*В книге содержится подробная справочная информация по МК семейства LPC17XX, рекомендации производителя по программированию и применению отдельных узлов МК, информация по существующим аппаратным и программным инструментальным средствам разработки-отладки-программирования приложений для LPC17XX: программным пакетам IDE IAR EWARM от фирмы IAR, IDE MDK от фирмы Keil Software, а также отладочным платам и аппаратным отладчикам-программаторам от IAR и Keil, приведены описания примеров приложений для МК LPC17XX. Все эти приложения были протестированы автором.Важной особенностью книги является то, что она не только содержит сведения справочного характера, но и охватывает все этапы проектирования приложений на основе МК LPC17XX, что позволяет в короткие сроки овладеть навыками работы с этими устройствами даже начинающим разработчикам.На сайте издательства www.дмк.рф выложены бесплатные демоверсии описанного в ней инструментального программного обеспечения, исходные коды свободно распространяемых примеров проектов для LPC17XX, оригинальную справочную информацию производителя и другие информационные и справочные материалы.Книга предназначена для специалистов в области разработки электронной аппаратуры, студентов технических ВУЗов и других лиц, интересующихся электроникой. Необходимый уровень подготовки читателей предполагает знание основ цифровой и аналоговой схемотехники, а также основ программирования на языке C.*

*The Law of Associations is a one-volume handbook that will guide association executives step by step through the business, legal and tax issues encountered every day in managing an association. This one-stop guide to association management details topics such as the nature of associations, association operation, association lobbying, antitrust and employment law issues, ethical dilemmas, federal tax aspects of association activities, statistical reporting, and other legal and related problems of associations. With the proven guidelines set out by author Hugh K. Webster, a partner in the Washington, D.C. firm of Webster, Chamberlain & Bean who specializes exclusively in the representation of nonprofit organizations, association executives will move confidently within the law and safeguard their tax-exempt status from danger. • Updated annually. • First published by the American Society of Association Executives in 1971. • Revised Second Edition published in 1975.*

*This book targets custom IC designers who are encountering variation issues in their designs, especially for modern process nodes at 45nm and below, such as statistical process variations, environmental variations, and layout effects. It teaches them the state-of-the-art in Variation-Aware Design tools, which help the designer to analyze quickly the variation effects, identify the problems, and fix the problems. Furthermore, this book describes the algorithms and algorithm behavior/performance/limitations, which is of use to designers considering these tools, designers using these tools, CAD researchers and CAD managers.*

*This book introduces the concepts of soft errors in FPGAs, as well as the motivation for using commercial, off-the-shelf (COTS) FPGAs in mission-critical and remote applications, such as aerospace. The authors describe the effects of radiation in FPGAs, present a large set of soft-error mitigation techniques that can be applied in these circuits, as well as methods for qualifying these circuits under radiation. Coverage includes radiation effects in FPGAs, fault-tolerant techniques for FPGAs, use of COTS FPGAs in aerospace applications, experimental data of FPGAs under radiation, FPGA embedded processors under radiation and fault injection in FPGAs. Since dedicated parallel processing architectures such as GPUs have become more desirable in aerospace applications due to high computational power, GPU analysis under radiation is also discussed.*

*Stress and Strain Engineering at Nanoscale in Semiconductor Devices*
*Physics of Semiconductor Devices*
*Design and Applications*
*Proceedings of the 5th International Workshop on Reconfigurable Communication-centric Systems on Chip 2010 - ReCoSoC'10*
*Virtualization of Computing Architecture*
*FPGAs and Parallel Architectures for Aerospace Applications*

This book discusses various issues of modeling freight and passenger traffic, and explores the common approaches and regional differences. The latter may be a consequence of national legislation or the various approaches that are adopted by scientists around the globe. It focuses on the organization of transcontinental transport and aspects of planning and harmonizing the movement of various transport means, particularly intermodal and multimodal transport. New approaches to the prediction of transportation needs are also considered. Written by international experts, the book is divided into 2 parts: the first part analyzes passenger transport, while the second addresses freight transport. It is intended wide audience, including university professors, graduate and Ph.D. students; transport professionals, and logistics specialist.

