

Access Free Advanced Design Techniques For Rf Power Amplifiers modernh.com

Advanced Techniques in RF Power Amplifier Design Silicon-Based RF Front-Ends for Ultra Wideband Radios Substrate Noise Coupling in RFICs Optimiertes Design von Mikrowellen-Leistungstransistoren und Verstärkern im X-Band Switchmode RF and Microwave Power Amplifiers Precision Temperature Sensors in CMOS Technology Solid-State Microwave High-Power Amplifiers RF Power Amplifiers Analog-Baseband Architectures and Circuits for Multistandard and Low-Voltage Wireless Transceivers Doherty Power Amplifiers CMOS Current-Mode Circuits for Data Communications Analog Circuit Design Techniques at 0.5V CMOS Multichannel Single-Chip Receivers for Multi-Gigabit Optical Data Communications RF Power Amplifiers Analysis and Design of Quadrature Oscillators Broadband Opto-Electrical Receivers in Standard CMOS Envelope Tracking Power Amplifiers for Wireless Communications Ultra Low Power Capacitive Sensor Interfaces Switchmode RF Power Amplifiers IQ Calibration Techniques for CMOS Radio Transceivers High-speed Circuit Board Signal Integrity Advanced Design Techniques for RF Power Amplifiers Low-Frequency Noise in Advanced MOS Devices Modeling and Design Techniques for RF Power Amplifiers High-Efficiency Load Modulation Power Amplifiers for Wireless Communications Practical RF Amplifier Design and Performance Optimization with SPICE and Load- and Source-pull Techniques Mobile Multimedia Communications High Efficiency RF and Microwave Solid State Power Amplifiers RF Power Amplifiers for Mobile Communications Design of High Voltage xDSL Line Drivers in Standard CMOS Full-Chip Nanometer Routing Techniques Hocheffiziente frequenzagile Mikrowellen-Leistungsverstärker auf Basis von Verbindungshalbleitern und Ferroelektrika Mobile Lightweight Wireless Systems Distortion in RF Power Amplifiers Efficiency Enhancement of Linear GaN RF power Amplifiers Using the Doherty Technique RF Front-End: World Class Designs Wireless Technologies Adaptive Multi-Standard RF Front-Ends Load-Pull Techniques with Applications to Power Amplifier Design Switched-Capacitor Techniques for High-Accuracy Filter and ADC Design

Advanced Techniques in RF Power Amplifier Design Advanced Design Techniques for RF Power Amplifiers provides a deep analysis of theoretical aspects, modelling, and design strategies of RF high-efficiency power amplifiers. The book can be used as a guide by scientists and engineers dealing with the subject and as a text book for graduate and postgraduate students. Although primarily intended for skilled readers, it provides an excellent quick start for beginners.

Silicon-Based RF Front-Ends for Ultra Wideband Radios This book proposes alternative switched capacitor techniques which allow the achievement of higher intrinsic analogue functional accuracy than previously possible in such application areas as analogue filter and ADC design. The validity of the concepts developed and analyzed in Switched-Capacitor Techniques for High-Accuracy Filter and ADC Design has been demonstrated in practice with the design of CMOS SC bandpass filters and algorithmic ADC stages.

Substrate Noise Coupling in RFICs This book deals with the analysis and design of CMOS current-mode circuits for data communications. CMOS current-mode sampled-data networks, i.e. switched-current circuits, are excluded. Major subjects covered in the book include: a critical comparison of voltage-mode and current-mode circuits; the building blocks of current-mode circuits; design techniques; modeling of wire channels, electrical signaling for Gbps data communications; ESD protection for current-mode circuits and more. This book will appeal to IC design engineers, hardware system engineers and others.

Optimiertes Design von Mikrowellen-Leistungstransistoren und Verstärkern im X-Band The book reports modeling and simulation techniques for substrate noise coupling effects in RFICs and introduces isolation structures and design guides to mitigate such effects with the ultimate goal of enhancing the yield of RF and mixed signal SoCs. The book further reports silicon measurements, and new test and noise isolation structures. To the authors' knowledge, this is the first title devoted to the topic of substrate noise coupling in RFICs as part of a large SoC.

