light, and confirm that there was no degradation caused by multireflections in the OTDR trace. We also demonstrate the in-service line monitoring of a 10-Gb/s L-band transmission with no degradation in the transmission quality.

Abstracts

Real-time detection of femtosecond optical pulse sequences via time-to-space conversion in the lightwave communications band

Jung-Ho Chung and A.M. Weiner. "Real-time detection of femtosecond optical pulse sequences via time-to-space conversion in the lightwave communications band." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3323-3333.

A spectral nonlinear optics time-to-space converter operating in the lightwave communications band is reported for the first time. We demonstrate serial-to-parallel conversion of short frames of femtosecond pulses, for the first time operating at a conversion efficiency level allowing direct electronic readout at a conversion rate of hundreds of megaframes/s in real time, without signal averaging and with good signal-to-noise ratio. The results demonstrate that applications such as real-time measurements of ultrafast optical data sequences and header recognition in ultrafast optical time-division-multiplexed (OTDM) packet networks are approaching feasibility. Moreover, we analyze tradeoffs between optical powers and data rates from a system perspective, which allows us to assess the challenges for scaling to parallel demultiplexing of bit-interleaved OTDM transmission systems.

Abstracts

Effect of transmission fiber on chaos communication system based on erbium-doped fiber ring laser

Fan Zhang and P.L. Chu. "Effect of transmission fiber on chaos communication system based on erbium-doped fiber ring laser." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3334-3343.

We report a numerical study on the deterioration of eye opening penalty (EOP) and bit error rate (BER) of the received message from a communication system based on chaos generated in erbium-doped fiber ring laser (EDFRL) under the influence of amplifier noise, transmission fiber dispersion, and nonlinearity. Three different transmission fibers with practical parameters are considered. We find that in order to realize high-bit-rate chaotic communication, the residual fiber dispersion should be kept as small as possible. Furthermore, if the transmission power is optimized to balance the effect of amplifier noise and fiber nonlinearity, a message with bit rate on the order of several gigabits/second can be transmitted over hundreds of kilometers with acceptable BER deterioration. A comparison between open- and closed-loop structures is also conducted. Moreover, we find that the maximum bit rate is limited by the bandwidth of the chaos determined by the nonlinearity of the fiber ring laser and the laser configuration. It is possible to optimize these parameters to provide the maximum chaos bandwidth and hence the maximum message bit rate.

Abstracts

Influence of high-optical power light launched into optical fibers in MT connector

K. Hogari, K. Kurokawa and I. Sankawa. "Influence of high-optical power light launched into optical fibers in MT connector." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3344-3348.

This paper describes the influence of a high-optical power light launched into optical fibers in an mechanically transferable (MT) connector. The features of the MT connector are the use of index matching material to suppress Fresnel reflection and the accommodation of several optical fibers to allow the connection of optical fiber ribbons. First, we experimentally investigated the relationship between connection loss, launched light power, temperature increase, and optical loss increase using an MT connector sample without contamination. Based on the results, we clarified the relationship between the allowed connection loss and the launched optical power in the optical fibers needed to maintain MT connector reliability. In addition, we examined the influence of the contamination of the connector endface and confirmed that it is necessary to clean the endface appropriately in an optical transmission system that uses high-optical power light to prevent any fatal damage to the MT connector.

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Technique for measuring longitudinal distribution of Raman gain characteristics in optical fibers

K. Toge, K. Hogari and T. Horiguchi. "Technique for measuring longitudinal distribution of Raman gain characteristics in optical fibers." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3349-3354.

This paper proposes a novel technique for measuring the longitudinal distribution of the Raman gain characteristics in concatenated single-mode optical fibers. This technique has an attractive advantage in that the Raman gain efficiency in concatenated optical fibers can be evaluated individually. We describe a measurement principle for obtaining the Raman gain efficiency distribution in optical fibers. We carried out laboratory and field measurements based on this principle, and confirmed that the Raman gain efficiency distribution could be measured easily and accurately.

Abstracts

Analytical treatment of randomly birefringent periodically spun fibers

A. Pizzinat, L. Palmieri, B.S. Marks, C.R. Menyuk and A. Galtarossa. "Analytical treatment of randomly birefringent periodically spun fibers." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3355-3363.

Spun fibers are increasingly used in telecommunication systems because their polarization-mode dispersion (PMD) is lower than that in unspun fibers. In this paper, we investigate the effects of a periodic spin on the PMD of fibers with randomly varying birefringence. Numerical simulations show that when the spin period is of the same order as or larger than the beat length, the mean differential group delay of a spun fiber depends on the model used for the random birefringence. We then carry out a general theoretical analysis using the second Wai-Menyuk model, which is the only model of fiber birefringence to date that is consistent with polarization optical time domain reflectometry data. Finally, we consider some particular regimes by means of a perturbative approach.