Emerging Technologies and Circuits contains a set of outstanding papers, keynote and tutorials presented during 3 days at the International Conference On Integrated Circuit Design and Technology (ICICDT) held in June 2008 in Minatec, Grenoble.

Knowledge exists: you only have to ?nd it VLSI design has come to an important in?ection point with the appearance of large manufacturing variations as semiconductor technology has moved to 45 nm feature sizes and below. If we ignore the random variations in the manufacturing process, simulation-based design essentially becomes useless, since its predictions will be far from the reality of manufactured ICs. On the other hand, using design margins based on some traditional notion of worst-case scenarios can force us to sacri?ce too much in terms of power consumption or manufacturing cost, to the extent of making the design goals even infeasible. We absolutely need to explicitly account for the statistics of this random variability, to have design margins that are accurate so that we can ?nd the optimum balance between yield loss and design cost. This discontinuity in design processes has led many researchers to develop effective methods of statistical design, where the designer can simulate not just the behavior of the nominal design, but the expected statistics of the behavior in manufactured ICs. Memory circuits tend to be the hardest hit by the problem of these random variations because of their high replication count on any single chip, which demands a very high statistical quality from the product. Requirements of 5-6s (0.

This book is about large-scale electronic circuits design driven by nanotechnology, where nanotechnology is broadly defined as building circuits using nanoscale devices that are either implemented with nanomaterials (e.g., nanotubes or nanowires) or following an unconventional method (e.g., FinFET or III/V compound-based devices). These nanoscale devices have significant potential to revolutionize the fabrication and integration of electronic systems and scale beyond the perceived scaling limitations of traditional CMOS. While innovations in nanotechnology originate at the individual device level, realizing the true impact of electronic systems demands that these device-level capabilities be translated into system-level benefits. This is the first book to focus on nanoscale circuits and their design issues, bridging the existing gap between nanodevice research and nanosystem design.

Reconfigurable Computing Systems Engineering
Building Embedded Systems
Robust SRAM Designs and Analysis
Modelling of the Interaction of the Different Vehicles and Various Transport Modes
Embedded SoPC Design with Nios II Processor and Verilog Examples
Advances in VLSI, Communication, and Signal Processing

This two-volume set LNICST 396 and 397 constitutes the post-conference proceedings of the Third EAI International Conference on Artificial Intelligence for Communications and Networks, AICON 2021, held in September 2021. Due to COVID-19 pandemic the conference was held virtually. The 79 full papers were carefully reviewed and selected from 159 submissions. The papers are organized in topical sections on Artificial Intelligence in Wireless Communications and Satellite Communications; Artificial Intelligence in Electromagnetic Signal Processing; Artificial Intelligence Application in Wireless Caching and Computing; Artificial Intelligence Application in Computer Network.

The book is divided into four major parts. Part I covers HDLconstructs and synthesis of basic digital circuits. Part IIprovides an overview of embedded software development with theemphasis on low-level I/O access and drivers. Part III demonstratesthe design and development of hardware and software for severalcomplex I/O peripherals, including PS2 keyboard and mouse, agraphic video controller, an audio codec, and an SD (secured)gital card. Part IV provides three case studies of theintegration of hardware accelerators, including a custom GCD(greatest common divisor) circuit, a Mandelbrot set fractalcircuit, and an audio synthesizer based on DDFS (direct digitalfrequency synthesis) methodology. The book utilizes FPGA devices, Nios II soft-core processor, anddevelopment platform from Altera Co., which is one of the two mainFPGA manufactures. Altera has a generous university program thatprovides free software and discounted prototyping boards foreducational institutions (details at ahref="http://www.altera.com/university"spanstyle="color: #284457;"http://www.altera.com/university/span/a).The two main educational prototyping boards are known as DE1 ($99)and DE2 ($269). All experiments can be implemented and tested withthese boards. A board combined with this book becomes a⊠turn-key⊠ solution for the SoPC design experiments andprojects. Most HDL and C codes in the book are device independentand can be adapted by other prototyping boards as long as a boardhas similar I/O configuration.

