Microwave Transistor Amplifiers Analysis And Design

It is hardly a profound observation to note that we remain in the midst of a wireless revolution. In 1998 alone, over 150 million cell phones were sold worldwide, representing an astonishing 50% increase over the previous year. Maintaining such a remarkable growth rate requires constant innovation to decrease cost while increasing performance and functionality. Traditionally, wireless products have depended on a mixture of semicond- tor technologies, spanning GaAs, bipolar and BiCMOS, just to name a few. A question that has been hotly debated is whether CMOS could ever be suitable for RF applications. However, given the acknowledged inferiority of CMOS transistors relative to those in other candidate technologies, it has been argued by many that "CMOS RF" is an oxymoron, an endeavor best left cloistered in the ivory towers of academia. In rebuttal, there are several compelling reasons to consider CMOS for wi- less applications. Aside from the exponential device and density improvements delivered regularly by Moore's law, only CMOS offers a technology path for integrating RF and digital elements, potentially leading to exceptionally c- pact and low-cost devices. To enable this achievement, several thorny issues need to be resolved. Among these are the problem of poor passive com- nents, broadband noise in MOSFETs, and phase noise in oscillators made with CMOS. Beyond the component level, there is also the important question of whether there are different architectural choices that one would make if CMOS were used, given the different constraints.

The ultimate handbook on microwave circuit design with CAD. Full of tips and insights from seasoned industry veterans, Microwave Circuit Design offers practical, proven advice on improving the design quality of microwave passive and active circuits-while cutting costs and time. Covering all levels of microwave circuit design from the elementary to the very advanced, the book systematically presents computer-aided methods for linear and nonlinear designs used in the design and manufacture of microwave amplifiers, oscillators, and mixers. Using the newest CAD tools, the book shows how to design transistor and diode circuits, and also details CAD's usefulness in microwave integrated circuit (MIC) and monolithic microwave integrated circuit (MMIC) technology. Applications of nonlinear SPICE programs, now available for microwave CAD, are described. State-of-the-art coverage includes microwave transistors (HEMTs, MODFETs, MESFETs, HBTs, and more), high-power amplifier design, oscillator design including feedback topologies, phase noise and examples, and more. The techniques presented are illustrated with several MMIC designs, including a wideband amplifier, a low-noise amplifier, and an MMIC mixer. This unique, one-stop handbook also features a major case study of an actual anticollision radar transceiver, which is compared in detail against CAD predictions; examples of actual circuit designs with photographs of completed circuits; and tables of design formulae.

This much-anticipated volume builds on the author's best selling and classic work, RF Power Amplifiers for Wireless Communications (Artech House, 1999), offering experienced engineers a more in-depth understanding of the theory and design of RF power amplifiers. An invaluable reference tool for RF, digital and system level designers, the book includes discussions on the most critical topics for professionals in the field, including envelope power management schemes and linearization.

Modern wireless communications hardware is underpinned by RF and microwave design techniques. This insightful book contains a wealth of circuit layouts, design tips, and practical measurement techniques for building and testing practical gigahertz systems. The book covers everything you need to know to design, build, and test a high-frequency circuit. Microstrip components are discussed, including tricks for extracting good performance from cheap materials. Connectors and cables are also described, as are discrete passive components, antennas, low-noise amplifiers, oscillators, and frequency synthesizers. Practical measurement techniques are presented in detail, including the use of network analyzers, sampling oscilloscopes, spectrum analyzers, and noise figure meters. Throughout the focus is practical, and many worked examples and design projects are included. There is also a CD-ROM that contains a variety of design and analysis programs. The book is packed with indispensable information for students taking courses on RF or microwave circuits and for practising engineers.

Microwave Engineering

Handbook of RF and Microwave Power Amplifiers

Analysis and Design by Gonzalez, ISBN

Intermodulation Distortion in Microwave and Wireless Circuits

Broadband RF and Microwave Amplifiers

Essential reading for experts in the field of RF circuit design and engineers needing a good reference. This book provides complete design procedures for multiple-pole Butterworth, Chebyshev, and Bessel filters. It also covers capacitors, inductors, and other components with their behavior at RF frequencies discussed in detail. Provides complete design procedures for multiple-pole Butterworth, Chebyshev, and Bessel filters Covers capacitors, inductors, and other components with their behavior at RF frequencies discussed in detail