Abstracts

Pump-wavelength dependence of Raman gain in single-mode optical fibers

N.R. Newbury. "Pump-wavelength dependence of Raman gain in single-mode optical fibers." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3364-3373.

The magnitude of the stimulated Raman gain spectrum depends on the absolute wavelength of the pump laser. For many fibers, this dependence can be cast as a simple scaling of the overall gain curve according to a power-law dependence on the pump wavelength. We present three methods of measuring this scaling: estimation from Raman gain theory and known fiber parameters, a brute-force comparison of gain versus pump wavelength, and a more elegant comparison of the asymmetry in the Stokes and anti-Stokes Raman gain spectrum at a fixed pump wavelength. We discuss the advantages of the asymmetry technique, which yields the full wavelength dependence of the Raman gain with low uncertainty using only a single pump laser, a broadband source, and an optical spectrum analyzer. Finally, we report on the pump-wavelength scaling of the Raman gain for a number of standard transmission fibers.

Abstracts

Investigation of the ratio between phase and Group birefringence in optical single-mode fibers

M. Legre, M. Wegmuller and N. Gisin. "Investigation of the ratio between phase and Group birefringence in optical single-mode fibers." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3374-3378.

A measurement technique for the phase and group birefringence of an optical fiber is thoroughly investigated. It is based on differential group delay measurements of twisted fibers and is capable of giving in a simple and elegant way the intrinsic birefringence values in the absence of twist. Analyzing various fibers with this method, we find that phase and group birefringence can be quite different for certain fiber types. Consequently, the commonly used assumption that in an optical fiber, phase and group birefringence are equal-and the resulting carelessness in distinguishing between these two a priori separate physical effects-is to be employed cautiously.

Abstracts

Design and analysis of cylindrical antiresonant reflecting optical waveguide

C.W. Tee and S.F. Yu. "Design and analysis of cylindrical antiresonant reflecting optical waveguide." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3379-3386.

A field-transfer matrix method is developed to analyze the modal characteristics of cylindrical multilayered waveguides with axis-symmetric geometry. A new design rule for cylindrical antiresonant reflecting optical waveguides (ARROWs), based on a three-step design process, is also proposed to minimize the radiation loss of the fundamental leaky mode. In addition, a simple approach is suggested to estimate the optimum core diameter of the cylindrical ARROWs for optimum radiation loss and radiation loss margin. Hence, it can be shown that an extra high index cladding layer is good enough to reduce the radiation loss as well as to maintain a reasonably high radiation loss margin in simplified ARROWs for long wavelength application.

Abstracts

Planar reflection grating wavelength filters in silicon

B.J. Luff, V. Tsatourian, P.A.L. Stopford, S.W. Roberts, J.P. Drake, S.A. Fuller and M. Asghari. "Planar reflection grating wavelength filters in silicon." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3387-3391.

The design, fabrication, and performance of reflection-type multiplexers and demultiplexers in the silicon-on-insulator material system is discussed. These devices provide a more compact alternative to arrayed waveguide grating filters in planar technologies. Their suitability for application to both dense wavelength-division multiplexing and coarse wavelength-division multiplexing optical communication systems is considered.

Abstracts

Rigorous beam propagation analysis of tapered spot-size converters in deep-etched semiconductor waveguides

B.M.A. Rahman, W. Boonthittanont, S.S.A. Obayya, T. Wongcharoen, E.O. Ladele and K.T.V. Grattan. "Rigorous beam propagation analysis of tapered spot-size converters in deep-etched semiconductor waveguides." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3392-3398.

A rigorous study of a tapered spot-size converter in a deep-etched GaAs/AlGaAs optical modulator is reported through the use of full vectorial approaches. Mode beating in the tapered section, the expansion of the spot-size, and the consequent enhancement of the coupling to an optical fiber are also reported.

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Analysis of corrugated long-period gratings in slab waveguides and their polarization dependence

Qing Liu, Kin Seng Chiang and V. Rastogi. "Analysis of corrugated long-period gratings in slab waveguides and their polarization dependence." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3399-3405.