The increasing demand in home and industry for electronic devices has encouraged designers and researchers to investigate new devices and circuits using new materials that can perform several tasks efficiently with low IC (integrated circuit) area and low power consumption. Furthermore, the increasing demand for portable devices intensifies the search to design sensor elements, an efficient storage cell, and large-capacity memory elements. Electrical and Electronic Devices, Circuits and Materials: Design and Applications will assist the development of basic concepts and fundamentals behind devices, circuits, materials, and systems. This book will allow its readers to develop their understanding of new materials to improve device performance with even smaller dimensions and lower costs. Additionally, this book covers major challenges in MEMS (micro-electromechanical system)-based device and thin-film fabrication and characterization, including their applications in different fields such as sensors, actuators, and biomedical engineering. Key Features: Assists researchers working on devices and circuits to correlate their work with other requirements of advanced electronic systems. Offers guidance for application-oriented electrical and electronic device and circuit design for future energy-efficient systems. Encourages awareness of the international standards for electrical and electronic device and circuit design. Organized into 23 chapters, Electrical and Electronic Devices, Circuits and Materials: Design and Applications will create a foundation to generate new electrical and electronic devices and their applications. It will be of vital significance for students and researchers seeking to establish the key parameters for future work.

It is a reality that we live in a world where populations could be exposed to radiation or hazardous chemicals as a result of an accident, act of terrorism or a war. This exposure could cause serious health problems, sometimes within days or weeks, and may even lead to a latent health effect on humans, such as an increased cancer rate. Health professionals dealing with these cases therefore need methods to measure the effects of radiation and chemicals using molecular & cellular assays, and their possible short & long term consequences for potentially exposed members of a population at risk. Many biological methods are currently available to monitor both the environment and humans following exposure to physical & chemical agents, by using specific biomarkers to measure genetic damage and changes in macromolecules and body tissues. This makes it possible to perform a reliable risk assessment and to protect the public against unwanted consequences of terrorism and other threats...

Innovative Devices, Architectures, and Applications
Innovative Applications of Nanowires for Circuit Design
Proceeding of NCCS 2018
Embedded SoPC Design with Nios II Processor and VHDL Examples
Design and Modeling of Low Power VLSI Systems
Artificial Intelligence for Communications and Networks

This book provides a guide to Static Random Access Memory (SRAM) bitcell design and analysis to meet the nano-regime challenges for CMOS devices and emerging devices, such as Tunnel FETs. Since process variability is an ongoing challenge in large memory arrays, this book highlights the most popular SRAM bitcell topologies (benchmark circuits) that mitigate variability, along with exhaustive analysis. Experimental simulation setups are also included, which cover nano-regime challenges such as process variation, leakage and NBTI for SRAM design and analysis. Emphasis is placed throughout the book on the various trade-offs for achieving a best SRAM bitcell design. Provides a complete and concise introduction to SRAM bitcell design and analysis; Offers techniques to face nano-regime challenges such as process variation, leakage and NBTI for SRAM design and analysis; Includes simulation set-ups for extracting different design metrics for CMOS technology and emerging devices; Emphasizes different trade-offs for achieving the best possible SRAM bitcell design.

TODAY'S TECHNICIAN: ADVANCED AUTOMOTIVE ELECTRONIC SYSTEMS, is an extension of the popular Today's Technician Series that covers all mechanical and electrical systems of automobiles and light trucks. This book is intended for a course in advanced automotive electronic systems and is divided into two volumes: a Classroom Manual and a Shop Manual that separate cognitive and performance learning objectives, respectively. The design is based on features that are known to promote improved student learning. The Classroom Manual contains the principles of operation for the most advanced electrical systems used today and covers design variations of components used by the different vehicle manufacturers. The book builds upon basic facts and theories and will help develop students' knowledge through its extensive coverage of component and system operation The Shop Manual covers the diagnostic processes for proper repairs and focuses more on the diagnostics of the components used within a system than on how to replace the component. The intent is to guide your students' thought processes toward finding the root cause of the problem, concentrating their attention on becoming a diagnostician and not a parts changer. Your students will learn how to develop a systematic approach to problem solving in order to isolate the root cause of the problem, thereby enhancing their ability to fix products right the first time. Photo Sequences are used to illustrate some of the common diagnostic procedures. Both Manuals are arranged in corresponding chapters, and topics within the chapters are linked between manuals by page references in the margins. Both volumes contain clear and thoughtfully-selected photos and illustrations. The margins of the pages include many special features of the series that are designed to underscore important points made in the running text, highlight safety concerns, and offer real world scenarios that the author has encountered in the shop. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