Switchmode RF and Microwave Power Amplifiers 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.

Precision Temperature Sensors in CMOS Technology This book presents architectural and circuit techniques for wireless transceivers to achieve multistandard and low-voltage compliance. It provides an up-to-date survey and detailed study of the state-of-the-art transceivers for modern single- and multi-purpose wireless communication systems. The book includes comprehensive analysis and design of multimode reconfigurable receivers and transmitters for an efficient multistandard compliance.

Solid-State Microwave High-Power Amplifiers A comprehensive study of silicon-based distributed architectures in wideband circuits are presented in this book. Novel circuit architectures for ultra-wideband (UWB) wireless technologies are described. The book begins with an introduction of several transceiver architectures for UWB. The discussion then focuses on RF front-end of the UWB radio. Therefore, the book will be of interest to RF circuit designers and students.

RF Power Amplifiers This second edition of the highly acclaimed RF Power Amplifiers has been thoroughly revised and expanded to reflect the latest challenges associated with power transmitters used in communications systems. With more rigorous treatment of many concepts, the new edition includes a unique combination of class-tested analysis and industry-proven design techniques. Radio frequency (RF) power amplifiers are the fundamental building blocks used in a vast variety of wireless communication circuits, radio and TV broadcasting transmitters, radars, wireless energy transfer, and industrial processes. Through a combination of theory and practice, RF Power Amplifiers, Second Edition provides a solid understanding of the key concepts, the principle of operation, synthesis, analysis, and design of RF power amplifiers. This extensive update boasts: up to date end of chapter summaries; review questions and problems; an expansion on key concepts; new examples related to real-world applications illustrating key concepts and brand new chapters covering 'hot topics' such as RF LC oscillators and dynamic power supplies. Carefully edited for superior readability, this work remains an essential reference for research & development staff and design engineers. Senior level undergraduate and graduate electrical engineering students will also find it an invaluable resource with its practical examples & summaries, review questions and end of chapter problems. Key features: • A fully revised solutions manual is now hosted on a companion website alongside new simulations. • Extended treatment of a broad range of topologies of RF power amplifiers. • In-depth treatment of state-of-the-art of modern transmitters and a new chapter on oscillators. • Includes problem-solving methodology, step-by-step derivations and closed-form design equations with illustrations.

Analog-Baseband Architectures and Circuits for Multistandard and Low-Voltage Wireless Transceivers Die vorliegende Arbeit beschreibt die Entwicklung einer neuartigen Transistor-Peripherie für Mikrowellen-Leistungstransistoren und den Entwurf von monolithischen Gallium-Arsenid-(GaAs-) und Gallium-Nitrid- (GaN-) Leistungsverstärkern im X-Band (8-12 GHz). Die neuartige Peripherie der Leistungstransistoren führt zu einer gleichmäßigeren Aussteuerung der einzelnen Transistorzellen. Hieraus resultiert eine höhere Verstärkung und Effizienz sowie eine bessere Linearität, insbesondere im Frequenzbereich oberhalb von 10 GHz. Diese Verbesserung der Transistoreigenschaften kann bei linearen Verstärkern und bei Schaltverstärkern genutzt werden, sowohl bei Verwendung von Koplanar- als auch von Mikrostreifen-Technologie. Die hier vorgestellten

Leistungsverstärker erreichen eine Ausgangsleistung von bis zu 16 W im X-Band bei einer Chipfläche von nur 2,2 mm x 3,3 mm, was einen internationalen Rekord in Bezug auf die Leistung pro Chipfläche darstellt. Derartige Verstärker erlauben eine kompaktere Gestaltung und ein geringeres Gewicht vieler Mikrowellen-Systeme, wie beispielsweise weltraumgestützter Kommunikationseinrichtungen. Ebenso sind mit diesen Verstärkern neue Systemkonzepte, wie etwa Active Phased Arrays für luftgestützte RADAR-Anlagen, leichter oder erstmals realisierbar.