We analyze theoretically the light transmission characteristics of corrugated long-period gratings formed in slab waveguides. The transmission spectra of the gratings show distinct rejection bands at specific wavelengths, known as the resonance wavelengths. We investigate in detail the phase-matching curves of the gratings, which govern the relationship between the resonance wavelength and the grating period. Thanks to the flexibility in the choice of the waveguide parameters, the phase-matching curves of a long-period waveguide grating can be different characteristically from those of a long-period fiber grating (LPFG), which implies that the former can exhibit much richer characteristics than the latter. Unlike an LPFG, the transmission spectrum of a long-period waveguide grating is in general sensitive to the polarization of light. Nevertheless, a proper choice of the waveguide and grating parameters can result in a polarization-independent rejection band. Long-period waveguide gratings should find potential applications in a wide range of integrated-optic waveguide devices and sensors.

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On the design of large receiver and transmitter arrays for OE-VLSI applications

M.B. Venditti and D.V. Plant. "On the design of large receiver and transmitter arrays for OE-VLSI applications." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3406-3416.

The design environment, design and test flows, and the constraints and challenges of implementing large two-dimensional arrays of receiver and transmitter circuits for optoelectronic-very-large-scale-integration (OE-VLSI) applications is described, and the use of optically and electrically differential architectures is advocated. We show that the incorporation of design-for-testability features and chip-level test methodologies overcome some of the unique challenges of testing OE-VLSI receiver and transmitter circuits. We present design techniques that can be used to improve the switching-noise performance of fully differential OE-VLSI receiver and transmitter circuits. We show that the operational yield of large receiver arrays is maximized through the use of an optically and electrically differential architecture.

Abstracts

New near-field and far-field attenuation models for free-space variable optical attenuators

X.M. Zhang, A.Q. Liu and C. Lu. "New near-field and far-field attenuation models for free-space variable optical attenuators." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3417-3426.

Novel closed-form attenuation models have been developed for free-space variable optical attenuators (VOAs)-one deals with the near-field condition when the two single-mode fibers are aligned very close to each other while the other deals with the far-field condition. In both models, the relationship between mirror (i.e., shutter) position and attenuation is represented by a constant term and another term in the form of an extended error function. The constant term determines the insertion loss, while the error function defines the shape of the attenuation curve. Compared with the conventional model that employs time-consuming numerical integrals, these two models show clearly the physical picture of the attenuation mechanism and provide closed-form expressions of attenuation versus mirror position. They are computationally efficient for attenuator design and optimization. Numerical calculation and experimental study have also been carried out to verify the attenuation models developed in this paper.

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Er-doped superfluorescent fiber source with a /spl plusmn/0.5-ppm long-term mean-wavelength stability

Hee Gap Park, M. Digonnet and G. Kino. "Er-doped superfluorescent fiber source with a /spl plusmn/0.5-ppm long-term mean-wavelength stability." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3427-3433.

We report an Er-doped superfluorescent fiber source (SFS) with a record mean-wavelength stability of /spl plusmn/0.5 ppm over 17 h. This breakthrough was achieved in a double-pass SFS by implementing several improvements, namely 1) controlling all the parameters that affect its mean wavelength, including the pump diode temperature and current, 2) reducing polarization-induced drifts in mean wavelength with a Faraday rotator mirror and a long Er-doped fiber (EDF), and 3) getting rid of polarization controllers to eliminate polarization-dependent loss. The long-term mean-wavelength variations of this SFS were due almost entirely to variations in the EDF temperature. When the SFS temperature was allowed to vary, by calibrating its mean-wavelength dependence on temperature, it was possible to predict the mean wavelength to a /spl plusmn/2-ppm precision by simply measuring the EDF temperature. The same configuration was also implemented with a different Er-doped fiber to achieve an even lower dependence on EDF temperature. When controlling the temperature of this second SFS to about /spl plusmn/0.5/spl deg/C, it exhibited a stability of /spl plusmn/0.5 ppm over 17 h. These new developments constitute an important step toward a practical high-grade fiber-optic gyroscope.

Abstracts

Failure mode analysis of photonic components on InP using low-coherence reflectometry: case of burned DBR lasers

C. Plouzennec, Y. Gottesman, E.V.K. Rao, H. Sillard, A. Plais and J. Jacquet. "Failure mode analysis of photonic components on InP using low-coherence reflectometry: case of burned DBR lasers." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3434-3440.

The high potential of optical low-coherence reflectometry to investigate the failure mode of InP-based optical devices is demonstrated here by considering two examples of burned (under high optical output power and operating temperature) distributed Bragg reflector lasers on InP. In addition to monitoring reflections in the conventional reflection mode, these two-section devices (active amplifier section and passive Bragg section) are further examined using other in-situ facilities such as the transmission and edge electroluminescence measurements. A comprehensive analysis of these data in comparison to a reference device permitted the following: 1) the spatial localization of burning induced damage only in the amplifier section; 2) some relevant information on the nature of defects in the damaged region, such as their nonradiative character and structural modifications in multiquantum wells, which tentatively are attributed to the occurrence of intermixing between well and barrier layers.

