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KEY=SOLUTION - PAGE MORENO

ANALYSIS AND DESIGN OF ANALOG INTEGRATED CIRCUITS, 5TH ED, ISV

John Wiley & Sons Market_Desc: Engineers Special Features: " Updates the coverage of bipolar technologies" Enhances the discussion of biCMOS" Provides a more unified treatment of digital and analog circuit design while strengthening the coverage of CMOS" Removes the chapter on non-linear analog circuits" Adds a new operational amplifier example to chapter 11 About The Book: This is the only comprehensive book in the market for engineers that covers CMOS, bipolar technologies, and biCMOS integrated circuits. The fifth edition retains its completeness, updates the coverage of bipolar technologies, and enhances the discussion of biCMOS. It provides a more unified treatment of digital and analog circuit design while strengthening the coverage of CMOS. The chapter on non-linear analog circuits has been removed and chapter 11 has been updated to include an operational amplifier example. With its streamlined and up-to-date coverage, more engineers can turn to this resource to explore key concepts in the field.

ANALYSIS AND DESIGN OF ANALOG INTEGRATED CIRCUITS, 5TH EDITION

Wiley Global Education This is the only comprehensive book in the market for engineers that covers the design of CMOS and bipolar analog integrated circuits. The fifth edition retains its completeness and updates the coverage of bipolar and CMOS circuits. A thorough analysis of a new low-voltage bipolar operational amplifier has been added to Chapters 6, 7, 9, and 11. Chapter 12 has been updated to include a fully differential folded cascode operational amplifier example. With its streamlined and up-to-date coverage, more engineers will turn to this resource to explore key concepts in the field.

ANALYSIS AND DESIGN OF ANALOG INTEGRATED CIRCUITS, 4TH ED

John Wiley & Sons Market_Desc: · Electrical Engineers· Computer Engineers Special Features: · The new edition features coverage of cutting edge topics--more advanced CMOS device electronics to include short-channel effects, weak inversion and impact ionization· Coverage of state-of-the-art IC processes shows how modern integrated circuits are fabricated, including recent issues like heterojunction bipolar transistors, copper interconnect and low permittivity dielectric materials· Comprehensive and unified treatment of bipolar and CMOS circuits helps readers design real-world amplifiers in silicon About The Book: The text provides a comprehensive treatment of analog integrated circuit analysis and design starting from the basics and through current industrial practices. The authors combine bipolar, CMOS and BiCMOS analog integrated-circuit design into a unified treatment that stresses their commonalities and highlights their differences. The book provides the reader with valuable insights into the relative strengths and weaknesses of these important technologies.

ANALYSIS AND DESIGN OF ANALOG INTEGRATED CIRCUITS

Wiley The fourth edition features coverage of cutting edge topics--more advanced CMOS device electronics to include short-channel effects, weak inversion and impact ionization. In this resourceful book find: * Coverage of state-of-the-art IC processes shows how modern integrated circuits are fabricated, including recent issues like heterojunction bipolar transistors, copper interconnect and low permittivity dielectric materials * Comprehensive and unified treatment of bipolar and CMOS circuits helps readers design real-world amplifiers in silicon.

INTEGRATED CIRCUITS FOR WIRELESS COMMUNICATIONS

Wiley-IEEE Press Electrical Engineering Integrated Circuits for Wireless Communications High-frequency integrated circuit design is a booming area of growth that is driven not only by the expanding capabilities of underlying circuit technologies like CMOS, but also by the dramatic increase in wireless communications products that depend on them. Integrated Circuits for Wireless Communications includes seminal and classic papers in the field and is the first all-in-one resource to address this increasingly important topic. Internationally known and highly regarded in the field, editors Asad Abidi, Paul Gray, and Robert G. Meyer have meticulously compiled more than 100 papers and articles covering the very latest high-level integrated circuits techniques and solutions in use today. Integrated Circuits for Wireless Communications is devised expressly to provide IC design engineers, system architects, and integrators with a practical understanding of subjects ranging from architecture choices for integrated transceivers to actual circuit designs in all viable IC technologies, such as bipolar, CMOS, and GaAs. The papers selected represent a breadth of coverage and level of expertise that is simply unmatched in the field. Topics covered include: Radio architectures Receivers Transmitters and transceivers Power amplifiers and RF switches Oscillators Passive components Systems applications