Doherty Power Amplifiers: From Fundamentals to Advanced Design Methods is a great resource for both RF and microwave engineers and graduate students who want to understand and implement the technology into future base station and mobile handset systems. The book introduces the very basic operational principles of the Doherty Amplifier and its non-ideal behaviors. The different transconductance requirements for carrier and peaking amplifiers, reactive element effect, and knee voltage effect are described. In addition, several methods to correct imperfections are introduced, such as uneven input drive, gate bias adaptation, dual input drive and the offset line technique. Advanced design methods of Doherty Amplifiers are also explained, including multistage/multiway Doherty power amplifiers which can enhance the efficiency of the amplification of a highly-modulated signal. Other covered topics include signal tracking operation which increases the dynamic range, highly efficient saturated amplifiers, and broadband amplifiers, amongst other comprehensive, related topics. Specifically written on the Doherty Power Amplifier by the world's leading expert, providing an in-depth presentation of principles and design techniques Includes detailed analysis on correcting non-ideal behaviors of Doherty Power Amplifiers Presents advanced Doherty Power Amplifier architectures

Never HIGHLIGHT a Book Again! Virtually all of the testable terms, concepts, persons, places, and events from the textbook are included. Cram101 Just the FACTS101 studyguides give all of the outlines, highlights, notes, and quizzes for your textbook with optional online comprehensive practice tests. Only Cram101 is Textbook Specific. Accompanys: 9780132543354 .

A majority of people now have a digital mobile device whether it be a cell phone, laptop, or blackberry. Now that we have the mobility we want it to be more versatile and dependable; RF power amplifiers accomplish just that. These amplifiers take a small input and make it stronger and larger creating a wider area of use with a more robust signal. Switching mode RF amplifiers have been theoretically possible for decades, but were largely impractical because they distort analog signals until they are unrecognizable. However, distortion is not an issue with digital signals—like those used by WLANs and digital cell phones—and switching mode RF amplifiers have become a hot area of RF/wireless design. This book explores both the theory behind switching mode RF amplifiers and design techniques for them. *Provides essential design and implementation techniques for use in cma2000, WiMAX, and other digital mobile standards *Both authors have written several articles on the topic and are well known in the industry *Includes specific design equations to greatly simplify the design of switchmode amplifiers

Microwave Devices, Circuits and Subsystems for Communications Engineering

The Loadpull Method of RF and Microwave Power Amplifier Design

Distributed Power Amplifiers for RF and Microwave Communications

Modern RF and Microwave Measurement Techniques

This groundbreaking book is the first to give an introduction to microwave de-embedding, showing how it is the cornerstone for waveform engineering. The authors of each chapter clearly explain the theoretical concepts, providing a foundation that supports linear and non-linear measurements, modelling and circuit design. Recent developments and future trends in the field are covered throughout, including successful strategies for low-noise and power amplifier design. This book is a must-have for those wishing to understand the full potential of the microwave de-embedding concept to achieve successful results in the areas of measurements, modelling, and design at high frequencies. With this book you will learn: The theoretical background of high-frequency de-embedding for measurements, modelling, and design Details on applying the de-embedding concept to the transistor's linear, non-linear, and noise behaviour The impact of de-embedding on low-noise and power amplifier design The recent advances and future trends in the field of high-frequency de-embedding Presents the theory and practice of microwave de-embedding, from the basic principles to recent advances and future trends Written by experts in the field, all of whom are leading researchers in the area Each chapter describes theoretical background and gives experimental results and practical applications Includes forewords by Giovanni Ghione and Stephen Maas

The aim of this book is to serve as a design reference for students and as an up-to-date reference for researchers. It also acts as an excellent introduction for newcomers to the field and offers established rf/microwave engineers a comprehensive refresher. The content is roughly classified into two – the first two chapters provide the necessary fundamentals, while the last three chapters focus on design and applications. Chapter 2 covers detailed treatment of transmission lines. The Smith chart is utilized in this chapter as an important tool in the synthesis of matching networks for microwave amplifiers. Chapter 3 contains an exhaustive review of microstrip circuits, culled from various references. Chapter 4 offers practical design information on solid state amplifiers, while Chapter 5 contains topics on the design of modern planar filters, some of which were seldom published previously. A set of problems at the end of each chapter provides the readers with exercises which are compiled from actual university exam questions. An extensive list of references is available at the end of each chapter to enable readers to obtain further information on the topics covered.