Doherty Power Amplifiers Do you want to know how to design high efficiency RF and microwave solid state power amplifiers? Read this book to learn the main concepts that are fundamental for optimum amplifier design. Practical design techniques are set out, stating the pros and cons for each method presented in this text. In addition to novel theoretical discussion and workable guidelines, you will find helpful running examples and case studies that demonstrate the key issues involved in power amplifier (PA) design flow. Highlights include: Clarification of topics which are often misunderstood and misused, such as bias classes and PA nomenclatures. The consideration of both hybrid and monolithic microwave integrated circuits (MMICs). Discussions of switch-mode and current-mode PA design approaches and an explanation of the differences. Coverage of the linearity issue in PA design at circuit level, with advice on low distortion power stages. Analysis of the hot topic of Doherty amplifier design, plus a description of advanced techniques based on multi-way and multi-stage architecture solutions. High Efficiency RF and Microwave Solid State Power Amplifiers is: an ideal tutorial for MSc and postgraduate students taking courses in microwave electronics and solid state circuit/device design; a useful reference text for practising electronic engineers and researchers in the field of PA design and microwave and RF engineering. With its unique unified vision of solid state amplifiers, you won't find a more comprehensive publication on the topic.

CMOS Current-Mode Circuits for Data Communications 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.

Analog Circuit Design Techniques at 0.5V Here is a thorough treatment of distortion in RF power amplifiers. This unique resource offers expert guidance in designing easily linearizable systems that have low memory effects. It offers you a detailed understanding of how the matching impedances of a power amplifier and other RF circuits can be tuned to minimize overall distortion. What's more, you see how to build models that can be used for distortion simulations.

CMOS Multichannel Single-Chip Receivers for Multi-Gigabit Optical Data Communications This book describes ultra low power capacitive sensor interfaces, and presents the realization of a very low power generic sensor interface chip that is adaptable to a broad range of capacitive sensors. The book opens by reviewing important design aspects for autonomous sensor systems, discusses different building blocks, and presents the modular architecture for the generic sensor interface chip. Finally, the generic sensor interface chip is shown in state-of-the-art applications.

RF Power Amplifiers This book investigates solutions, benefits, limitations, and costs associated with multi-standard operation of RF front-ends and their ability to adapt to variable radio environments. Next, it highlights the optimization of RF front-ends to allow maximum performance within a certain power budget, while targeting full integration. Finally, the book investigates possibilities for low-voltage, low-power circuit topologies in CMOS technology.

Analysis and Design of Quadrature Oscillators This much-anticipated volume builds on the author's popular work, *RF Power Amplifiers for Wireless Communications* (Artech House, 1999), offering you 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 enables you to efficiently design linear RF power amplifiers, and includes detailed discussions on envelope power management schemes and linearization techniques.

Broadband Opto-Electrical Receivers in Standard CMOS Envelope tracking technology is seen as the most promising efficiency enhancement technology for RF power amplifiers for 4G and beyond wireless communications. More and more organizations are investing and researching on this topic with huge potential in academic and commercial areas. This is the first book on the market to offer complete introduction, theory, and design considerations on envelope tracking for wireless communications. This resource presents you with a full introduction to the subject and covers underlying theory and practical design considerations.

Envelope Tracking Power Amplifiers for Wireless Communications This book tackles challenges for the design of analog integrated circuits that operate from ultra-low power supply voltages (down to 0.5V). Coverage demonstrates the signal processing circuit and circuit biasing approaches through the design of operational transconductance amplifiers (OTAs). These amplifiers are then used to build analog system functions including continuous time filter and a sample and hold amplifier.

Ultra Low Power Capacitive Sensor Interfaces This cutting-edge resource presents a complete and systematic overview of the practical design considerations of radio frequency (RF) high efficiency load modulation power amplifiers (PA) for modern wireless communications for 4G and beyond. It provides comprehensive insight into all aspects of load modulation PA design and optimization not only covering design approaches specifically for passive and active load modulation operation but also hybrid with dynamic supply modulation and digital signal processing algorithms required for performance enhancement. Passive load impedance tuner design, dynamic load modulation PA, active load modulation PA and Doherty PA design for efficiency enhancement are explained. Readers find practical guidance into load modulation PA design for bandwidth extension, including video bandwidth enhancement techniques, broadband dynamic load amplifiers, topology selection, design procedures, and network output. This book presents the evolution and integration of classical load modulation PA topologies in order to meet new challenges in the field.

