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High-Frequency Integrated Circuits
Analysis and Design of Analog Integrated Circuits, 5th Edition
Neural Information Processing and VLSI
Double-shift Schooling
Practical MMIC Design
Classical and Object-oriented Software Engineering with UML and Java
Operation and Modeling of the MOS Transistor
Compact Modeling
High Frequency Continuous Time Filters in Digital CMOS Processes
A First Lab in Circuits and Electronics
Microelectronics
Continuous-Time Active Filter Design
BSIM4 and MOSFET Modeling for IC Simulation
Mixed Analog-digital VLSI Devices and Technology
Modern Semiconductor Devices for Integrated Circuits
Analog Integrated Circuits for Communication
CMOS: MIXED-SIGNAL CIRCUIT DESIGN
Analog Circuit Design Techniques at 0.5V
Fundamentals of Modern VLSI Devices
Advanced MOS Device Physics
Inverter-Based Circuit Design Techniques for Low Supply Voltages
Operation and Modeling of the MOS Transistor
CMOS RF Modeling, Characterization and Applications
Silicon RF Power MOSFETs
Foundations of Analog and Digital Electronic Circuits
Analog Circuit Design

Low-Power CMOS Wireless Communications
The Design of CMOS Radio-Frequency Integrated Circuits
Principles of Semiconductor Devices
Design of Analog-digital VLSI Circuits for Telecommunications and Signal Processing
Operation and Modeling of the MOS Transistor
Trade-Offs in Analog Circuit Design
CMOS Analog Design Using All-Region MOSFET Modeling
The MOS Transistor
MOSFET Modeling for Circuit Analysis and Design
Design of MOS VLSI Circuits for Telecommunications
CMOS analog circuit design
MOSFET Modeling for Circuit Analysis and Design
Operation and Modeling of the MOS Transistor, Third Edition International Edition
Ultra Low Power Bioelectronics

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High-Frequency Integrated Circuits Springer

Written by an award-winning educator and researcher, the sixteen experiments in this book have been extensively class-tested and fine-tuned. This lab manual, like no other, provides an exciting, active exploration of concepts and measurements and encourages students to tinker, experiment, and become creative on their own. This benefits their further study and subsequent professional work. The manual includes self-contained background for all electronics experiments, so that the lab can be run concurrently with any circuits or electronics course, at any

level. It uses circuits in real applications which students can relate to, in order to motivate them and convince them that what they learn is for real. As a result, the material is not only made interesting, but helps motivate further study in circuits, electronics, communications and semiconductor devices. EXTENSIVE INSTRUCTOR RESOURCES: * Putting the Lab Together is an extensive resource for instructors who are considering starting a lab based on this book. Includes an overview of a typical lab station, suggestions for choosing measurement equipment, equipment list with relevant information, and detailed information on parts required. This resource is openly available. * Instructor's Manual includes hints for choosing lab TAs, hints on how to run the lab experiments, guidelines for shortening or combining experiments, answers to experiment questions, and

suggestions for projects and exams. This manual is available to instructors who adopt the book.

Analysis and Design of Analog Integrated Circuits, 5th Edition
John Wiley & Sons

The essentials of analog circuit design with a unique all-region MOSFET modeling approach.

Neural Information Processing and VLSI Springer Science & Business Media

VLSI Electronics Microstructure Science, Volume 18: Advanced MOS Device Physics explores several device physics topics related to metal oxide semiconductor (MOS) technology. The emphasis is on physical description, modeling, and technological implications rather than on the formal aspects of device theory. Special attention is paid to the reliability physics of small-geometry MOSFETs. Comprised of eight chapters, this volume begins with a general picture of MOS technology development from the device and processing points of view. The critical issue of hot-carrier effects is discussed, along with the device engineering aspects of this problem; the emerging low-temperature MOS technology; and the problem of latchup in scaled MOS circuits. Several device models that are suitable for use in circuit simulators are also described. The last chapter examines novel electron transport effects observed in ultra-small MOS structures. This book should prove useful to semiconductor engineers involved in different aspects of MOS technology development, as well as for researchers in this field and students of the corresponding disciplines.