ANALYSIS AND DESIGN OF ANALOG INTEGRATED CIRCUITS

John Wiley & Sons This edition combines the consideration of metal-oxide-semiconductors (MOS) and bipolar circuits into a unified treatment that also includes MOS-bipolar connections made possible by BiCMOS technology. Contains extensive use of SPICE, especially as an integral part of many examples in the problem sets as a more accurate check on hand calculations and as a tool to examine complex circuit behavior beyond the scope of hand analysis. Concerned largely with the design of integrated circuits, a considerable amount of material is also included on applications.

ANALOG INTEGRATED CIRCUITS

Springer Science & Business Media Analog Integrated Circuits deals with the design and analysis of modern analog circuits using integrated bipolar and field-effect transistor technologies. This book is suitable as a text for a one-semester course for senior level or first-year graduate students as well as a reference work for practicing engineers. Advanced students will also find the text useful in that some of the material presented here is not covered in many first courses on analog circuits. Included in this is an extensive coverage of feedback amplifiers, current-mode circuits, and translinear circuits. Suitable background would be fundamental courses in electronic circuits and semiconductor devices. This book contains numerous examples, many of which include commercial analog circuits. End-of-chapter problems are given, many illustrating practical circuits. Chapter 1 discusses the models commonly used to represent devices used in modern analog integrated circuits. Presented are models for bipolar junction transistors, junction diodes, junction field-effect transistors, and metal-oxide semiconductor field-effect transistors. Both large-signal and small-signal models are developed as well as their implementation in the SPICE circuit simulation program. The basic building blocks used in a large variety of analog circuits are analyzed in Chapter 2; these consist of current sources, dc level-shift stages, single-transistor gain stages, two-transistor gain stages, and output stages. Both bipolar and field-effect transistor implementations are presented. Chapter 3 deals with operational amplifier circuits. The four basic op-amp circuits are analyzed: (1) voltage-feedback amplifiers, (2) current-feedback amplifiers, (3) current-differencing amplifiers, and (4) transconductance amplifiers. Selected applications are also presented.

DESIGN OF ANALOG CMOS INTEGRATED CIRCUITS

McGraw-Hill Companies This textbook deals with the analysis and design of analog CMOS integrated circuits, emphasizing recent technological developments and design paradigms that students and practicing engineers need to master to succeed in today's industry. Based on the author's teaching and research experience in the past ten years, the text follows three general principles: (1) Motivate the reader by describing the significance and application of each idea with real-world problems; (2) Force the reader to look at concepts from an intuitive point of view, preparing him/her for more complex problems; (3) Complement the intuition by rigorous analysis, confirming the results obtained by the intuitive, yet rough approach.

ANALYSIS AND DESIGN OF ANALOG INTEGRATED CIRCUITS

Written for senior/graduate level engineering courses, this text presents the techniques of modern analog integrated circuit analysis and design. Features a unique combination of theoretical treatments with practical examples of real-world applications. Offers unified coverage of bipolar and MOS analog IC techniques.

ANALOG INTEGRATED CIRCUIT DESIGN

The 2nd Edition of Analog Integrated Circuit Design focuses on more coverage about several types of circuits that have increased in importance in the past decade. Furthermore, the text is enhanced with material on CMOS IC device modeling, updated processing layout and expanded coverage to reflect technical innovations. CMOS devices and circuits have more influence in this edition as well as a

reduced amount of text on BiCMOS and bipolar information. New chapters include topics on frequency response of analog ICs and basic theory of feedback amplifiers.

ANALYSIS AND DESIGN OF ANALOG INTEGRATED CIRCUITS

John Wiley & Sons The Fifth Edition of this academically rigorous text provides a comprehensive treatment of analog integrated circuit analysis and design starting from the basics and through current industrial practices. The authors combine bipolar, CMOS and BiCMOS analog integrated-circuit design into a unified treatment that stresses their commonalities and highlights their differences. The comprehensive coverage of the material will provide the student with valuable insights into the relative strengths and weaknesses of these important technologies.