Switchmode RF Power Amplifiers This is an introduction to noise, describing fundamental noise sources and basic circuit analysis, discussing characterization of low-frequency noise and offering practical advice that bridges concepts of noise theory and modelling, characterization, CMOS technology and circuits. The text offers the latest research, reviewing the most recent publications and conference presentations. The book concludes with an introduction to noise in analog/RF circuits and describes how low-frequency noise can affect these circuits.

IQ Calibration Techniques for CMOS Radio Transceivers This book presents a novel multilevel full-chip router, namely mSIGMA for SIGnal-integrity and MANufacturability optimization. These routing technologies will ensure faster time-to-market and time-to-profitability. The book includes a detailed description on the modern VLSI routing problems, and multilevel optimization on routing design to solve the chip complexity problem.

High-speed Circuit Board Signal Integrity Achieve higher levels of performance, integration, compactness, and cost-effectiveness in the design and modeling of radio-frequency (RF) power amplifiers. RF power amplifiers are important components of any wireless transmitter, but are often the limiting factors in achieving better performance and lower cost in a wireless communication system—presenting the RF IC design community with many challenges. The next-generation technological advances presented in this book are the result of cutting-edge research in the area of large-signal device modeling and RF power amplifier design at the Georgia Institute of Technology, and have the potential to significantly

address issues of performance and cost-effectiveness in this area. Richly complemented with hundreds of figures and equations, Modeling and Design Techniques for RF Power Amplifiers introduces and explores the most important topics related to RF power amplifier design under one concise cover. With a focus on efficiency enhancement techniques and the latest advances in the field, coverage includes: Device modeling for CAD Empirical modeling of bipolar devices Scalable modeling of RF MOSFETs Power amplifier IC design Power amplifier design in silicon Efficiency enhancement of RF power amplifiers The description of state-of-the-art techniques makes this book a valuable and handy reference for practicing engineers and researchers, while the breadth of coverage makes it an ideal text for graduate- and advanced undergraduate-level courses in the area of RF power amplifier design and modeling.

Advanced Design Techniques for RF Power Amplifiers This book fits in the quest for highly efficient fully integrated xDSL modems for central office applications. It presents a summary of research at one of Europe's most famous analog design research groups over a five year period. The book focuses on the line driver, the most demanding building block of the xDSL modem for lowering power. The book covers the total design flow of monolithic CMOS high voltage circuits. It is essential reading for analog design engineers.

Low-Frequency Noise in Advanced MOS Devices This book describes the analysis and design of precision temperature sensors in CMOS IC technology, focusing on so-called smart temperature sensors, which provide a digital output signal that can be readily interpreted by a computer. The text shows how temperature characteristics can be used to obtain an accurate digital temperature reading. The book ends with a detailed description of three prototypes, one of which achieves the best performance reported to date.

Modeling and Design Techniques for RF Power Amplifiers Advanced concepts for wireless technologies present a vision of technology that is embedded in our surroundings and practically invisible. From established radio techniques like GSM, 802.11 or Bluetooth to more emerging technologies, such as Ultra Wide Band and smart dust motes, a common denominator for future progress is the underlying integrated circuit technology. Wireless Technologies responds to the explosive growth of standard cellular radios and radically different wireless applications by presenting new architectural and circuit solutions engineers can use to solve modern design problems. This reference addresses state-of-the-art CMOS design in the context of emerging wireless applications, including 3G/4G cellular telephony, wireless sensor networks, and wireless medical application. Written by top international experts specializing in both the IC industry and academia, this carefully edited work uncovers new design opportunities in body area networks, medical implants, satellite communications, automobile radar detection, and wearable electronics. The book is divided into three sections: wireless system perspectives, chip architecture and implementation issues, and devices and technologies used to fabricate wireless integrated circuits. Contributors address key issues in the development of future silicon-based systems, such as scale of integration, ultra-low power dissipation, and the integration of heterogeneous circuit design style and processes onto one substrate. Wireless sensor network systems are now being applied in critical applications in commerce, healthcare, and security. This reference, which contains 25 practical and scientifically rigorous articles, provides the knowledge communications engineers need to design innovative methodologies at the circuit and system level.