Broadband RF and Microwave Amplifiers provides extensive coverage of broadband radio frequency (RF) and microwave power amplifier design, including well-known historical and recent novel schematic configurations, theoretical approaches, circuit simulation results, and practical implementation strategies. The text begins by introducing two-port networks to illustrate the behavior of linear and nonlinear circuits, explaining the basic principles of power amplifier design, and discussing impedance matching and broadband power amplifier design using lumped and distributed parameters. The book then: Shows how dissipative or lossy gain-compensation-matching circuits can offer an important trade-off between power gain, reflection coefficient, and operating frequency bandwidth Describes the design of broadband RF and microwave amplifiers using real frequency techniques (RFTs), supplying numerous examples based on the MATLAB® programming process Examines Class-E power amplifiers, Doherty amplifiers, low-noise amplifiers, microwave gallium arsenide field-effect transistor (GaAs FET)-distributed amplifiers, and complementary metal-oxide semiconductor (CMOS) amplifiers for ultra-wideband (UWB) applications Broadband RF and Microwave Amplifiers combines theoretical analysis with practical design to create a solid foundation for innovative ideas and circuit design techniques.

A comprehensive treatment of microwave radio-frequency amplifier design, using solid-state devices such as GaAs FEETs, microwave bipolar transistors, IMPATT and Gunn diodes. Emphasis is on low-noise, high-gain and high-power transistor amplifiers for both wideband and narrowband applications, using scattering parameters as design tools. Includes computer simulation results of amplifier performance in design examples, problems and an extensive bibliography.

The Design and Implementation of Low-Power CMOS Radio Receivers

The Design of Low-noise Microwave Bipolar Transistor Amplifiers

Valve and Transistor Audio Amplifiers

From Theory to Applications

Via Simplified Real Frequency Technique

In today's fast-changing, competitive environment, having an up-to-date information system (IS) is critical for all companies and institutions. Rather than creating a new system from scratch, reengineering is an economical way to develop an IS to match changing business needs. Using detailed examples, this practical book gives you methods and techniques for reengineering systems for flexibility and reliability. It helps you reengineer a system to continue to provide for business critical missions as well as achieve a smooth transformation to an up-to-date software technology environment. What's more, it shows you how to redevelop a flexible system that can evolve to meet future business objectives, reduce start time and save money in the reengineering process.

A Comprehensive and Up-to-Date Treatment of RF and Microwave Transistor Amplifiers This book provides state-of-the-art coverage of RF and microwave transistor amplifiers, including low-noise, narrowband, broadband, linear, high-power, high-efficiency, and high-voltage. Topics covered include modeling, analysis, design, packaging, and thermal and fabrication considerations. Through a unique integration of theory and practice, readers will learn to solve amplifier-related design problems ranging from matching networks to biasing and stability. More than 240 problems are included to help readers test their basic amplifier and circuit design skills-and more than half of the problems feature fully worked-out solutions. With an emphasis on theory, design, and everyday applications, this book is geared toward students, teachers, scientists, and practicing engineers who are interested in broadening their knowledge of RF and microwave transistor amplifier circuit design.

A comprehensive, hands-on review of the most up-to-date techniques in RF and microwave measurement, including practical advice on deployment challenges.

This extensively revised edition offers a comprehensive, practical, up-to-date understanding of how to tackle a power amplifier design with confidence and quickly determine the cause of malfunctioning hardware.

Planar Microwave Engineering

Microwave Circuit Design Using Linear and Nonlinear Techniques

Modeling and Characterization of RF and Microwave Power FETs

Switchmode RF and Microwave Power Amplifiers

Switchmode RF Power Amplifiers

Annotation In today's globally competitive wireless industry, the design-to-production cycle is critically important. The first of a two-volume set, this leading-edge book takes a practical approach to RF (radio frequency) circuit design, offering a complete understanding of the fundamental concepts practitioners need to know and use for their work in the field.