Abstracts

Measurement of gain in pump diode lasers using a low-coherence source and synchronous detection

J. Troger. "Measurement of gain in pump diode lasers using a low-coherence source and synchronous detection." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3441-3445.

A novel method for determining gain in long-cavity Fabry-Pe/spl acute/rot diode lasers is presented. Gain is extracted from a return-loss measurement via a simple model. The experimental setup is based on the injection of a low-coherence probe signal into the laser cavity and synchronous detection of the reflected light. Using a fiber-optics setup, gain can be determined in commercial fiber-coupled laser modules. The novel technique is particularly suitable for diode lasers with very long cavities. To illustrate the method, the gain spectra of a 980-nm pump diode laser with 1800-/spl mu/m cavity length are determined. Gain saturation due to probe signal injection is addressed.

Abstracts

Optimal design for ultra-broad-band amplifier

Xueming Liu and Byoungho Lee. "Optimal design for ultra-broad-band amplifier." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3446-3455.

We propose a novel hybrid genetic algorithm (GA) based on such techniques as clustering, sharing, crowding, and adaptive probability. The proposed GA can effectively solve multimodal optimization, including the global and local optima in the distributed multipump Raman amplifier (DMRA). The simulation results show that the optimal signal bandwidth /spl Delta//spl lambda/ can be evidently broadened by means of increasing the number of pumps and that /spl Delta//spl lambda/ decreases with the increase of Raman gain and the improvement of the flatness property. The optimal results show that the hybrid erbium-doped fiber amplifier and DMRA can availably overcome the weakness of pure DMRA and that both higher gain and broader bandwidth can be realized in hybrid amplifiers simultaneously.

Abstracts

Rectangular waveguide output unitraveling-carrier photodiode module for high-power photonic millimeter-wave generation in the F-band

H. Ito, T. Ito, Y. Muramoto, T. Furuta and T. Ishibashi. "Rectangular waveguide output unitraveling-carrier photodiode module for high-power photonic millimeter-wave generation in the F-band." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3456-3462.

A compact unitraveling-carrier photodiode (UTC-PD) module with a WR-8 rectangular waveguide output port for operation in the F-band (90-140 GHz) has been developed. A resonating matching circuit integrated with a UTC-PD and a microstrip-line-to-rectangular-waveguide transformer are designed to have high output powers with a wide bandwidth covering the F-band. The module size and configuration are equivalent to those of conventional optoelectronic devices, which enables the use of standard assembly technology. The fabricated module exhibits a record millimeter-wave output power of 17 mW at 120 GHz for a bias voltage of -3 V. The 3-dB bandwidth is as wide as 55 GHz, which fully covers the F-band. An optical input stress test at a photocurrent of 10 mA performed to confirm the long-term stability of the module showed that the dark current stays below 1 /spl mu/A for more than 4000 hours.

Abstracts

A novel and compact optical polarizer incorporating a layered waveguide core structure

M. Rajarajan, B.M.A. Rahman and K.T.V. Grattan. "A novel and compact optical polarizer incorporating a layered waveguide core structure." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3463-3470.

A compact optical polarizer based on a directional coupler incorporating layered waveguide core structures is studied in detail in this paper. Important waveguide design parameters such as the guide width, guide separation, guide height, refractive index contrast, and wavelength dependence have been analyzed by using the vectorial H-field finite-element method. The optical power transfer characteristics have been calculated by using the least squares boundary residual methods.

Abstracts

Phase-shifting VOA with polymer dispersed liquid crystal

P. Chanclou, B. Vinouze, M. Roy, C. Cornu and H. Ramanitra. "Phase-shifting VOA with polymer dispersed liquid crystal." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3471-3476.

A polymer containing fine droplets of liquid crystal (LC) is investigated for obtaining an optical phase-shifting attenuator at 1550-nm wavelength. Two mixtures of liquid crystals and monomers are compared for a cell thickness of 15 /spl mu/m. The first method uses nanosized LC droplets to achieve 2.29-rad phase shifting for an applied voltage of 230 Vrms. The second method uses microsized LC droplets to achieve 2.35-rad phase shifting for an applied voltage of 15 Vrms. Theoretical analysis of the phase shifting is developed. This optical property is used to achieve a variable optical attenuator (VOA) between two single-mode fibers. An optical architecture using graded index rod lenses and a pattern of photoresist polymer is presented. Typical characteristics of such VOA are: 12-dB range of attenuation, a maximum polarization dependence loss of 0.5 dB, 1.1-dB insertion loss, and a saturation voltage of 20 Vrms.