High-Efficiency Load Modulation Power Amplifiers for Wireless Communications Following the success of the First MOBILIGHT 2009 in Athens, Greece, the Second International Conference on Mobile Lightweight Systems (MOBILIGHT) was held in Barcelona, Spain on May 10-12, 2010. It was not an easy decision to carry on organizing a scientific event on wireless communications, where competition is really enormous. This decision was motivated by discussion with many colleagues about the current unprecedented demand for light-weight, wireless communication devices with high usability and performance able to support added-value services in a highly mobile environment. Such devices follow the users everywhere they go (at work, at home, while travelling, in a classroom, etc.) and result in exciting research, development and business opportunities. Such scenarios clearly demand significant upgrades to the existing communication paradigm in terms of infrastructure, devices and services to support the "anytime, anywhere, any device" philosophy, providing novel and fast-evolving requirements and expectations on search and development in the field of information and communication technologies. The core issue is to support wireless users' desire for 24/7 network availability and transparent access to "their own" services. In this context, we continue to envision an international forum where practitioners and researchers coming from the many areas involved in lightweight wireless systems' design and deployment would be able to interact and exchange experiences.

Practical RF Amplifier Design and Performance Optimization with SPICE and Load- and Source-pull Techniques This book opens with the basics of the design of opto-electronic interface circuits. The text continues with an in-depth analysis of the photodiode, transimpedance amplifier (TIA) and limiting amplifier (LA). To thoroughly describe light detection mechanisms in silicon, first a one-dimensional and second a two-dimensional model is developed. All material is experimentally verified with several CMOS implementations, with ultimately a fully integrated Gbit/s optical receiver front-end including photodiode, TIA and LA.

Mobile Multimedia Communications An advanced textbook covering the fundamental theory of RF power amplifiers and their uses, this book provides essential guidance for design procedures. The introduction explains the basic theory of RF power amplifiers besides providing the basic classification of the different types of RF power amplifier. It then systematically dedicates a chapter to each different of RF power amplifier covering A, B and C, D (full-bridge and half-bridge types), E (zero-voltage-switching and zero-current-switching), F and DE amplifiers. Throughout this comprehensive guide, the optimal operating conditions are explored and the possible causes for suboptimum operation explained. The book then considers integrated inductors and linearization techniques and LC Oscillators in the concluding chapters. A comprehensive text covering the fundamentals of RF power amplifiers and their range of applications in radio and TV broadcasting, wireless communications and radars. Presents accessible coverage of the complex principles of operation of RF power amplifiers and radio power systems. Introduces the fundamental design techniques and procedures for practitioners for RF power amplifiers. All chapters contain examples and design procedures throughout, with review questions and problems at the end of each chapter. A solutions manual is available for instructors upon enquiry

High Efficiency RF and Microwave Solid State Power Amplifiers The 802.11n wireless standard uses 64-state quadrature amplitude modulation (64-QAM) to achieve higher spectral efficiency. Consequently, the transmitter and receiver require a higher signal to noise ratio with the same level of error rate performance. This book offers a fully-analog compensation technique without baseband circuitry to control the calibration process. Using an 802.11g transceiver design as an example, it describes in detail an auto-calibration mechanism for I/Q gains and phases imbalance.

