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Ieee Journal On Solid State Circuit

Dennis Sylvester, Edgar Sánchez-Sinencio, Dejan Marković, Jan Mulder, Antonio Liscidini, Roman Genov, Atsushi Kawasumi, Eric A. M. Klumperink, Elad Alon, Subhasish Mitra

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IEEE Journal of Solid-State Circuits, 1999-2000 IEEE Solid-State Circuits Society Staff,2002-02-01 Special Issue on the 2016 IEEE International Solid-State Circuits Conference Dennis Sylvester,Dejan Marković,Roman Genov,Atsushi Kawasumi,Subhasish Mitra,2017 **Special Issue on the 2016 IEEE International Solid-State Circuits Conference** Dennis Sylvester,Edgar Sánchez-Sinencio,Dejan Marković,Jan Mulder,Antonio Liscidini,Roman Genov,Atsushi Kawasumi,Eric A. M. Klumperink,Elad Alon,Subhasish Mitra,2016 Advances in Solid State Circuit Technologies Paul Chu,2010-04-01 This book brings together contributions from experts in the fields to describe the current status of important topics in solid state circuit technologies It consists of 20 chapters which are grouped under the following categories general information circuits and devices materials and characterization techniques These chapters have been written by renowned experts in the respective fields making this book valuable to the integrated circuits and materials science communities It is intended for a diverse readership including electrical engineers and material scientists in the industry and academic institutions Readers will be able to familiarize themselves with the latest technologies in the various fields *Low Power Circuits for Emerging Applications in Communications, Computing, and Sensing* Fei Yuan,2018-12-07 The book addresses the need to investigate new approaches to lower energy requirement in multiple application areas and serves as a guide into emerging circuit technologies It explores revolutionary device concepts sensors and associated circuits and architectures that will greatly extend the practical engineering limits of energy efficient computation The book responds to the need to develop disruptive new system architectures circuit microarchitectures and attendant device and interconnect technology aimed at achieving the highest level of computational energy efficiency for general purpose computing systems Features Discusses unique technologies and material only available in specialized journal and conferences Covers emerging applications areas such as ultra low power communications emerging bio electronics and operation in extreme environments Explores broad circuit operation ex analog RF memory and digital circuits Contains practical applications in the engineering field as well as graduate studies Written by international experts from both academia and industry Optoelectronic Integrated Circuit Design and Device Modeling Jianjun Gao,2011-09-19 In Optoelectronic Integrated Circuit Design and Device Modeling Professor Jianjun Gao introduces the fundamentals and modeling techniques of optoelectronic devices used in high speed optical transmission systems Gao covers electronic circuit elements such as FET HBT MOSFET as well as design techniques for advanced optical transmitter and receiver front end circuits The book includes an overview of optical communication systems and computer aided optoelectronic IC design before going over the basic concept of laser diodes This is followed by modeling and parameter extraction techniques of lasers and photodiodes Gao covers high speed electronic semiconductor devices optical transmitter design and optical receiver design in the final three chapters Addresses a gap within the rapidly growing area of transmitter and receiver modeling in OEICs Explains diode physics before device modeling helping readers

understand their equivalent circuit models Provides comprehensive explanations for E O and O E conversions done with laser and photodiodes Covers an extensive range of devices for high speed applications Accessible for students new to microwaves Presentation slides available for instructor use This book is primarily aimed at practicing engineers researchers and post graduates in the areas of RF microwaves IC design photonics and lasers and solid state devices The book is also a strong supplement for senior undergraduates taking courses in RF and microwaves Lecture materials for instructors available at www.wiley.com/go/gao

Memory, Microprocessor, and ASIC Wai-Kai Chen, 2003-03-26 Timing memory power dissipation testing and testability are all crucial elements of VLSI circuit design In this volume culled from the popular VLSI Handbook experts from around the world provide in depth discussions on these and related topics Stacked gate embedded and flash memory all receive detailed treatment including their power cons

DRAM Circuit Design Brent Keeth, R. Jacob Baker, Brian Johnson, Feng Lin, 2007-12-04 A modern comprehensive introduction to DRAM for students and practicing chip designers Dynamic Random Access Memory DRAM technology has been one of the greatest driving forces in the advancement of solid state technology With its ability to produce high product volumes and low pricing it forces solid state memory manufacturers to work aggressively to cut costs while maintaining if not increasing their market share As a result the state of the art continues to advance owing to the tremendous pressure to get more memory chips from each silicon wafer primarily through process scaling and clever design From a team of engineers working in memory circuit design DRAM Circuit Design gives students and practicing chip designers an easy to follow yet thorough introductory treatment of the subject Focusing on the chip designer rather than the end user this volume offers expanded up to date coverage of DRAM circuit design by presenting both standard and high speed implementations Additionally it explores a range of topics the DRAM array peripheral circuitry global circuitry and considerations voltage converters synchronization in DRAMs data path design and power delivery Additionally this up to date and comprehensive book features topics in high speed design and architecture and the ever increasing speed requirements of memory circuits The only book that covers the breadth and scope of the subject under one cover DRAM Circuit Design is an invaluable introduction for students in courses on memory circuit design or advanced digital courses in VLSI or CMOS circuit design It also serves as an essential one stop resource for academics researchers and practicing engineers