Abstracts

Design of two-section dbr laser operating at itu frequencies only by grating current tuning (Correction)

V.I. Feies and I. Montrosset. "Design of two-section dbr laser operating at itu frequencies only by grating current tuning (Correction)." 2003 Journal of Lightwave Technology 21.12 (Dec. 2003 [J-LT] (Special Issue on Microwave Photonics)): 3477-3477.

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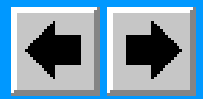
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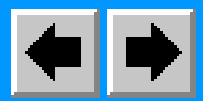
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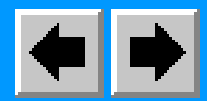
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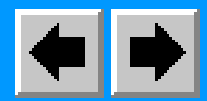
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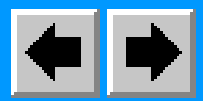
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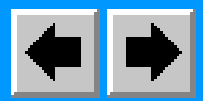
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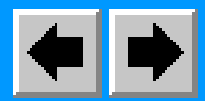
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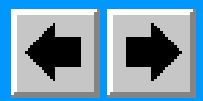
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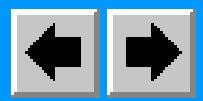
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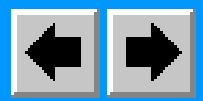
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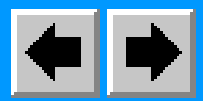
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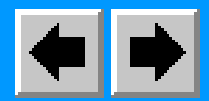
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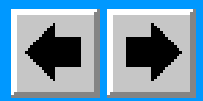
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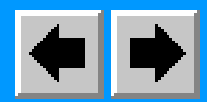
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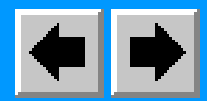
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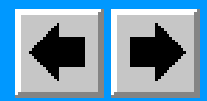
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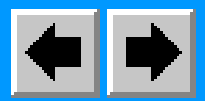
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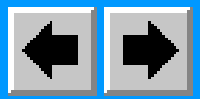
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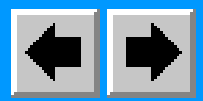
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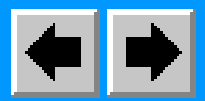
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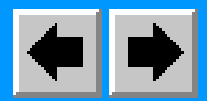
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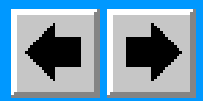
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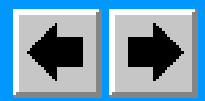
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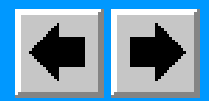
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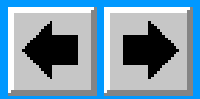
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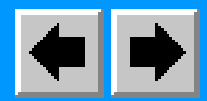
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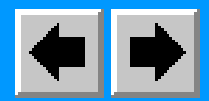
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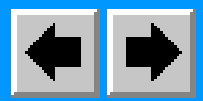
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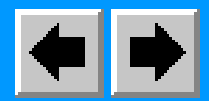
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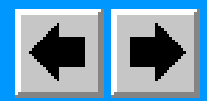
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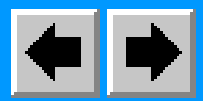
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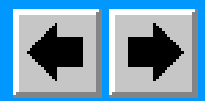
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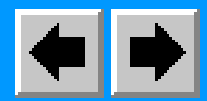
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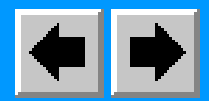
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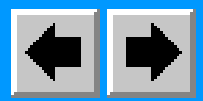
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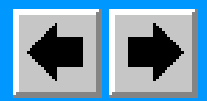
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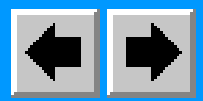
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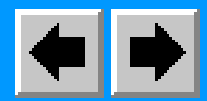
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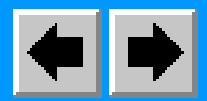
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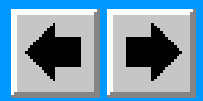
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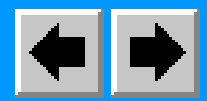
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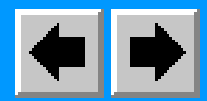
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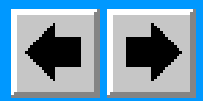
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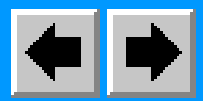
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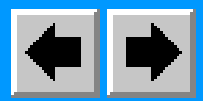
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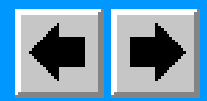
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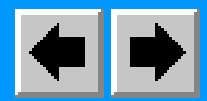