THE ART OF ANALOG LAYOUT

For Electrical Engineering courses in analog layout or professional layout designers. This text covers the issues involved in successfully laying out analog integrated circuits. Hastings provides clear guidance and does not stress theoretical physics or mathematical analysis of layouts. He emphasizes cross-sections of devices and carrier-based models of device operation as compared to the more common geometric and schematic representation of devices.

TRENDS IN ELECTROCHEMICAL BIOSENSORS - PROCEEDINGS OF THE CONFERENCE

World Scientific This book gives an overview of the present trends in a rapidly growing interdisciplinary field, namely the research and development of biosensors. It focuses on the development of new biosensors which combine the sensitivity and specificity of biological systems (enzymes, immunosystems, microbial cells, tissue, plants, etc.) with the efficiency of electrochemical transducers. The molecular mechanisms of the processes in biosensors as well as the new methods for transduction and immobilization of biosystems are described in detail. Also, important fields of application are evaluated, i.e. medicinal chemistry including in vivo monitoring, environment pollution monitoring, biotechnology process control, determination of food contaminants and food quality control.

ANALOG CIRCUIT DESIGN

DISCRETE AND INTEGRATED

Places emphasis on developing intuition and physical insight. This title includes numerous examples and problems that have been carefully thought out to promote problem solving methodologies of the type engineers apply daily on the job.

SYSTEMATIC DESIGN OF ANALOG CMOS CIRCUITS

USING PRE-COMPUTED LOOKUP TABLES

Cambridge University Press Discover a fresh approach to efficient and insight-driven analog integrated circuit design in nanoscale-CMOS with this hands-on guide. Expert authors present a sizing methodology that employs SPICE-generated lookup tables, enabling close agreement between hand analysis and simulation. This enables the exploration of analog circuit tradeoffs using the gm/ID ratio as a central variable in script-based design flows, and eliminates time-consuming iterations in a circuit simulator. Supported by downloadable MATLAB code, and including over forty detailed worked examples, this book will provide professional analog circuit designers, researchers, and graduate students with the theoretical know-how and practical tools needed to acquire a systematic and re-use oriented design style for analog integrated circuits in modern CMOS.

ANALOG CIRCUIT DESIGN

ART, SCIENCE, AND PERSONALITIES

Elsevier Analog Circuit Design

ESD

ANALOG CIRCUITS AND DESIGN

John Wiley & Sons A comprehensive and in-depth review of analog circuit layout, schematic architecture, device, power network and ESD design. This book will provide a balanced overview of analog circuit design layout, analog circuit schematic development, architecture of chips, and ESD design. It will start at an introductory level and will bring the reader right up to the state-of-the-art. Two critical design aspects for analog and power integrated circuits are combined. The first design aspect covers analog circuit design techniques to achieve the desired circuit performance. The second and main aspect presents the additional challenges associated with the design of adequate and effective ESD protection elements and schemes. A comprehensive list of practical application examples is used to demonstrate the successful combination of both techniques and any potential design trade-offs. Chapter One looks at analog design discipline, including layout and analog matching and analog layout design practices. Chapter Two discusses analog design with circuits, examining: single transistor amplifiers; multi-transistor amplifiers; active loads and more. The third chapter covers analog design layout (also MOSFET layout), before Chapters Four and Five discuss analog design synthesis. The next chapters introduce the reader to analog-digital mixed signal design synthesis, analog signal pin ESD networks, and analog ESD power clamps. Chapter Nine, the last chapter, covers ESD design in analog applications. Clearly describes analog design fundamentals (circuit fundamentals) as well as outlining the various ESD implications. Covers a large breadth of subjects and technologies, such as CMOS, LDMOS, BCD, SOI, and thick body SOI. Establishes an "ESD analog design" discipline that distinguishes itself from the alternative ESD digital design focus. Focuses on circuit and circuit design applications. Assessable, with the artwork and tutorial style of the ESD book series. PowerPoint slides are available for university faculty members. Even in the world of digital circuits, analog and power circuits are two very important but under-addressed topics, especially from the ESD aspect. Dr. Voldman's new book will serve as an essential and practical guide to the greater IC community. With high practical and academic values this book is a "bible" for professionals, graduate students, device and circuit designers for investigating the physics of ESD and for product designs and testing.