RF Power Amplifiers for Mobile Communications Diese Arbeit beschäftigt sich mit dem Entwurf, der Optimierung und Charakterisierung von GaN-HEMT-Leistungsverstärkern für Mobilfunkanwendungen. Der Fokus liegt hierbei auf steuerbaren Transformationsnetzwerken auf Basis elektronisch anpassbarer Barium-Strontium-Titanat (BST)-Varaktoren. Dabei konnte die Leistungsverträglichkeit jener BST-Varaktoren bis zu 50 W gesteigert werden, verbunden mit einer guten Linearität und geringen Temperaturabhängigkeit. Dies zielt darauf, den Wirkungsgrad von Leistungsverstärkern bei Leistungen deutlich unterhalb der Sättigung zu verbessern. Die so entwickelten steuerbaren Transformationsnetzwerke sind für gehäuseintegrierte Transistormodule optimiert. Auf diese Weise lassen sich platzsparende und äußerst flexibel einsetzbare Komponenten für Hochfrequenzanwendungen realisieren. Die Transistormodule erreichen einen hohen Wirkungsgrad von bis zu 72% PAE in der Sättigung. Sie verbessern zudem die PAE bei reduzierter Leistung um mehrere Prozentpunkte gegenüber statisch angepassten Transistoren. Darüber hinaus sind sie über der Frequenz im S-Band nicht nur gut steuerbar, sondern lassen sich auch durch Änderung der Steuerspannung auf optimalen Wirkungsgrad oder Linearität bei verschiedenen Leistungspegeln anpassen. Auch hybride Verstärker werden vorgestellt, in denen diskret aufgebaute Varaktoren verbaut sind. Dank der verwendeten Modulatoren, für welche ebenfalls GaN-Transistoren und Dioden genutzt werden, bieten die Verstärker das Potenzial zur Lastmodulation. Dadurch steigt die Effizienz beim Betrieb mit modulierten Signalen. Für LTE-äquivalente Signale lässt sich die mittlere PAE um mehrere Prozentpunkte erhöhen, ohne die Linearität in einem System mit Vorverzerrung zu belasten.

Design of High Voltage xDSL Line Drivers in Standard CMOS 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

Full-Chip Nanometer Routing Techniques

Hocheffiziente frequenzagile Mikrowellen-Leistungsverstärker auf Basis von Verbindungshalbleitern und Ferroelektrika This first book on load-pull systems is intended for readers with a broad knowledge of high frequency transistor device characterization, nonlinear and linear microwave measurements, RF power amplifiers and transmitters. Load-Pull Techniques with Applications to Power Amplifier Design fulfills the demands of users, designers, and researchers both from industry and academia who have felt the need of a book on this topic. It presents a comprehensive reference spanning different load-pull measurement systems, waveform measurement and engineering systems, and associated calibration procedures for accurate large signal characterization. Besides, this book also provides in-depth practical considerations required in the realization and usage of load-pull and waveform engineering systems. In addition, it also provides procedure to design application specific load-pull setup and includes several case studies where the user can customize architecture of load-pull setups to meet any specific measurement requirements. Furthermore, the materials covered in this book can be part of a full semester graduate course on microwave device characterization and power amplifier design.

Mobile Lightweight Wireless Systems All the design and development inspiration and direction a hardware engineer needs in one blockbuster book! Janine Love site editor for RF Design Line, columnist, and author has selected the very best RF design material from the Newnes portfolio and has compiled it into this volume. The result is a book covering the gamut of RF front end design from antenna and filter design fundamentals to optimized layout techniques with a strong pragmatic emphasis. In addition to specific design techniques and practices, this book also discusses various approaches to solving RF front end design problems and how to successfully apply theory to actual design tasks. The material has been selected for its timelessness as well as for its relevance to contemporary RF front end design issues. Contents: Chapter 1 Radio waves and propagation Chapter 2 RF Front End Design Chapter 3 Radio Transmission Fundamentals Chapter 4 Advanced Architectures Chapter 5 RF Power Amplifiers Chapter 6 RF Amplifiers CHAPTER 7 Basics of PA Design Chapter 8 Power Amplifiers Chapter 9 RF/IF Circuits Chapter 10 Filters Chapter 11 Transmission Lines and PCBs as Filters Chapter 12 Tuning and Matching Chapter 13 Impedance Matching Chapter 14 RF Power Linearization Techniques *Hand-picked content selected by Janine Love, RF DesignLine site editor and author *Proven best design practices for antennas, filters, and layout *Case histories and design examples get you off and running on your current project

Distortion in RF Power Amplifiers This book tackles both high efficiency and high linearity power amplifier (PA) design in low-voltage CMOS. With its emphasis on theory, design and implementation, the book offers a guide for those actively involved in the design of fully integrated CMOS wireless transceivers. Offering mathematical background, as well as intuitive insight, the book is essential reading for RF design engineers and researchers and is also suitable as a text book.