Solid State Circuits Technologies Jacobus Swart, 2010-01-01 The evolution of solid state circuit technology has a long history within a relatively short period of time This technology has lead to the modern information society that connects us and tools a large market and many types of products and applications The solid state circuit technology continuously evolves via breakthroughs and improvements every year This book is devoted to review and present novel approaches for some of the main issues involved in this exciting and vigorous technology The book is composed of 22 chapters written by authors coming from 30 different institutions located in 12 different countries throughout the Americas Asia and Europe Thus reflecting the wide international contribution to the book The broad range of subjects

presented in the book offers a general overview of the main issues in modern solid state circuit technology Furthermore the book offers an in depth analysis on specific subjects for specialists We believe the book is of great scientific and educational value for many readers I am profoundly indebted to the support provided by all of those involved in the work First and foremost I would like to acknowledge and thank the authors who worked hard and generously agreed to share their results and knowledge Second I would like to express my gratitude to the Intech team that invited me to edit the book and give me their full support and a fruitful experience while working together to combine this book

CMOS Data Converters for Communications Mikael Gustavsson, J. Jacob Wikner, Nianxiong Tan, 2005-12-15 CMOS Data Converters for Communications distinguishes itself from other data converter books by emphasizing system related aspects of the design and frequency domain measures It explains in detail how to derive data converter requirements for a given communication system baseband passband and multi carrier systems The authors also review CMOS data converter architectures and discuss their suitability for communications The rest of the book is dedicated to high performance CMOS data converter architecture and circuit design Pipelined ADCs parallel ADCs with an improved passive sampling technique and oversampling ADCs are the focus for ADC architectures while current steering DAC modeling and implementation are the focus for DAC architectures The principles of the switched current and the switched capacitor techniques are reviewed and their applications to crucial functional blocks such as multiplying DACs and integrators are detailed The book outlines the design of the basic building blocks such as operational amplifiers comparators and reference generators with emphasis on the practical aspects To operate analog circuits at a reduced supply voltage special circuit techniques are needed Low voltage techniques are also discussed in this book CMOS Data Converters for Communications can be used as a reference book by analog circuit designers to understand the data converter requirements for communication applications It can also be used by telecommunication system designers to understand the difficulties of certain performance requirements on data converters It is also an excellent resource to prepare analog students for the new challenges ahead

Multi-Standard CMOS Wireless Receivers: Analysis and Design Xiaopeng Li, Mohammed Ismail, 2005-12-19 This is the first book on the subject of multi standard wireless receivers It covers both the analysis and design aspects of CMOS radio receivers with primary focus on receivers for mobile terminals The subject of multi standard data converter design for base stations is also covered

Multirate Switched-Capacitor Circuits for 2-D Signal Processing Wang Ping, José E. Franca, 2012-12-06 Multirate Switched Capacitor Circuits for 2 D Signal Processing introduces the concepts of analog multirate signal processing for the efficient implementation of two dimensional 2 D filtering in integrated circuit form particularly from the viewpoints of silicon area and power dissipation New 2 D switched capacitor SC networks and design techniques are presented both with finite impulse response FIR and infinite impulse response IIR with separable denominator polynomial which offer simpler and more systematic synthesis procedures than currently available design techniques for 2 D analog filters Since they are in the

discrete time domain the book can be also referred to the digital multirate signal processing A 2 D SC image processor that realizes both 2 x 2 nd order Butterworth lowpass and highpass filtering functions for video image signals was realized as a prototype integrated circuit implemented in 1 0 μm CMOS technology The experimental characterization of this prototype chip demonstrated the feasibility of real time analog multirate 2 D image processing with equivalent 8 bits accuracy using only 2 5 x 3 0 mm² of silicon area and dissipating as little as 85 mW at 5V supply and 18 MHz sampling rate This indicates that for moderate accuracy and low to moderate complexity of the filtering function a fully multirate analog implementation has a potential to achieve a more competitive implementation than an alternative digital VLSI implementation However for high accuracy and or higher processing complexity not only the relative overhead cost of the front end and back end converters will diminish but also the implementation of the processing core in digital VLSI will benefit more of technology scaling to achieve higher density of integration Multirate Switched Capacitor Circuits for 2 D Signal Processing is essential reading for practicing analog design engineers and researchers in the field It is also suitable as a text for an advanced course on the subject

Monolithic Phase-Locked Loops and Clock Recovery Circuits Behzad Razavi,1996-04-18 Featuring an extensive 40 page tutorial introduction this carefully compiled anthology of 65 of the most important papers on phase locked loops and clock recovery circuits brings you comprehensive coverage of the field all in one self contained volume You ll gain an understanding of the analysis design simulation and implementation of phase locked loops and clock recovery circuits in CMOS and bipolar technologies along with valuable insights into the issues and trade offs associated with phase locked systems for high speed low power and low noise