CMOS ANALOG CIRCUIT DESIGN

ANALOG INTEGRATED CIRCUITS FOR COMMUNICATION

PRINCIPLES, SIMULATION, AND DESIGN

Springer Science & Business Media

DISTORTION ANALYSIS OF ANALOG INTEGRATED CIRCUITS

Springer Science & Business Media The analysis and prediction of nonlinear behavior in electronic circuits has long been a topic of concern for analog circuit designers. The recent explosion of interest in portable electronics such as cellular telephones, cordless telephones and other applications has served to reinforce the importance of these issues. The need now often arises to predict and optimize the distortion performance of diverse electronic circuit configurations operating in the gigahertz frequency range, where nonlinear reactive effects often dominate. However, there have historically been few sources available from which design engineers could obtain information on analysis techniques suitable for tackling these important problems. I am sure that the analog circuit design community will thus welcome this work by Dr. Wambacq and Professor Sansen as a major contribution to the analog circuit design literature in the area of distortion analysis of electronic circuits. I am personally looking forward to having a copy readily available for reference when designing integrated circuits for communication systems.

SUBSTRATE NOISE COUPLING IN RFICS

Springer Science & Business Media 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.

SCIENTIFIC COMPUTING IN ELECTRICAL ENGINEERING

Springer Science & Business Media This book is a collection of papers presented at the last Scientific Computing in Electrical Engineering (SCEE) Conference, held in Sicily, in 2004. The series of SCEE conferences aims at addressing mathematical problems which have a relevancy to industry. The areas covered at SCEE-2004 were: Electromagnetism, Circuit Simulation, Coupled Problems and General mathematical and computational methods.

AUDIO POWER AMPLIFIER DESIGN

Taylor & Francis This book is essential for audio power amplifier designers and engineers for one simple reason...it enables you as a professional to develop reliable, high-performance circuits. The Author Douglas Self covers the major issues of distortion and linearity, power supplies, overload, DC-protection and reactive loading. He also tackles unusual forms of compensation and distortion produced by capacitors and fuses. This completely updated fifth edition includes four NEW chapters including one on The XD Principle, invented by the author, and used by Cambridge Audio. Crosstalk, power amplifier input systems, and microcontrollers in amplifiers are also now discussed in this fifth edition, making this book a must-have for audio power amplifier professionals and audiophiles.

BROADBAND CIRCUITS FOR OPTICAL FIBER COMMUNICATION

John Wiley & Sons An expert guide to the new and emerging field of broadband circuits for optical fiber communication This exciting publication makes it easy for readers to enter into and deepen their knowledge of the new and emerging field of broadband circuits for optical fiber communication. The author's selection and organization of material have been developed, tested, and refined from his many industry courses and seminars. Five types of broadband circuits are discussed in detail: * Transimpedance amplifiers * Limiting amplifiers * Automatic gain control (AGC) amplifiers * Lasers drivers * Modulator drivers Essential background on optical fiber, photodetectors, lasers, modulators, and receiver theory is presented to help readers understand the system environment in which these broadband circuits operate. For each circuit type, the main specifications and their impact on system performance are explained and illustrated with numerical values. Next, the circuit concepts are discussed and illustrated with practical implementations. A broad range of circuits in MESFET, HFET, BJT, HBT, BiCMOS, and CMOS technologies is covered. Emphasis is on circuits for digital, continuous-mode transmission in the 2.5 to 40 Gb/s range, typically used in SONET, SDH, and Gigabit Ethernet applications. Burst-mode circuits for passive optical networks (PON) and analog circuits for hybrid fiber-coax (HFC) cable-TV applications also are discussed. Learning aids are provided throughout the text to help readers grasp and apply difficult concepts and techniques, including: * Chapter summaries that highlight the key points * Problem-and-answer sections to help readers apply their new knowledge * Research directions that point to exciting new technological breakthroughs on the horizon * Product examples that show the performance of actual broadband circuits * Appendices that cover eye diagrams, differential circuits, S-parameters, transistors, and technologies * A bibliography that leads readers to more complete and in-depth treatment of specialized topics This is a superior learning tool for upper-level undergraduates and graduate-level students in circuit design and optical fiber communication. Unlike other texts that concentrate on analog circuits in general or mostly on optics, this text provides balanced coverage of electronic, optic, and system issues. Professionals in the fiber optic industry will find it an excellent reference, incorporating the latest technology and discoveries in the industry.