Double-shift Schooling Springer Science & Business Media

This book, first published in 2004, is an expanded and revised

edition of Tom Lee's acclaimed RFIC text.

Practical MMIC Design Springer Science & Business Media
Modern Semiconductor Devices for Integrated Circuits, First Edition introduces readers to the world of modern semiconductor devices with an emphasis on integrated circuit applications. KEY TOPICS: Electrons and Holes in Semiconductors; Motion and Recombination of Electrons and Holes; Device Fabrication Technology; PN and Metal-Semiconductor Junctions; MOS Capacitor; MOS Transistor; MOSFETs in ICs—Scaling, Leakage, and Other Topics; Bipolar Transistor. MARKET: Written by an experienced teacher, researcher, and expert in industry practices, this succinct and forward-looking text is appropriate for anyone interested in semiconductor devices for integrated circuits, and serves as a suitable reference text for practicing engineers.

Classical and Object-oriented Software Engineering with UML and Java Elsevier

This book presents the design of active RC filters in continuous time. Topics include: filter fundamentals active elements realization of functions using opamps LC ladder filters operational transconductance amplifier circuits (OTACs) MOSFET-C filters Continuous-Time Active Filter Design uses wave variables to enable the reader to better understand the introduction of more complex variables created through linear transformations of voltages and currents. Intended for undergraduate students in electrical engineering, Continuous-Time Active Filter Design provides chapters as self-contained units, including introductory material leading to active RC filters.

Operation and Modeling of the MOS Transistor World Scientific

Improve your circuit-design potential with this expert guide to the devices and technology used in mixed analog-digital VLSI chips for such high-volume applications as hard-disk drives, wireless telephones, and consumer electronics. The book provides you with a critical understanding of device models, fabrication technology, and layout as they apply to mixed analog-digital circuits. You will learn about the many device-modeling requirements for analog work, as well as the pitfalls in models used today for computer simulators such as Spice. Also included is information on fabrication technologies developed specifically for mixed-signal VLSI chips, plus guidance on the layout of mixed analog-digital chips for a high degree of analog-device matching and minimum digital-to-analog interference. This reference book features an intuitive introduction to MOSFET operation that will enable you to view with insight any MOSFET model ? besides thorough discussions on valuable large-signal and small-signal models. Filled with practical information, this first-of-its-kind book will help you grasp the nuances of mixed-signal VLSI-device models and layout that are crucial to the design of high-performance chips.

Compact Modeling Cambridge University Press

This edition has several improvements made to the content, organization and pedagogy. It introduces Overview of the MOS Transistor and has increased the number of examples featured. A chapter discussing CAD to take advantage of the widespread use of simulation software has also been added.

High Frequency Continuous Time Filters in Digital CMOS Processes Springer Science & Business Media

By helping students develop an intuitive understanding of the

subject, Microelectronics teaches them to think like engineers. The second edition of Razavi's Microelectronics retains its hallmark emphasis on analysis by inspection and building students' design intuition, and it incorporates a host of new pedagogical features that make it easier to teach and learn from, including: application sidebars, self-check problems with answers, simulation problems with SPICE and MULTISIM, and an expanded problem set that is organized by degree of difficulty and more clearly associated with specific chapter sections.

A First Lab in Circuits and Electronics Springer Science & Business Media

How do you say hello in Arabic? Explore the pages of this Arabic English picture dictionary to learn new words and phrases. Colorful photographs and simple labels make learning Arabic easy.

Microelectronics Prentice Hall

This book describes intuitive analog design approaches using digital inverters, providing filter architectures and circuit techniques enabling high performance analog circuit design. The authors provide process, supply voltage and temperature (PVT) variation-tolerant design techniques for inverter based circuits. They also discuss various analog design techniques for lower technology nodes and lower power supply, which can be used for designing high performance systems-on-chip.