The new edition of the most detailed and comprehensive single-volume reference on major semiconductor devices The Fourth Edition of Physics of Semiconductor Devices remains the standard reference work on the fundamental physics and operational characteristics of all major bipolar, unipolar, special microwave, and optoelectronic devices. This fully updated and expanded edition includes approximately 1,000 references to original research papers and review articles, more than 650 high-quality technical illustrations, and over two dozen tables of material parameters. Divided into five parts, the text first provides a summary of semiconductor properties, covering energy band, carrier concentration, and transport properties. The second part surveys the basic building blocks of semiconductor devices, including p-n junctions, metal-semiconductor contacts, and metal-insulator-semiconductor (MIS) capacitors. Part III examines bipolar transistors, MOSFETs (MOS field-effect transistors), and other field-effect transistors such as JFETs (junction field-effect-transistors) and MESFETs (metal-semiconductor field-effect transistors). Part IV focuses on negative-resistance and power devices. The book concludes with coverage of photonic devices and sensors, including light-emitting diodes (LEDs), solar cells, and various photodetectors and semiconductor sensors. This classic volume, the standard textbook and reference in the field of semiconductor devices: Provides the practical foundation necessary for understanding the devices currently in use and evaluating the performance and limitations of future devices Offers completely updated and revised information that reflects advances in device concepts, performance, and application Features discussions of topics of contemporary interest, such as applications of photonic devices that convert optical energy to electric energy Includes numerous problem sets, real-world examples, tables, figures, and illustrations; several useful appendices; and a detailed solutions manual Explores new work on leading-edge technologies such as MODFETs, resonant-tunneling diodes, quantum-cascade lasers, single-electron transistors, real-space-transfer devices, and MOS-controlled thyristors Physics of Semiconductor Devices, Fourth Edition is an indispensable resource for design engineers, research scientists, industrial and electronics engineering managers, and graduate students in the field.

This book features selected papers presented at the Fourth International Conference on Nanoelectronics, Circuits and Communication Systems (NCCS 2018). Covering topics such as MEMS and nanoelectronics, wireless communications, optical communications, instrumentation, signal processing, the Internet of Things, image processing, bioengineering, green energy, hybrid vehicles, environmental science, weather forecasting, cloud computing, renewable energy, RFID, CMOS sensors, actuators, transducers, telemetry systems, embedded systems, and sensor network applications in mines, it offers a valuable resource for young scholars, researchers, and academics alike.

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32-битные микроконтроллеры NXP с ядром Cortex-M3 семейства LPC17xx
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China Semiconductor Technology International Conference 2010 (CSTIC 2010)
Conference Proceedings from the 36th International Symposium for Testing and Failure Analysis; November 14-18, 2010 InterContinental Hotel Dallas Dall
Cache, DRAM, Disk

**This book constitutes the thoroughly refereed post-worksop proceedings of the 8th International Workshop Radio Frequency Identification: Security and Privacy Issues, RFIDSec 2012, held in Nijmegen, The Netherlands, in July 2012. The 12 revised full papers presented were carefully reviewed and selected from 29 submissions for inclusion in the book. The papers focus on approaches to solve security and data protection issues in advanced contactless technologies.**