ELECTRONIC CIRCUIT DESIGN

ART AND PRACTICE

Cambridge University Press The theme of this new textbook is the practical element of electronic circuit design. Dr O'Dell, whilst recognising that theoretical knowledge is essential, has drawn from his many years of teaching experience to produce a book which emphasises learning by doing throughout. However, there is more to circuit design than a good theoretical foundation coupled to design itself. Where do new circuit ideas come from? This is the topic of the first chapter, and the discussion is maintained throughout the following eight chapters which deal with high and low frequency small signal circuits, opto-electronic circuits, digital circuits, oscillators, translinear circuits, and power amplifiers. In each chapter, one or more experimental circuits are described in detail for the reader to construct, a total of thirteen project exercises in all. The final chapter draws some conclusions about the fundamental problem of design in the light of the circuits that have been dealt with in the book. The book is intended for use alongside a foundation text on the theoretical basis of electronic circuit design. It is written not only for undergraduate students of electronic engineering but also for the far wider range of reader in the hard or soft sciences, in industry or in education, who have access to a simple electronics laboratory.

STOCHASTIC PROCESS VARIATION IN DEEP-SUBMICRON CMOS

CIRCUITS AND ALGORITHMS

Springer Science & Business Media One of the most notable features of nanometer scale CMOS technology is the increasing magnitude of variability of the key device parameters affecting performance of integrated circuits. The growth of variability can be attributed to multiple factors, including the difficulty of manufacturing control, the emergence of new systematic variation-generating mechanisms, and most importantly, the increase in atomic-scale randomness, where device operation must be described as a stochastic process. In addition to wide-sense stationary stochastic device variability and temperature variation, existence of non-stationary stochastic electrical noise associated with fundamental processes in integrated-circuit devices represents an elementary limit on the performance of electronic circuits. In an attempt to address these issues, Stochastic Process Variation in Deep-Submicron CMOS: Circuits and Algorithms offers unique combination of mathematical treatment of random

process variation, electrical noise and temperature and necessary circuit realizations for on-chip monitoring and performance calibration. The associated problems are addressed at various abstraction levels, i.e. circuit level, architecture level and system level. It therefore provides a broad view on the various solutions that have to be used and their possible combination in very effective complementary techniques for both analog/mixed-signal and digital circuits. The feasibility of the described algorithms and built-in circuitry has been verified by measurements from the silicon prototypes fabricated in standard 90 nm and 65 nm CMOS technology.

HIGH PERFORMANCE CMOS TRANSMITTERS FOR WIRELESS COMMUNICATIONS

Springer Academic book, not applicable for bookstore catalogue

DESIGN WITH OPERATIONAL AMPLIFIERS AND ANALOG INTEGRATED CIRCUITS

Franco's "Design with Operational Amplifiers and Analog Integrated Circuits, 4e" combines theory with real-life applications to deliver a straightforward look at analog design principles and techniques. An emphasis on the physical picture helps the student develop the intuition and practical insight that are the keys to making sound design decisions. The book is intended for a design-oriented course in applications with operational amplifiers and analog ICs. It also serves as a comprehensive reference for practicing engineers. This new edition includes enhanced pedagogy (additional problems, more in-depth coverage of negative feedback, more effective layout), updated technology (current-feedback and folded-cascode amplifiers, and low-voltage amplifiers), and increased topical coverage (current-feedback amplifiers, switching regulators and phase-locked loops).