Front cover -- Titelseite -- Impressum -- Acknowledgments -- Contents -- List of Abbreviations and Acronyms -- Abstract -- Zusammenfassung -- Chapter 1 Introduction -- 1.1 Principle of the Partitioning Design Approach -- 1.2 Dissertation Organization -- Chapter 2 Investigation of Planar-Interconnection -- 2.1 Active Chip Device Interconnection -- 2.1.1 Die Attach -- 2.1.2 Wire Bonding Pad-To-Microstrip -- 2.2 Microstrip-to-Microstrip Interconnection -- 2.2.1 Soldering -- 2.2.2 Multi-Wire Bonding -- 2.2.3 Copper Ribbon -- 2.2.4 Silver- Painting -- Chapter 3 Analysis and Modeling of Passive SMD Components -- 3.1 SMD Resistor -- 3.2 SMD Capacitor -- 3.3 SMD Inductor -- Chapter 4 Modeling of AlGaAs/GaAs HEMT Chip Device -- 4.1 AIGaAs/GaGa HEMT Chip -- 4.2 Modeling Approach Overview -- 4.3 Small-Signal Modeling -- 4.3.1 Extrinsic Parameter Extraction -- 4.3.2 Intrinsic Parameter Extraction -- 4.4 Large-Signal Modeling -- 4.4.1 Gate Current and Charge Models -- 4.4.2 Drain Current Model -- 4.4.3 Model Verification -- Chapter 5 Demonstrator Design of a Class-AB Power Amplifier Following -- 5.1 Micro-Packaged Device Characterization -- 5.1.1 Small-Signal Performance -- 5.1.2 Large-Signal Performance -- 5.2 Bias Network Design -- 5.2.1 Drain Bias Network -- 5.2.2 Gate Bias Network -- 5.3 Matching Network Design -- 5.3.1 Matching Impedance Determination -- 5.4 Power Amplifier Performance Evaluation -- 5.4.1 Small-Signal Performance -- 5.4.2 Large-Signal Performance -- Chapter 6 Conclusions and Outlook -- Appendix -- Appendix A THLR In-Fixture Calibration -- Appendix B Precise Determination of Substrate Permittivity -- Appendix C Schematic Circuit of the Designed Power Amplifier Demonstrator -- Appendix D Power Amplifier Design Following the Conventional Design Approach -- References -- Back cover

This book is a comprehensive exposition of FET modeling, and is a must-have resource for seasoned professionals and new graduates in the RF and microwave power amplifier design and modeling community. In it, you will find descriptions of characterization and measurement techniques, analysis methods, and the simulator implementation, model verification and validation procedures that are needed to produce a transistor model that can be used with confidence by the circuit designer. Written by semiconductor industry professionals with many years' device modeling experience in LDMOS and III-V technologies, this was the first book to address the modeling requirements specific to high-power RF transistors. A technology-independent approach is described, addressing thermal effects, scaling issues, nonlinear modeling, and in-package matching networks. These are illustrated using the current market-leading high-power RF technology, LDMOS, as well as with III-V power devices.

This new resource presents readers with all relevant information and comprehensive design methodology of wideband amplifiers. This book specifically focuses on distributed amplifiers and their main components, and presents numerous RF and microwave applications including well-known historical and recent architectures, theoretical approaches, circuit simulation, and practical implementation techniques. A great resource for practicing designers and engineers, this book contains numerous well-known and novel practical circuits, architectures, and theoretical approaches with detailed description of their operational principles.

CONQUER RADIO FREQUENCY

Microwave Active Circuit Analysis and Design

RFIC and MMIC Design and Technology

Passive Circuits and Systems Passive Circuits and Systems, Volume 1

Outlines and Highlights for Microwave Transistor Amplifiers

Design of Ultra Wideband Antenna Matching Networks: via Simplified Real Frequency Technique (SRFT) will open up a new horizon for design engineers, researchers, undergraduate and graduate students to construct multi-band and ultra wideband antenna matching networks for antennas which in turn will push the edge of technology to manufacture new generation of complex communication systems beyond microwave frequencies both in commercial and military line. In Design of Ultra Wideband Antenna Matching Networks, many real life examples are presented to design antenna matching networks over HF and cellular commercial multi-band frequencies. For each example, open MatLab source codes are provided so that the reader can easily generate and verify the results of the examples included in the book.

Plane waves in an infinite ferrite medium. Longitudinally magnetised ferrite in circular waveguide. Transversely magnetised ferrite in circular waveguide. Circular waveguide devices. Transversely magnetised ferrite in rectangular waveguide. Rectangular waveguide devices. Y-junction circulator. Stripline and microstrip devices. mm-Wave devices. High-power and non-linear effects. Perturbation theory and measurements.