**Very Large Scale Integration (VLSI) Systems refer to the latest development in computer microchips which are created by integrating hundreds of thousands of transistors into one chip. Emerging research in this area has the potential to uncover further applications for VSLI technologies in addition to system advancements. Design and Modeling of Low Power VLSI Systems analyzes various traditional and modern low power techniques for integrated circuit design in addition to the limiting factors of existing techniques and methods for optimization. Through a research-based discussion of the technicalities involved in the VLSI hardware development process cycle, this book is a useful resource for researchers, engineers, and graduate-level students in computer science and engineering.**

**This book constitutes the thoroughly refereed post-conference proceedings of the 11th International Workshop on Radio Frequency Identification held in New York, USA, in June 2015. The 10 revised full papers were carefully reviewed and selected from 23 submissions and are organized in topical sections on PUFs and applications, side-channels and countermeasures, RFID system attacks, and efficient implementations.**

**This book is based on the 18 tutorials presented during the 26th workshop on Advances in Analog Circuit Design. Expert designers present readers with information about a variety of topics at the frontier of analog circuit design, with specific contributions focusing on hybrid ADCs, smart sensors for the IoT, sub-1V and advanced-node analog circuit design. This book serves as a valuable reference to the state-of-the-art, for anyone involved in analog circuit research and development.**

**Radio Frequency Identification: Security and Privacy Issues**
**Memory Systems**
**Today's Technician: Advanced Automotive Electronic Systems, Classroom and Shop Manual**
**Applying the ARM mbed**
**Programmable Hardware**
**Variation-Aware Design of Custom Integrated Circuits: A Hands-on Field Guide**

*Explores the unique hardware programmability of FPGA-based embedded systems, using a learn-by-doing approach to introduce the concepts and techniques for embedded SoPC design with Verilog An SoPC (system on a programmable chip) integrates a processor, memory modules, I/O peripherals, and custom hardware accelerators into a single FPGA (field-programmable gate array) device. In addition to the customized software, customized hardware can be developed and incorporated into the embedded system as well—allowing us to configure the soft-core processor, create tailored I/O interfaces, and develop specialized hardware accelerators for computation-intensive tasks. Utilizing an Altera FPGA prototyping board and its Nios II soft-core processor, Embedded SoPC Design with Nios II Processor and Verilog Examples takes a "learn by doing" approach to illustrate the hardware and software design and development process by including realistic projects that can be implemented and tested on the board. Emphasizing hardware design and integration throughout, the book is divided into four major parts: Part I covers HDL and synthesis of custom hardware Part II introduces the Nios II processor and provides an overview of embedded software development Part III demonstrates the design and development of hardware and software of several complex I/O peripherals, including a PS2 keyboard and mouse, a graphic video controller, an audio codec, and an SD (secure digital) card Part IV provides several case studies of the integration of hardware accelerators, including a custom GCD (greatest common divisor) circuit, a Mandelbrot set fractal circuit, and an audio synthesizer based on DDFS (direct digital frequency synthesis) methodology While designing and developing an embedded SoPC can be rewarding, the learning can be a long and winding journey. This book shows the trail ahead and guides readers through the initial steps to exploit the full potential of this emerging methodology.*

*Anticipating a limit to the continuous miniaturization (More-Moore), intense research efforts are being made to co-integrate various functionalities (More-than-Moore) in a single chip. Currently, strain engineering is the main technique used to enhance the performance of advanced semiconductor devices. Written from an engineering applications standpoint, this book encompasses broad areas of semiconductor devices involving the design, simulation, and analysis of Si, heterostructure silicongermanium (SiGe), and III-N compound semiconductor devices. The book provides the background and physical insight needed to understand the new and future developments in the technology CAD (TCAD) design at the nanoscale. Features Covers stressstrain engineering in semiconductor devices, such as FinFETs and III-V Nitride-based devices Includes comprehensive mobility model for strained substrates in global and local strain techniques and their implementation in device simulations Explains the development of strain/stress relationships and their effects on the band structures of strained substrates Uses design of experiments to find the optimum process conditions Illustrates the use of TCAD for modeling strain-engineered FinFETs for DC and AC performance predictions This book is for graduate students and researchers studying solid-state devices and materials, microelectronics, systems and controls, power electronics, nanomaterials, and electronic materials and devices.*

*This book covers one of the most important device architectures that have been widely researched to extend the transistor scaling: FinFET. Starting with theory, the book discusses the advantages and the integration challenges of this device architecture. It*

addresses in detail the topics such as high-density fin patterning, gate stack design, and source/drain engineering, which have been considered challenges for the integration of FinFETs. The book also addresses circuit-related aspects, including the impact of variability on SRAM design, ESD design, and high-T operation. It discusses a new device concept: the junctionless nanowire FET.