Continuous-Time Active Filter Design Springer Science & Business Media

Low-Power CMOS Wireless Communications: A Wideband CDMA System Design focuses on the issues behind the development of a high-bandwidth, silicon complementary metal-oxide silicon

(CMOS) low-power transceiver system for mobile RF wireless data communications. In the design of any RF communications system, three distinct factors must be considered: the propagation environment in question, the multiplexing and modulation of user data streams, and the complexity of hardware required to implement the desired link. None of these can be allowed to dominate. Coupling between system design and implementation is the key to simultaneously achieving high bandwidth and low power and is emphasized throughout the book. The material presented in *Low-Power CMOS Wireless Communications: A Wideband CDMA System Design* is the result of broadband wireless systems research done at the University of California, Berkeley. The wireless development was motivated by a much larger collaborative effort known as the Infopad Project, which was centered on developing a mobile information terminal for multimedia content - a wireless 'network computer'. The desire for mobility, combined with the need to support potentially hundreds of users simultaneously accessing full-motion digital video, demanded a wireless solution that was of far lower power and higher data rate than could be provided by existing systems. That solution is the topic of this book: a case study of not only wireless systems designs, but also the implementation of such a link, down to the analog and digital circuit level.

[BSIM4 and MOSFET Modeling for IC Simulation](#) Springer Science & Business Media

Learn the basic properties and designs of modern VLSI devices, as well as the factors affecting performance, with this thoroughly updated second edition. The first edition has been widely adopted as a standard textbook in microelectronics in many major US

universities and worldwide. The internationally renowned authors highlight the intricate interdependencies and subtle trade-offs between various practically important device parameters, and provide an in-depth discussion of device scaling and scaling limits of CMOS and bipolar devices. Equations and parameters provided are checked continuously against the reality of silicon data, making the book equally useful in practical transistor design and in the classroom. Every chapter has been updated to include the latest developments, such as MOSFET scale length theory, high-field transport model and SiGe-base bipolar devices.

Mixed Analog-digital VLSI Devices and Technology World Scientific

Analog Integrated Circuits for Communication: Principles, Simulation and Design, Second Edition covers the analysis and design of nonlinear analog integrated circuits that form the basis of present-day communication systems. Both bipolar and MOS transistor circuits are analyzed and several numerical examples are used to illustrate the analysis and design techniques developed in this book. Especially unique to this work is the tight coupling between the first-order circuit analysis and circuit simulation results. Extensive use has been made of the public domain circuit simulator Spice, to verify the results of first-order analyses, and for detailed simulations with complex device models. Highlights of the new edition include: A new introductory chapter that provides a brief review of communication systems, transistor models, and distortion generation and simulation. Addition of new material on MOSFET mixers, compression and intercept points, matching networks. Revisions of text and explanations where necessary to reflect the new organization of

the book Spice input files for all the circuit examples that are available to the reader from a website. Problem sets at the end of each chapter to reinforce and apply the subject matter. An instructors solutions manual is available on the book's webpage at springer.com. Analog Integrated Circuits for Communication: Principles, Simulation and Design, Second Edition is for readers who have completed an introductory course in analog circuits and are familiar with basic analysis techniques as well as with the operating principles of semiconductor devices. This book also serves as a useful reference for practicing engineers.

Modern Semiconductor Devices for Integrated Circuits OUP USA CMOS technology has now reached a state of evolution, in terms of both frequency and noise, where it is becoming a serious contender for radio frequency (RF) applications in the GHz range. Cutoff frequencies of about 50 GHz have been reported for 0.18 μm CMOS technology, and are expected to reach about 100 GHz when the feature size shrinks to 100 nm within a few years. This translates into CMOS circuit operating frequencies well into the GHz range, which covers the frequency range of many of today's popular wireless products, such as cell phones, GPS (Global Positioning System) and Bluetooth. Of course, the great interest in RF CMOS comes from the obvious advantages of CMOS technology in terms of production cost, high-level integration, and the ability to combine digital, analog and RF circuits on the same chip. This book discusses many of the challenges facing the CMOS RF circuit designer in terms of device modeling and characterization, which are crucial issues in circuit simulation and design.