Appropriate for upper level undergraduate or graduate courses in microwave transistor amplifiers and oscillators. It would also be useful for short-courses in companies that design and produce these devises. A unified presentation of the analysis and design of microwave transistor amplifiers (and oscillators) -- using scattering parameters techniques.

This book explains and demonstrates with an exhaustive set of design examples, how common types of radio frequency(RF) amplifiers (classes A, B, AB, C, D, E, F, G and H) can be designed, and then have their performance characteristics evaluated and optimized with SPICE. The author demonstrates the transient analysis features of SPICE, along with industry-standard load- and source-pull techniques to simulate the steady-state, long-term time-domain behavior of any test RF amplifier.· Describes methods for designing and evaluating/optimizing the performance characteristics of an RF amplifier that circumvent the issues involved with existing, traditional methods and don't require expensive, high-end software tools;· Includes C language executables for each RF amplifier type, eliminating errors that might creep in while computing passive component (capacitor, inductor, resistor) values for a given RF amplifier type;· Demonstrates industry-standard load- and source-pull schemes that can be included easily in text SPICE netlists, allowing accurate calculation of impedance matching and impedance values at the input and output ports of the test RF amplifier, eliminating messy, error-prone S parameter based calculations.

RF Power Amplifiers for Wireless Communications

Microwave Systems Design

Microwave Transistor Amplifiers

Analysis and Design

Fundamentals of RF and Microwave Transistor Amplifiers

Microwave Transistor AmplifiersAnalysis and DesignFundamentals of RF and Microwave Transistor AmplifiersJohn Wiley & Sons

This is a one-stop guide for circuit designers and system/device engineers, covering everything from CAD to reliability.

Covering the fundamentals applying to all radio devices, this is a perfect introduction to the subject for students and professionals.

CD-ROM contains: PUFF 2.1 for construction and evaluation of circuits.

A Practical Guide to Theory, Measurement, and Circuits

Radio-Frequency Electronics

Design of Ultra Wideband Antenna Matching Networks

Advanced Techniques in RF Power Amplifier Design

Microwave RF Antennas and Circuits

Switchmode RF and Microwave Power Amplifiers, Third Edition is an essential reference book on developing RF and microwave switchmode power amplifiers. The book combines theoretical discussions with practical examples, allowing readers to design high-efficiency RF and microwave power amplifiers on different types of bipolar and field-effect transistors, design any type of high-efficiency switchmode

power amplifiers operating in Class D or E at lower frequencies and in Class E or F and their subclasses at microwave frequencies with specified output power, also providing techniques on how to design multiband and broadband Doherty amplifiers using different bandwidth extension techniques and implementation technologies. This book provides the necessary information to understand the theory and practical implementation of load-network design techniques based on lumped and transmission-line elements. It brings a unique focus on switchmode RF and microwave power amplifiers that are widely used in cellular/wireless, satellite and radar communication systems which offer major power consumption savings. Provides a complete history of high-efficiency Class E and Class F techniques Presents a new chapter on Class E with shunt capacitance and shunt filter to simplify the design of high-efficiency power amplifier with broader frequency bandwidths Covers different Doherty architectures, including integrated and monolithic implementations, which are and will be, used in modern communication systems to save power consumption and to reduce size and costs Includes extended coverage of multiband and broadband Doherty amplifiers with different frequency ranges and output powers using different bandwidth extension techniques Balances theory with practical implementation, avoiding a cookbook approach and enabling engineers to develop better designs, including hybrid, integrated and monolithic implementations

This book teaches the skills and knowledge required by today's RF and microwave engineer in a concise, structured and systematic way. Reflecting modern developments in the field, this book focuses on active circuit design covering the latest devices and design techniques. From electromagnetic and transmission line theory and S-parameters through to amplifier and oscillator design, techniques for low noise and broadband design; This book focuses on analysis and design including up to date material on MMIC design techniques. With this book you will: Learn the basics of RF and microwave circuit analysis and design, with an emphasis on active circuits, and become familiar with the operating principles of the most common active system building blocks such as amplifiers, oscillators and mixers Be able to design transistor-based amplifiers, oscillators and mixers by means of basic design methodologies Be able to apply established graphical design tools, such as the Smith chart and feedback mappings, to the design RF and microwave active circuits Acquire a set of basic design skills and useful tools that can be employed without recourse to complex computer aided design Structured in the form of modular chapters, each covering a specific topic in a concise form suitable for delivery in a single lecture Emphasis on clear explanation and a step-by-step approach that aims to help students to easily grasp complex concepts Contains tutorial questions and problems allowing readers to test their knowledge An accompanying website containing supporting material in the form of slides and software (MATLAB) listings Unique material on negative resistance oscillator design, noise analysis and three-port design techniques Covers the latest developments in microwave active circuit design with new approaches that are not covered elsewhere