Efficiency Enhancement of Linear GaN RF power Amplifiers Using the Doherty Technique This leading-edge circuit design resource offers the knowledge needed to quickly pinpoint transmission problems that can compromise circuit design. Discusses both design and debug issues at gigabit per second data rates.

RF Front-End: World Class Designs This book constitutes the thoroughly refereed post-conference proceedings of the 6th International ICST Conference on Mobile Multimedia Communications (MOBIMEDIA 2010) held in Lisbon, Portugal, in September 2010, which was accompanied by the First International Workshop on Cognitive Radio and Cooperative Strategies for POWER Saving (C2POWER 2010), the Workshop on Impact of Scalable Video Coding on Multimedia Provisioning (SVCVision 2010), and the First International Workshop on Energy-efficient and Reconfigurable Transceivers (EERT 2010). The 59 revised full papers presented were carefully reviewed and selected from numerous submissions and are organized in topical sections on advanced techniques for video transmission; multimedia distribution; modelling of wireless systems; cellular networks; mobility concepts for IMT-advances (MOBILIA); media independent handovers (MIH-4-MEDIA); and IP-based emergency applications and services for next generation networks (PEACE).

Wireless Technologies Modern RF receivers and transmitters require quadrature oscillators with accurate quadrature and low phase-noise. Existing literature is dedicated mainly to single oscillators, and is strongly biased towards LC oscillators. This book is devoted to quadrature oscillators and presents a detailed comparative study of LC and RC oscillators, both at architectural and at circuit levels. It is shown that in cross-coupled RC oscillators both the quadrature error and phase-noise are reduced, whereas in LC oscillators the coupling decreases the quadrature error, but increases the phase-noise. Thus, quadrature RC oscillators can be a practical alternative to LC oscillators, especially when area and cost are to be minimized. The main topics of the book are: cross-coupled LC quasi-sinusoidal oscillators, cross-coupled RC relaxation oscillators, a quadrature RC oscillator-mixer, and π -integrator oscillators. The effect of mismatches on the phase-error and the phase-noise are thoroughly investigated. The book includes many experimental results, obtained from different integrated circuit prototypes, in the GHz range. A structured design approach is followed: a technology independent study, with ideal blocks, is performed initially, and then the circuit level design is addressed. This book can be used in advanced courses on RF circuit design. In addition to post-graduate students and lecturers, this book will be of interest to design engineers and researchers in this area.

Adaptive Multi-Standard RF Front-Ends This practical resource offers expert guidance on the most critical aspects of microwave power amplifier design. This comprehensive book provides descriptions of all the major active devices, discusses large signal characterization, explains all the key circuit design procedures. Moreover you gain keen insight on the link between design parameters and technological implementation, helping you achieve optimal solutions with the most efficient utilization of available technologies. The book covers a broad range of essential topics, from requirements for high-power amplifiers, device models, phase noise and power combiners, to high-efficiency amplifiers, linear amplifier design, bias circuits, and thermal design.

Load-Pull Techniques with Applications to Power Amplifier Design In the world of optical data communications this book will be an absolute must-read. It focuses on optical communications for short and very short distance applications and discusses the monolithic integration of optical receivers with processing elements in standard CMOS technologies. What's more, it provides the reader with the necessary background knowledge to fully understand the trade-offs in short-distance communication receiver design and presents the key issues to be addressed in the development of such receivers in CMOS technologies. Moreover, novel design approaches are presented.

Switched-Capacitor Techniques for High-Accuracy Filter and ADC Design 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

Copyright code : [3e56b7f66a9faaecefc57838ec306632](#)