Analog Integrated Circuits for Communication Springer

Science & Business Media

The MOS (Metal Oxide Semiconductor) transistor is the most important building block of modern silicon integrated circuits. This book fills an important gap in the literature by presenting a unified treatment of the operation and modeling of the MOS transistor that is complemented with extensive intuitive discussions. The MOS transistor is the dominant VLSI (Very Large Scale Integration) device, and understanding of this device is mandatory for those people planning a career in device physics and modeling as well as in circuit design. Especially important for university courses, there is a logical, systematic and progressive description that starts with semiconductor fundamentals and builds up to a comprehensive understanding of the basics of MOS transistors. For practicing professionals there are details of nuances observed in MOS transistor behavior, and various approaches to modeling these are presented. Detailed derivations are given for modeling dc currents, charges for large-signal operation, small-signal operation at low frequencies and high frequencies, and noise.

CMOS: MIXED-SIGNAL CIRCUIT DESIGN Cambridge University Press

"This dynamic text applies physics concepts and equations to practical, real-world applications of semiconductor device theory"--

Analog Circuit Design Techniques at 0.5V World Scientific Analog Circuit Design is based on the yearly Advances in Analog Circuit Design workshop. The aim of the workshop is to bring together designers of advanced analogue and RF circuits for the purpose of studying and discussing new possibilities and future

developments in this field. Selected topics for AACD 2007 were: (1) Sensors, Actuators and Power Drivers for the Automotive and Industrial Environment; (2) Integrated PA's from Wireline to RF; (3) Very High Frequency Front Ends.

Fundamentals of Modern VLSI Devices Prentice Hall

There is an ever increasing trend towards putting entire systems on a single chip. This means that analog circuits will have to coexist on the same substrate along with massive digital systems. Since technologies are optimized with these digital systems in mind, designers will have to make do with standard CMOS processes in the years to come. We address analog filter design from this perspective. Filters form important blocks in applications ranging from computer disc-drive chips to radio transceivers. In this book, we develop the theory and techniques necessary for the implementation of high frequency (hundreds of megahertz) programmable continuous time filters in standard CMOS processes. Since high density poly-poly capacitors are not available in these technologies, alternative capacitor structures have to be found. Metal-metal capacitors have low specific capacitance. An alternative is to use the (inherently nonlinear) capacitance formed by MOSFET gates. In Chapter 2, we focus on the use of MOS capacitors as integrating elements. A physics-based model which predicts distortion accurately is presented for a two-terminal MOS structure in accumulation. Distortion in these

capacitors as a function of signal swing and bias voltage is computed. Chapter 3 reviews continuous-time filter architectures in the light of bias-dependent integrating capacitors. We also discuss the merits and demerits of various CMOS transconductance elements. The problems encountered in designing high frequency programmable filters are discussed in detail.

Advanced MOS Device Physics Oxford University Press, USA

This book presents the art of advanced MOSFET modeling for integrated circuit simulation and design. It provides the essential mathematical and physical analyses of all the electrical, mechanical and thermal effects in MOS transistors relevant to the operation of integrated circuits. Particular emphasis is placed on how the BSIM model evolved into the first ever industry standard SPICE MOSFET model for circuit simulation and CMOS technology development. The discussion covers the theory and methodology of how a MOSFET model, or semiconductor device models in general, can be implemented to be robust and efficient, turning device physics theory into a production-worthy SPICE simulation model. Special attention is paid to MOSFET characterization and model parameter extraction methodologies, making the book particularly useful for those interested or already engaged in work in the areas of semiconductor devices, compact modeling for SPICE simulation, and integrated circuit design.