The audio amplifier is at the heart of audio design. Its performance determines largely the performance of any audio system. John Linsley Hood is widely regarded as the finest audio designer around, and pioneered design in the post-valve era. His mastery of audio technology extends from valves to the latest techniques. This is John Linsley Hood's greatest work yet, describing the milestones that have marked the development of audio amplifiers since the earliest days to the latest systems. Including classic amps with valves at their heart and exciting new designs using the latest components, this book is the complete world guide to audio amp design. John Linsley Hood is responsible for numerous amplifier designs that have led the way to better sound, and has also kept up a commentary on developments in audio in magazines such as The Gramophone, Electronics in Action and Electronics and Wireless World. He is also the author of The Art of Linear Electronics and Audio Electronics published by Newnes. Complete world guide to audio amp design written by world famous author Covers classic amps to new designs using latest components Includes the best of valves as well as best of transistors

This material, which includes a full-colour textbook and over 12 hours of video tutorials (in mp4 format), provides a comprehensive guide for the RF and Microwave engineering student or junior professional. It allows the reader to achieve a good understanding of the foundation theory and concepts behind high frequency circuits as well illustrating the most common design and simulation techniques for passive and active RF circuits.

High Frequency and Microwave Engineering

Ferrites at Microwave Frequencies

Nonlinearity Applications in Engineering

From Fundamentals to Advanced Design Methods

RF Circuit Design

This book gives an in-depth account of GaAs, InP and SiGe, technologies and describes all the key techniques for the design of amplifiers, ranging from filters and data converters to image oscillators, mixers, switches, variable attenuators, phase shifters, integrated antennas and complete monolithic transceivers.

Using the load-pull method for RF and microwave power amplifier design This new book on RF power amplifier design, by industry expert Dr. John F. Sevic, provides comprehensive treatment of RF PA design using the load-pull method, the most widely used and successful method of design. Intended for the newcomer to load-pull, or the seasoned expert, the book presents a systematic method of generation of load-pull contour data, and matching network design, to rapidly produce a RF PA with first-pass success. The method is suitable from HF to millimeter-wave bands, discrete or integrated, and for high-power applications. Those engaged in design or fundamental research will find this book useful, as will the student new to RF and interested in PA design. The author presents a complete pedagogical methodology for RF PA design, starting with treatment of automated contour generation to identify optimum transistor performance with constant source power load-pull. Advanced methods of contour generation for simultaneous optimization of many variables, such as power, efficiency, and linearity are next presented. This is followed by treatment of optimum impedance identification using contour data to address specific objectives, such as optimum efficiency for a given linearity over a specific bandwidth. The final chapter presents a load-pull specific treatment of matching network design using load-pull contour data, applicable to both single-stage and multi-stage PA's. Both lumped and distributed matching network synthesis methods are described, with several worked matching network examples. Readers will see a description of a powerful and accessible method that spans multiple RF PA disciplines, including 5G base-station and mobile applications, as well as sat-com and military applications; load-pull with CAD systems is also included. They will review information presented through a practical, hands-on perspective. The book: Helps engineers develop systematic, accurate, and repeatable approach to RF PA design Provides in-depth coverage of using the load-pull method for first-pass design success Offers 150 illustrations and six case studies for greater comprehension of topics