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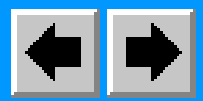
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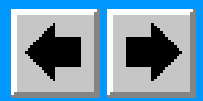
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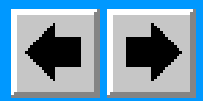
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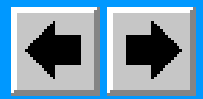
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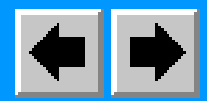
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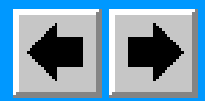
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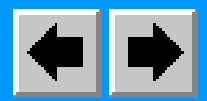
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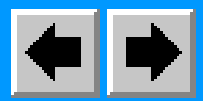
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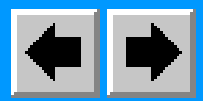
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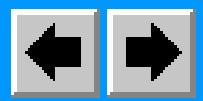
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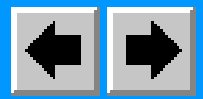
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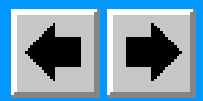
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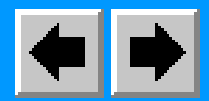
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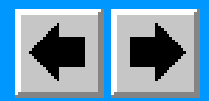
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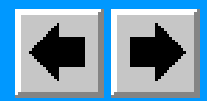
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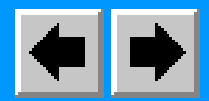
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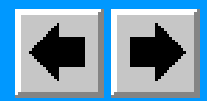
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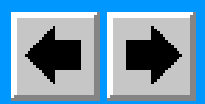
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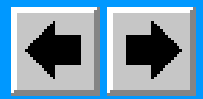
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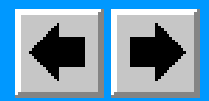
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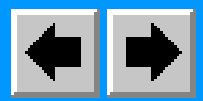
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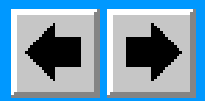
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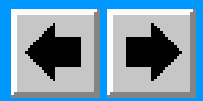
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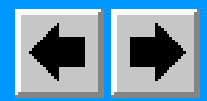
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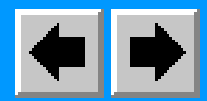
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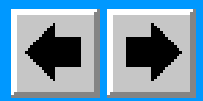
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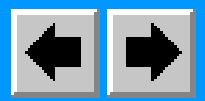
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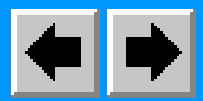
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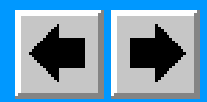
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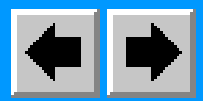
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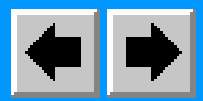
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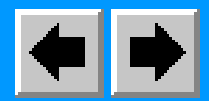
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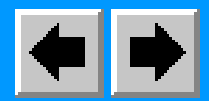
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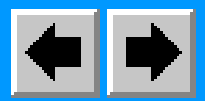
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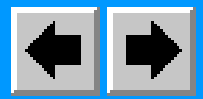
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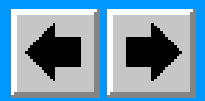
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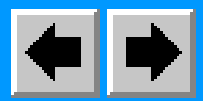
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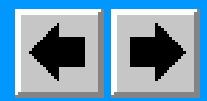
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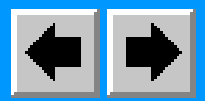
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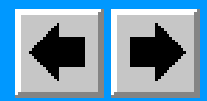
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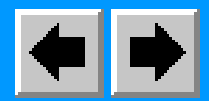
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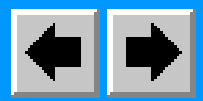
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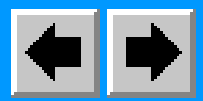
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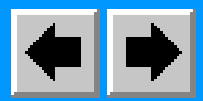
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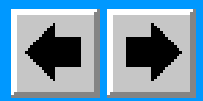
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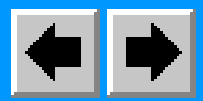
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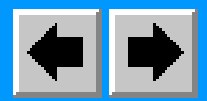
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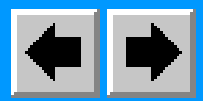
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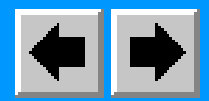
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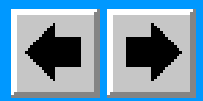
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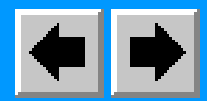
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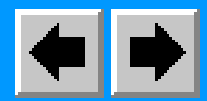