ANALOG AND VLSI CIRCUITS

CRC Press Featuring hundreds of illustrations and references, this volume in the third edition of the Circuits and Filters Handbook, provides the latest information on analog and VLSI circuits, omitting extensive theory and proofs in favor of numerous examples throughout each chapter. The first part of the text focuses on analog integrated circuits, presenting up-to-date knowledge on monolithic device models, analog circuit cells, high performance analog circuits, RF communication circuits, and PLL circuits. In the second half of the book, well-known contributors offer the latest findings on VLSI circuits, including digital systems, data converters, and systolic arrays.

SYSTEMATIC DESIGN OF CMOS SWITCHED-CURRENT BANDPASS SIGMA-DELTA MODULATORS FOR DIGITAL COMMUNICATION CHIPS

Springer Science & Business Media This very detailed book discusses architectures, circuits and procedures for the optimum design of bandpass sigma-delta A/D interfaces for mixed-signal chips in standard CMOS technologies. It provides uniquely in-depth coverage of switched-current errors, which supports the design of high performance SI chips.

ANALOG CIRCUIT DESIGN

MOST RF CIRCUITS, SIGMA-DELTA CONVERTERS AND TRANSLINEAR CIRCUITS

Springer Science & Business Media This book contains the revised contributions of all the speakers of the fifth AACD Workshop which was held in Lausanne on April 2-4, 1996. It was organized by Dr Vlado Valence of the EPFL University and MEAD of Lausanne. The program consisted of six tutorials per day during three days. The tutorials were presented by experts in the field. They were selected by a program committee consisting of Prof. Willy Sansen of the Katholieke Universiteit Leuven, Prof. Rudy van de Plassche of Philips Research and the University of Technology Eindhoven and Prof. 10han Huijsing of the Delft University of Technology. The three topics mentioned above have been selected because of their importance in present days analog design. The other topics that have been discussed before are: in 1992 : Operational amplifiers Analog to digital convereters Analog computer aided design in 1993 : Mixed AID cicuit design Sensor interface circuits Communication circuits in 1994 : Low-power low-voltage design Integrated filters Smart power circuits in 1995 : Low-noise, low-power, low-voltage design Mixed-mode design with CAD tools Voltage, current and time references Each AACD workhop has given rise to the publication of a book by Kluwer entitled "Analog Circuit Design". This is thus the fifth book. This series of books provides a valuable overview of all analog circuit design techniques and achievements. It is a reference for whoever is engaged in this discipline.

LOW POWER VLSI DESIGN

FUNDAMENTALS

Walter de Gruyter GmbH & Co KG This book teaches basic and advanced concepts, new methodologies and recent developments in VLSI technology with a focus on low power design. It provides insight on how to use Tanner Spice, Cadence tools, Xilinx tools, VHDL programming and Synopsis to design simple and complex circuits using latest state-of-the art technologies. Emphasis is placed on fundamental transistor circuit-level design concepts.

RADIO FREQUENCY INTEGRATED CIRCUITS AND SYSTEMS

Cambridge University Press Equips students with essential industry-relevant knowledge through in-depth explanations, practical applications, examples, and exercises.

ANALYSIS AND APPLICATION OF ANALOG ELECTRONIC CIRCUITS TO BIOMEDICAL INSTRUMENTATION

CRC Press Analysis and Application of Analog Electronic Circuits to Biomedical Instrumentation, Second Edition helps biomedical engineers understand the basic analog electronic circuits used for signal conditioning in biomedical instruments. It explains the function and design of signal conditioning systems using analog ICs-the circuits that enable ECG, EEG,

INTEGRATED CIRCUIT DESIGN: POWER AND TIMING MODELING, OPTIMIZATION AND SIMULATION

10TH INTERNATIONAL WORKSHOP, PATMOS 2000, GÖTTINGEN, GERMANY, SEPTEMBER 13-15, 2000 PROCEEDINGS

Springer This book constitutes the refereed proceedings of the 10th International Workshop on Power and Timing Modeling, Optimization and Simulation, PATMOS 2000, held in Göttingen, Germany in September 2000. The 33 revised full papers presented were carefully reviewed and selected for inclusion in the book. The papers are organized in sections on RTL power modeling, power estimation and optimization, system-level design, transistor level design, asynchronous circuit design, power efficient technologies, design of multimedia processing applications, adiabatic design and arithmetic modules, and analog-digital circuit modeling.