Microwave Devices, Circuits and Subsystems for Communications Engineering provides a detailed treatment of the common microwave elements found in modern microwave communications systems. The treatment is thorough without being unnecessarily mathematical. The emphasis is on acquiring a conceptual understanding of the techniques and technologies discussed and the practical design criteria required to apply these in real engineering situations. Key topics addressed include: Microwave diode and transistor equivalent circuits Microwave transmission line technologies and microstrip design Network methods and s-parameter measurements Smith chart and related design techniques Broadband and low-noise amplifier design Mixer theory and design Microwave filter design Oscillators, synthesisers and phase locked loops Each chapter is written by specialists in their field and the whole is edited by experience authors whose expertise spans the fields of communications systems engineering and microwave circuit design. Microwave Devices, Circuits and Subsystems for Communications Engineering is suitable for senior electrical, electronic or telecommunications engineering undergraduate students, first year postgraduate students and experienced engineers seeking a conversion or refresher text. Includes a companion website featuring: Solutions to selected problems Electronic versions of the figures Sample chapter

This book describes a new concept for analyzing RF/microwave circuits, which includes RF/microwave antennas. The book is unique in its emphasis on practical and innovative microwave RF engineering applications. The analysis is based on nonlinear dynamics and chaos models and shows comprehensive benefits and results. All conceptual RF microwave circuits and antennas are innovative and can be broadly implemented in engineering applications. Given the dynamics of RF microwave circuits and antennas, they are suitable for use in a broad range of applications. The book presents analytical methods for microwave RF antennas and circuit analysis, concrete examples, and geometric examples. The analysis is developed systematically, starting with basic differential equations and their bifurcations, and subsequently moving on to fixed point analysis, limit cycles and their bifurcations. Engineering applications include microwave RF circuits and antennas in a variety of topological structures, RFID ICs and antennas, microstrips, circulators, cylindrical RF network antennas, Tunnel Diodes (TDs), bipolar transistors, field effect transistors (FETs), IMPATT amplifiers, Small Signal (SS) amplifiers, Bias-T circuits, PIN diode circuits, power amplifiers, oscillators, resonators, filters, N-turn antennas, dual spiral coil antennas, helix antennas, linear dipole and slot arrays, and hybrid translinear circuits. In each chapter, the concept is developed from the basic assumptions up to the final engineering outcomes. The scientific background is explained at basic and advanced levels and closely integrated with mathematical theory. The book also includes a wealth of examples, making it ideal for intermediate graduate level studies. It is aimed at electrical and electronic engineers, RF and microwave engineers, students and researchers in physics, and will also greatly benefit all engineers who have had no formal instruction in nonlinear dynamics, but who now desire to bridge the gap between innovative microwave RF circuits and antennas and advanced mathematical analysis methods.

A Multimedia Conceptual Guide to RF & Microwave Engineering, Based on AWR Microwave Office Video Tutorials

Nonlinear Microwave Circuits

Doherty Power Amplifiers

RF and Microwave Power Amplifier Design

Practical RF Circuit Design for Modern Wireless Systems

Pozar's new edition of Microwave Engineering includes more material on active circuits, noise, nonlinear effects, and wireless systems. Chapters on noise and nonlinear distortion, and active devices have been added along with the coverage of noise and more material on intermodulation distortion and related nonlinear effects. On active devices, there's more updated material on bipolar junction and field effect transistors. New and updated material on wireless communications systems, including link budget, link margin, digital modulation methods, and bit error rates is also part of the new edition. Other new material includes a section on transients on transmission lines, the theory of power waves, a discussion of higher order modes and frequency effects for microstrip line, and a discussion of how to determine unloaded.

This classic text is an excellent resource and time-saver for engineers who need to tackle troublesome nonlinear components that remain in use despite recent advances in microwave technology. NONLINEAR MICROWAVE CIRCUITS offers detailed, technically substantial coverage of key methods for the analysis, design, and optimization of nonlinear microwave circuits. Using minimal mathematics, it integrates in-depth, "readable" coverage of the underlying theories that guide these methods. This book is replete with valuable "how to" information on a wide range of topics.

This is a rigorous tutorial on radio frequency and microwave power amplifier design, teaching the circuit design techniques that form the microelectronic backbones of modern wireless communications systems. Suitable for self-study, corporate training, or Senior/Graduate classroom use, the book combines analytical calculations and computer-aided design techniques to arm electronic engineers with every possible method to improve their designs and shorten their design time cycles.

Reliable RF Power Amplifier Design Based on a Partitioning Design Approach

Circuits and Applications

Microwave De-embedding

Practical RF Amplifier Design and Performance Optimization with SPICE and Load- and Source-pull Techniques

Solid-State Microwave Amplifier Design