This book constitutes the refereed proceedings of the 17th International Symposium on VLSI Design and Test, VDAT 2013, held in Jaipur, India, in July 2013. The 44 papers presented were carefully reviewed and selected from 162 submissions. The papers discuss the frontiers of design and test of VLSI components, circuits and systems. They are organized in topical sections on VLSI design, testing and verification, embedded systems, emerging technology.

For Road & Mountain Bikes

2010: Rearview Issue

CMOS Nanoelectronics

Rapid Diagnosis in Populations at Risk from Radiation and Chemicals

Soft Errors

Fast and Effective Embedded Systems Design

Reconfigurable Computing Systems Engineering: Virtualization of Computing Architecture describes the organization of reconfigurable computing system (RCS) architecture and discusses the pros and cons of different RCS architecture implementations. Providing a solid understanding of RCS technology and where it's most effective, this book: Details the architecture organization of RCS platforms for application-specific workloads Covers the process of the architectural synthesis of hardware components for system-on-chip (SoC) for the RCS Explores the virtualization of RCS architecture from the system and on-chip levels Presents methodologies for RCS architecture run-time integration according to mode of operation and rapid adaptation to changes of multi-parametric constraints Includes illustrative examples, case studies, homework problems, and references to important literature A solutions manual is available with qualifying course adoption. Reconfigurable Computing Systems Engineering: Virtualization of Computing Architecture offers a complete road map to the synthesis of RCS architecture, exposing hardware design engineers, system architects, and students specializing in designing FPGA-based embedded systems to novel concepts in RCS architecture organization and virtualization.

This book comprises select proceedings of the International Conference on VLSI, Communication and Signal processing (VCAS 2018). It looks at latest research findings in VLSI design and applications. The book covers a wide range of topics in electronics and communication engineering, especially in the area of microelectronics and VLSI design, communication systems and networks, and image and signal processing. The contents of this book will be useful to researchers and professionals alike.

The fully revised and updated sixth edition of the best-selling guide to bike maintenance from the world's leading authority on cycling Whether they own the latest model or a classic with thousands of miles on it, beginner and experienced cyclists alike need a guide that will help them get their bikes out of the shop faster and keep them on the road longer. For more than 20 years, The Bicycling Guide to Complete Bicycle Maintenance & Repair has done just that. With troubleshooting sections to quickly identify and correct common problems, 450 photographs and 40 drawings to clarify the step-by-step directions so even the complete neophyte can get repairs right the first time, and websites and phone numbers of bicycle and parts manufacturers, this is truly the ultimate bicycle repair and maintenance manual. Now better than ever, the newest edition contains the latest information on component kits and carbon fork specifications.

Nanowires are an important sector of circuit design whose applications in very-large-scale integration design (VLSI) have huge impacts for bringing revolutionary advancements in nanoscale devices, circuits, and systems due to improved electronic properties of the nanowires. Nanowires are potential devices for VLSI circuits and system applications and are highly preferred in novel nanoscale devices due to their high mobility and high-driving capacity. Although the knowledge and resources for the fabrication of nanowires is currently limited, it is predicted that, with the advancement of technology, conventional fabrication flow can be used for nanoscale devices, specifically nanowires. Innovative Applications of Nanowires for Circuit Design provides relevant theoretical frameworks that include device physics, modeling, circuit design, and the latest developments in experimental fabrication in the field of nanotechnology. The book covers advanced modeling concepts of nanowires along with their role as a key enabler for innovation in GLSI devices, circuits, and systems. While highlighting topics such as design, simulation, types and applications, and performance analysis of nanowires, this book is ideally intended for engineers, practitioners, stakeholders, academicians, researchers, and students interested in electronics engineering, nanoscience, and nanotechnology.