NANO-CMOS CIRCUIT AND PHYSICAL DESIGN

John Wiley & Sons Based on the authors' expansive collection of notes taken over the years, Nano-CMOS Circuit and Physical Design bridges the gap between physical and circuit design and fabrication processing, manufacturability, and yield. This innovative book covers: process technology, including sub-wavelength optical lithography; impact of process scaling on circuit and physical implementation and low power with leaky transistors; and DFM, yield, and the impact of physical implementation.

ANALYSIS AND DESIGN OF TRANSIMPEDANCE AMPLIFIERS FOR OPTICAL RECEIVERS

John Wiley & Sons An up-to-date, comprehensive guide for advanced electrical engineering students and electrical engineers working in the IC and optical industries This book covers the major transimpedance amplifier (TIA) topologies and their circuit implementations for optical receivers. This includes the shunt-feedback TIA, common-base TIA, common-gate TIA, regulated-cascode TIA, distributed-amplifier TIA, nonresistive feedback TIA, current-mode TIA, burst-mode TIA, and analog-receiver TIA. The noise, transimpedance, and other performance parameters of these circuits are analyzed and optimized. Topics of interest include post amplifiers, differential vs. single-ended TIAs, DC input current control, and adaptive transimpedance. The book features real-world examples of TIA circuits for a variety of receivers (direct detection, coherent, burst-mode, etc.) implemented in a broad array of technologies (HBT, BiCMOS, CMOS, etc.). The book begins with an introduction to optical communication systems, signals, and standards. It then moves on to discussions of optical fiber and photodetectors. This discussion includes p-i-n photodetectors; avalanche photodetectors (APD); optically preamplified detectors; integrated detectors, including detectors for silicon photonics; and detectors for phase-modulated signals, including coherent detectors. This is followed by coverage of the optical receiver at the system level: the relationship between noise, sensitivity, optical signal-to-noise ratio (OSNR), and bit-error rate (BER) is explained; receiver impairments, such as intersymbol interference (ISI), are covered. In addition, the author presents TIA specifications and illustrates them with example values from recent product data sheets. The book also includes: Many numerical examples throughout that help make the material more concrete for readers Real-world product examples that show the performance of actual IC designs Chapter summaries that highlight the key points Problems and their solutions for readers who want to practice and deepen their understanding of the material Appendices that cover communication signals, eye diagrams, timing jitter, nonlinearity, adaptive equalizers, decision point control, forward error correction (FEC), and second-order low-pass transfer functions Analysis and Design of Transimpedance Amplifiers for Optical Receivers belongs on the reference shelves of every electrical engineer working in the IC and optical industries. It also can serve as a textbook for upper-level undergraduates and graduate students studying integrated circuit design and optical communication.

THE VLSI HANDBOOK

CRC Press Over the years, the fundamentals of VLSI technology have evolved to include a wide range of topics and a broad range of practices. To encompass such a vast amount of knowledge, The VLSI Handbook focuses on the key concepts, models, and equations that enable the electrical engineer to analyze, design, and predict the behavior of very large-scale integrated circuits. It provides the most up-to-date information on IC technology you can find. Using frequent examples, the Handbook stresses the fundamental theory behind professional applications. Focusing not only on the traditional design methods, it contains all relevant sources of information and tools to assist you in performing your job. This includes software, databases, standards, seminars, conferences and more. The VLSI Handbook answers all your needs in one comprehensive volume at a level that will enlighten and refresh the knowledge of experienced engineers and educate the novice. This one-source reference keeps you current on new techniques and procedures and serves as a review for standard practice. It will be your first choice when looking for a solution.

CMOS DIGITAL INTEGRATED CIRCUITS

ANALYSIS AND DESIGN

The fourth edition of CMOS Digital Integrated Circuits: Analysis and Design continues the well-established tradition of the earlier editions by offering the most comprehensive coverage of digital CMOS circuit design, as well as addressing state-of-the-art technology issues highlighted by the widespread use of nanometer-scale CMOS technologies. In this latest edition, virtually all chapters have been re-written, the transistor model equations and device parameters have been revised to reflect the significant changes that must be taken into account for new technology generations, and