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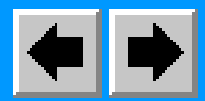
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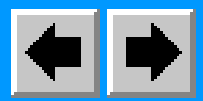
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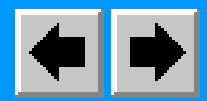
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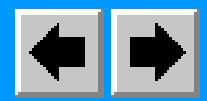
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- The design of 5 GHz voltage controlled ring oscillator using source capacitively coupled current amplifier (2003 Vol. I [MWSYM])
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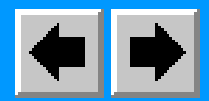
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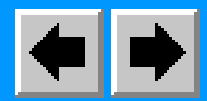
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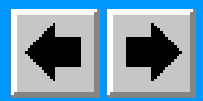
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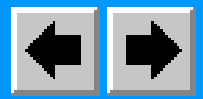
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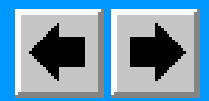
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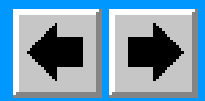
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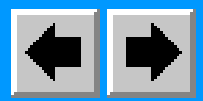
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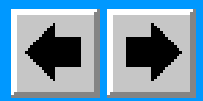
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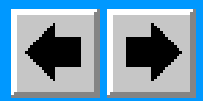
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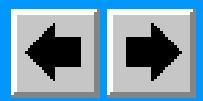
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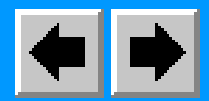
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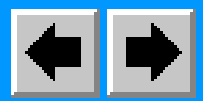
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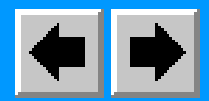
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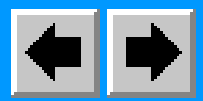
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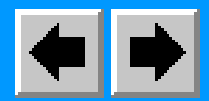
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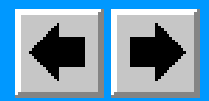
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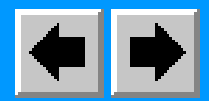
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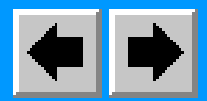
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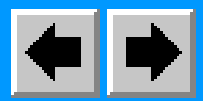
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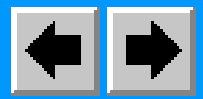
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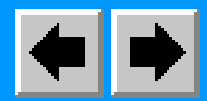
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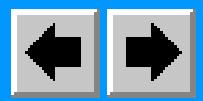
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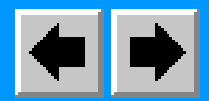
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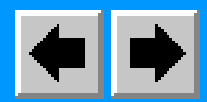
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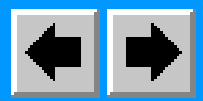
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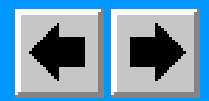
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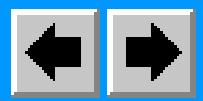
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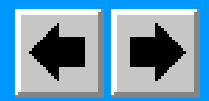
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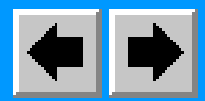
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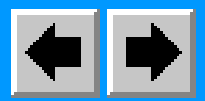
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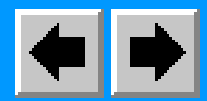
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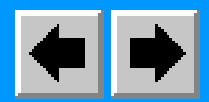
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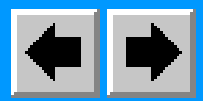
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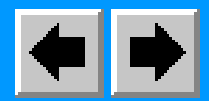
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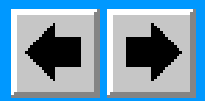
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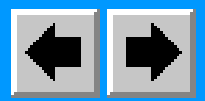
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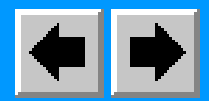
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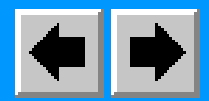
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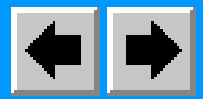
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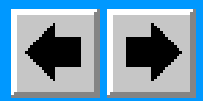
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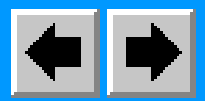
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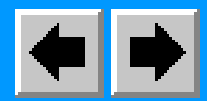
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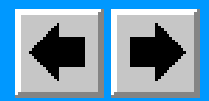
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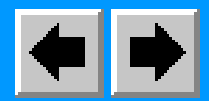
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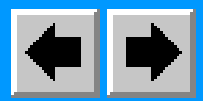