Radiation Tolerant Electronics

8th International Workshop, RFIDSec 2012, Nijmegen, The Netherlands, July 2-3, 2012, Revised Selected Papers

17th International Symposium, VDAT 2013, Jaipur, India, July 27-30, 2013, Proceedings

From Particles to Circuits

Advances in Imaging and Electron Physics

Extreme Statistics in Nanoscale Memory Design

Fast and Effective Embedded Systems Design is a fast-moving introduction to embedded system design, applying the innovative ARM mbed and its web-based development environment. Each chapter introduces a major topic in embedded systems, and proceeds as a series of practical experiments, adopting a "learning through doing" strategy. Minimal background knowledge is needed. C/C++ programming is applied, with a step-by-step approach which allows the novice to get coding quickly. Once the basics are covered, the book progresses to some "hot" embedded issues - intelligent instrumentation, networked systems, closed loop control, and digital signal processing. Written by two experts in the field, this book reflects on the experimental results, develops and matches theory to practice, evaluates the strengths and weaknesses of the technology or technique introduced, and considers applications and the wider context. Numerous exercises and end of chapter questions are included. A hands-on introduction to the field of embedded systems, with a focus on fast prototyping Key embedded system concepts covered through simple and effective experimentation Amazing breadth of coverage, from simple digital i/o, to advanced networking and control Applies the most accessible tools available in the embedded world Supported by mbed and book web sites, containing FAQs and all code examples Deep insights into ARM technology, and aspects of microcontroller architecture Instructor support available, including power point slides, and solutions to questions and exercises

Advances in Imaging and Electron Physics merges two long-running serials--Advances in Electronics and Electron Physics and Advances in Optical and Electron Microscopy. This series features extended articles on the physics of electron devices (especially semiconductor devices), particle optics at high and low energies, microlithography, image science and digital image processing, electromagnetic wave propagation, electron microscopy, and the computing methods used in all these domains. * Contributions from leading international scholars and industry experts * Discusses hot topic areas and presents current and future research trends * Invaluable reference and guide for physicists, engineers and mathematicians

Research on radiation-tolerant electronics has increased rapidly over the past few years, resulting in many interesting approaches to modeling radiation effects and designing radiation-hardened integrated circuits and embedded systems. This research is strongly driven by the growing need for radiation-hardened electronics for space applications, high-energy physics experiments such as those on the Large Hadron Collider at CERN, and many terrestrial nuclear applications including nuclear energy and nuclear safety. With the progressive scaling of integrated circuit technologies and the growing complexity of electronic systems, their susceptibility to ionizing radiation has raised many exciting challenges, which are expected to drive research in the coming decade. In this book we highlight recent breakthroughs in the study of radiation effects in advanced semiconductor devices, as well as in high-performance analog, mixed signal, RF, and digital integrated circuits. We also focus on advances in embedded radiation hardening in both FPGA and microcontroller systems and apply radiation-hardened embedded systems for cryptography and image processing, targeting space applications.

Soft errors are a multifaceted issue at the crossroads of applied physics and engineering sciences. Soft errors are by nature multiscale and multiphysics problems that combine not only nuclear and semiconductor physics, material sciences, circuit design, and chip architecture and operation, but also cosmic-ray physics, natural radioactivity issues, particle detection, and related instrumentation. Soft Errors: From Particles to Circuits addresses the problem of soft errors in digital integrated circuits subjected to the terrestrial natural radiation environment—one of the most important primary limits for modern digital electronic reliability. Covering the fundamentals of soft errors as well as engineering considerations and technological aspects, this robust text: Discusses the basics of the natural radiation environment, particle interactions with matter, and soft-error mechanisms Details instrumentation developments in the fields of environment characterization, particle detection, and real-time and accelerated tests Describes the latest computational developments, modeling, and simulation strategies for the soft error-rate estimation in digital circuits Explores trends for future technological nodes and emerging devices Soft Errors: From Particles to Circuits presents the state of the art of this complex subject, providing comprehensive knowledge of the complete chain of the physics of soft errors. The book makes an ideal text for introductory graduate-level courses, offers academic researchers a specialized overview, and serves as a practical guide for semiconductor industry engineers or application engineers.