Low Power VCO Design in CMOS Marc Tiebout,2006-01-25 This work covers the design of CMOS fully integrated low power low phase noise voltage controlled oscillators for telecommunication or datacommuni tion systems The need for low power is obvious as mobile wireless telecommunications are battery operated As wireless telecommunication systems use oscillators in frequency synthesizers for frequency translation the selectivity and signal to noise ratio of receivers and transmitters depend heavily on the low phase noise performance of the implemented oscillators Datacommunication s tems need low jitter the time domain equivalent of low phase noise clocks for data detection and recovery The power consumption is less critical The need for multi band and multi mode systems pushes the high integration of telecommunication systems This is o ered by sub micron CMOS feat ing digital exibility The recent crisis in telecommunication clearly shows that mobile hand sets became mass market high volume consumer products where low cost is of prime importance This need for low cost products livens tremendously research towards CMOS alternatives for the bipolar or BiCMOS solutions in use today

Circuits at the Nanoscale Krzysztof Iniewski,2018-10-08 Circuits for Emerging Technologies Beyond CMOS New exciting opportunities are abounding in the field of body area networks wireless communications data networking and optical imaging In response to these developments top notch international experts in industry and academia present Circuits at the Nanoscale Communications Imaging and Sensing This volume unique in both

its scope and its focus addresses the state of the art in integrated circuit design in the context of emerging systems. A must for anyone serious about circuit design for future technologies, this book discusses emerging materials that can take system performance beyond standard CMOS. These include Silicon on Insulator (SOI), Silicon Germanium (SiGe), and Indium Phosphide (InP). Three-dimensional CMOS integration and co-integration with Microelectromechanical (MEMS) technology and radiation sensors are described as well. Topics in the book are divided into comprehensive sections on emerging design techniques, mixed-signal CMOS circuits, circuits for communications, and circuits for imaging and sensing. Dr. Krzysztof Iniewski is a director at CMOS Emerging Technologies Inc, a consulting company in Vancouver, British Columbia. His current research interests are in VLSI circuits for medical applications. He has published over 100 research papers in international journals and conferences and he holds 18 international patents granted in the United States, Canada, France, Germany, and Japan. In this volume, he has assembled the contributions of over 60 world-renowned experts who are at the top of their field in the world of circuit design, advancing the bank of knowledge for all who work in this exciting and burgeoning area.

Compact Models for Integrated Circuit Design Samar K. Saha, 2018-09-03. *Compact Models for Integrated Circuit Design: Conventional Transistors and Beyond* provides a modern treatise on compact models for circuit computer-aided design (CAD). Written by an author with more than 25 years of industry experience in semiconductor processes, devices, and circuit CAD, and more than 10 years of academic experience in teaching compact modeling courses, this first-of-its-kind book on compact SPICE models for very large-scale integrated (VLSI) chip design offers a balanced presentation of compact modeling crucial for addressing current modeling challenges and understanding new models for emerging devices. Starting from basic semiconductor physics and covering state-of-the-art device regimes from conventional micron to nanometer, this text presents industry standard models for bipolar junction transistors (BJTs), metal-oxide semiconductor (MOS) field-effect transistors (FETs), FinFETs, and tunnel field-effect transistors (TFETs) along with statistical MOS models. It discusses the major issue of process variability, which severely impacts device and circuit performance in advanced technologies, and requires statistical compact models. It promotes further research of the evolution and development of compact models for VLSI circuit design and analysis. It supplies fundamental and practical knowledge necessary for efficient integrated circuit (IC) design using nanoscale devices. It includes exercise problems at the end of each chapter and extensive references at the end of the book. *Compact Models for Integrated Circuit Design: Conventional Transistors and Beyond* is intended for senior undergraduate and graduate courses in electrical and electronics engineering, as well as for researchers and practitioners working in the area of electron devices. However, even those unfamiliar with semiconductor physics gain a solid grasp of compact modeling concepts from this book.

Analysis and Design of Analog Integrated Circuits Paul R. Gray, Paul J. Hurst, Stephen H. Lewis, Robert G. Meyer, 2009-01-20. 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 CMOS R. Jacob Baker,2008 This edition provides an important contemporary view of a wide range of analog digital circuit blocks the BSIM model data converter architectures and more The authors develop design techniques for both long and short channel CMOS technologies and then compare the two *The VLSI Handbook* Wai-Kai Chen,2019-07-17 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

Design of High Frequency Integrated Analogue Filters Yichuang Sun,2002-04-15 Sun communication electronics U of Hertfordshire UK this volume s editor also contributed a chapter on the architectures and design of OTA gm C filters The other papers describe on chip automatic tuning of filters analog adaptive filters low voltage techniques for switched current filters log domain filters the MOSFET C technique and active filters using integrated inductors The contributors teach electrical engineering in the US the UK Thailand and Canada Annotation copyrighted by Book News Inc Portland OR

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