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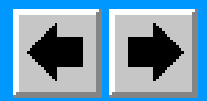
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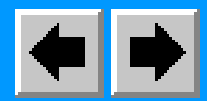
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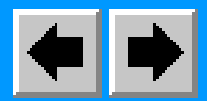
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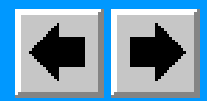
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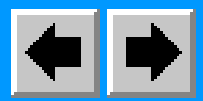
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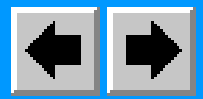
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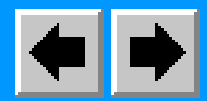
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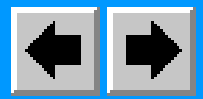
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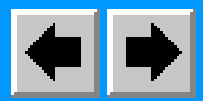
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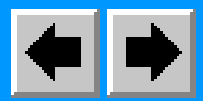
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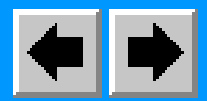
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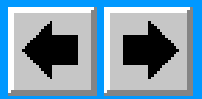
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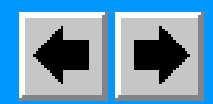
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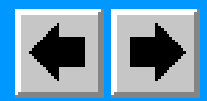
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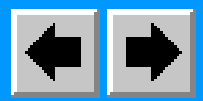
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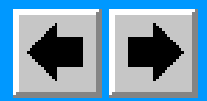
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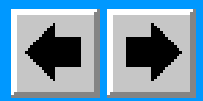
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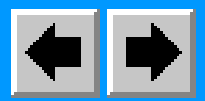
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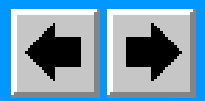
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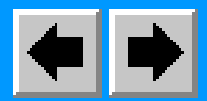
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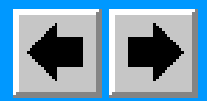
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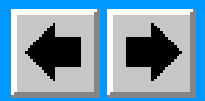
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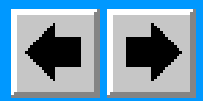
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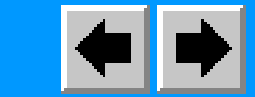
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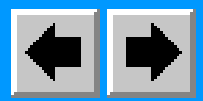
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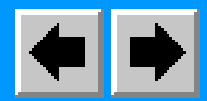
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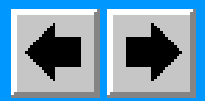
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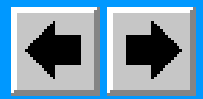
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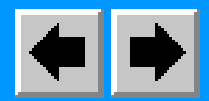
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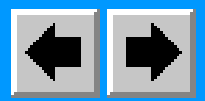
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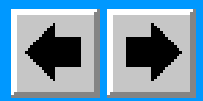
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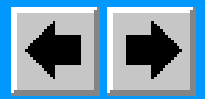
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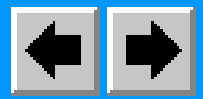
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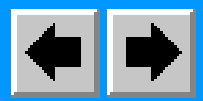
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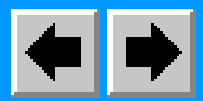
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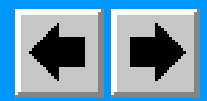


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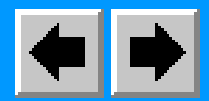
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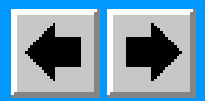


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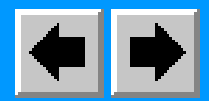
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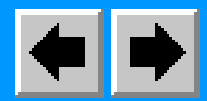
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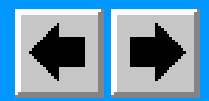
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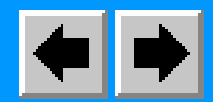
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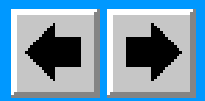
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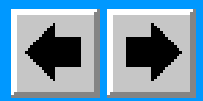
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- The merging of a WDM fiber-radio backbone with a 25 GHz WDM ring network
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- A wavelet-transformed finite-difference time-domain scheme with a static multi-resolution grid
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- Convergence of FDTD and wavelet-collocation modeling of curved dielectric interface with the effective dielectric constant technique
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- Advanced design of broadband distributed amplifier using a SiGe BiCMOS technology (2003 Vol. I [MWSYM])
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