Advances in Analog Circuit Design 2017

Radio Frequency Identification

Hybrid ADCs, Smart Sensors for the IoT, and Sub-1V & Advanced Node Analog Circuit Design

Electrical and Electronic Devices, Circuits and Materials

Scientific and Technical Aerospace Reports

Soft Errors and Fault-Tolerant Design

Develop the software and hardware you never think about. We're talking about the nitty-gritty behind the buttons on your microwave, inside your thermostat, inside the keyboard used to type this description, and even running the monitor on which you are reading it now. Such stuff is termed embedded systems, and this book shows how to design and develop embedded systems at a professional level. Because yes, many people quietly make a successful career doing just that. Building embedded systems can be both fun and intimidating. Putting together an embedded system requires skill sets from multiple engineering disciplines, from software and hardware in particular. Building Embedded Systems is a book about helping you do things in the right way from the beginning of your first project. Programmers who know software will learn what they need to know about hardware. Engineers with hardware knowledge likewise will learn about the software side. Whatever your background is, Building Embedded Systems is the perfect book to fill in any knowledge gaps and get you started in a career programming for everyday devices. Author Changyi Gu brings more than fifteen years of experience in working his way up the ladder in the field of embedded systems. He brings knowledge of numerous approaches to embedded systems design, including the System on Programmable Chips (SOPC) approach that is currently growing to dominate the field. His knowledge and experience make Building Embedded Systems an excellent book for anyone wanting to enter the field, or even just to do some embedded programming as a side project What You Will Learn Program embedded systems in firmware development Develop practical knowledge of embedded hardware options Create tight integration between software and hardware Practice a work flow leading to successful outcomes Build from transistor level to the system level Make sound choices between performance and cost Who This Book Is For Embedded-system engineers and intermediate electronics enthusiasts who are seeking tighter integration between software and hardware. Those who favor the System on a Programmable Chip (SOPC) approach will in particular benefit from this book. Students in both Electrical Engineering and Computer Science can also benefit from this book and the real-life industry practice it provides.

Is your memory hierarchy stopping your microprocessor from performing at the high level it should be? Memory Systems: Cache, DRAM, Disk shows you how to resolve this problem. The book tells you everything you need to know about the logical design and operation, physical design and operation, performance characteristics and resulting design trade-offs, and the energy consumption of modern memory hierarchies. You learn how to to tackle the challenging optimization problems that result from the side-effects that can appear at any point in the entire hierarchy. As a result you will be able to design and emulate the entire memory hierarchy. Understand all levels of the system hierarchy -Xcache, DRAM, and disk. Evaluate the system-level effects of all design choices. Model performance and energy consumption for each component in the memory hierarchy.

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 Discusses the major issues of process variability, which severely impacts device and circuit performance in advanced technologies and requires statistical compact models Promotes further research of the evolution and development of compact models for VLSI circuit design and analysis Supplies fundamental and practical knowledge necessary for efficient integrated circuit (IC) design using nanoscale devices 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.

Our mission is to provide a forum for world experts to discuss technologies, address the growing needs associated with silicon technology, and exchange their discoveries and solutions for current issues of high interest. We encourage collaboration, open discussion, and critical reviews at this conference. Furthermore, we hope that this conference will also provide collaborative opportunities for those who are interested in the semiconductor industry in Asia, particularly in China.

The Law of Associations: An Operating Legal Manual for Executives and Counsel

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Nanoelectronics, Circuits and Communication Systems

Conventional Transistors and Beyond

11th International Workshop, RFIDsec 2015, New York, NY, USA, June 23-24, 2015, Revised Selected Papers