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KEY=DESIGN - MOSHE RAIDEN

SYSTEM LEVEL ESD CO-DESIGN

John Wiley & Sons An effective and cost efficient protection of electronic system against ESD stress pulses specified by IEC 61000-4-2 is paramount for any system design. This pioneering book presents the collective knowledge of system designers and system testing experts and state-of-the-art techniques for achieving efficient system-level ESD protection, with minimum impact on the system performance. All categories of system failures ranging from 'hard' to 'soft' types are considered to review simulation and tool applications that can be used. The principal focus of System Level ESD Co-Design is defining and establishing the importance of co-design efforts from both IC supplier and system builder perspectives. ESD designers often face challenges in meeting customers' system-level ESD requirements and, therefore, a clear understanding of the techniques presented here will facilitate effective simulation approaches leading to better solutions without compromising system performance. With contributions from Robert Ashton, Jeffrey Dunning, Micheal Hopkins, Pratik Maheshwari, David Pomerence, Wolfgang Reinprecht, and Matti Usumaki, readers benefit from hands-on experience and in-depth knowledge in topics ranging from ESD design and the physics of system ESD phenomena to tools and techniques to address soft failures and strategies to design ESD-robust systems that include mobile and automotive applications. The first dedicated resource to system-level ESD co-design, this is an essential reference for industry ESD designers, system builders, IC suppliers and customers and also Original Equipment Manufacturers (OEMs). Key features: Clarifies the concept of system level ESD protection. Introduces a co-design approach for ESD robust systems. Details soft and hard ESD fail mechanisms. Detailed protection strategies for both mobile and automotive applications. Explains simulation tools and methodology for system level ESD co-design and overviews available test methods and standards. Highlights economic benefits of system ESD co-design.

ELECTROMAGNETIC COMPATIBILITY FOR SPACE SYSTEMS DESIGN

IGI Global In the aerospace industry, avoiding operating issues, especially in regard to space missions and satellite structures, is crucial. The vast majority of these issues can be traced to disturbances in the electromagnetic fields used. Electromagnetic Compatibility for Space Systems Design is a critical scholarly resource that examines the applications of electromagnetic compatibility and electromagnetic interference in the space industry. Featuring coverage on a wide range of topics, such as magnetometers, electromagnetic environmental effects, and electromagnetic shielding, this book is geared toward managers, engineers, and researchers seeking current research on the applications of electromagnetic technologies in the aerospace field.

BITS ON CHIPS

Springer This book provides readers with a broad overview of integrated circuits, also generally referred to as micro-electronics. The presentation is designed to be accessible to readers with limited, technical knowledge and coverage includes key aspects of integrated circuit design, implementation, fabrication and application. The author complements his discussion with a large number of diagrams and photographs, in order to reinforce the explanations. The book is divided into two parts, the first of which is specifically developed for people with almost no or little technical knowledge. It presents an overview of the electronic evolution and discusses the similarity between a chip floor plan and a city plan, using metaphors to help explain concepts. It includes a summary of the chip development cycle, some basic definitions and a variety of applications that use integrated circuits. The second part digs deeper into the details and is perfectly suited for professionals working in one of the semiconductor disciplines who want to broaden their semiconductor horizon.

RECENT TRENDS ON ELECTROMAGNETIC ENVIRONMENTAL EFFECTS FOR AERONAUTICS AND SPACE APPLICATIONS

IGI Global Electromagnetic compatibility and regulatory compliance issues are subjects of great importance in electronics engineering. Avoiding problems regarding an electronic system's operation, while always important, is especially critical in space missions and satellite structures. Many problems can be traced to EM field disturbances as interference from unintended sources and other electromagnetic phenomena. As a result, stringent requirements are to be met in terms of electromagnetic emissions levels. The inclusion of this electromagnetic environment in the design of a multimillion mission can lead to a system that is able to withstand whatever challenge the environment throws at it. Failure to do so may lead to important data corruption or loss, destruction of expensive instruments, waste of resources, and even a total mission failure. Research in this area focuses on the studying of the applications of electromagnetic compatibility and electromagnetic interference in the space industry. Recent Trends on Electromagnetic Environmental Effects for Aeronautics and Space Applications will provide relevant theoretical frameworks and the latest empirical research findings in electromagnetic compatibility and electromagnetic interference (EMC/EMI) for the aerospace industry. This book examines all the necessary information for all matters that can possibly affect the system design of a spacecraft and can be a useful reference to space system engineers and more. While highlighting topics such as artificial intelligence, electromagnetic testing, environmental shielding, and EMC modelling techniques, this book is ideal for professionals, spacecraft designers, science and data processing managers, electrical and mechanical engineers, EMC testing engineers, and researchers working in the aerospace industry along with practitioners, researchers, academicians, and students looking for necessary information for all the matters that can possibly affect the system design of a spacecraft.

ELECTROMAGNETIC COMPATIBILITY FOR DEVICE DESIGN AND SYSTEM INTEGRATION

Springer Science & Business Media The Electromagnetic Compatibility has become an increasingly essential factor for placing a product on the global, world wide market. Fulfilling emission limits and immunity requirements as well as handling apparently complex cases of incompatibility demands a deeper understanding of the physical interrelations and of Maxwell's theory. Based on the authors' experiences, the textbook provides some help in solving such interferential cases. It contains many illustrative examples and more than 80 exercises with solutions.

RELIABILITY ENGINEERING

THEORY AND PRACTICE

Springer Science & Business Media Reliability engineering is a rapidly evolving discipline, whose purpose is to develop methods and tools to predict, evaluate, and demonstrate reliability, maintainability, and availability of components, equipment, and systems, as well as to support development and production engineers in building in reliability and maintainability. To be cost and time effective, reliability engineering has to be coordinated with quality assurance activities, in agreement with Total Quality Management (TQM) and Concurrent Engineering efforts. To build in reliability and maintainability into complex equipment or systems, failure rate and failure mode analyses have to be performed early in the development phase and be supported by design guidelines for reliability, maintainability, and software quality as well as by extensive design reviews. Before production, qualification tests on prototypes are necessary to ensure that quality and reliability targets have been met. In the production phase, processes need to be selected and monitored to assure the required quality level. For many systems, availability requirements have also to be satisfied. In these cases, stochastic processes can be used to investigate and optimize availability, including logistical support as well. Software often plays a dominant role, requiring specific quality assurance activities. This book presents the state-of-the-art of reliability engineering, both in theory and practice. It is based on over 25 years experience of the author in this field, half of which was in industry and half as Professor for reliability engineering at the ETH (Swiss Federal Institute of Technology Zurich).

RELIABILITY ENGINEERING

THEORY AND PRACTICE

Springer Science & Business Media 27 Required function (mission profile) • Set up the reliability block diagram FMEA where (RBD), by performing a redundancy appears Eliminate reliability weaknesses • Determine the component stresses • component/material selection • Compute the failure rate Ai of each • derating component • screening • Compute R(t) at the assembly level • redundancy • Check the fulfillment of reliability design rules • Perform a preliminary design review no yes Go to the next assembly or to the next integration level Figure 2. 1 Reliability analysis procedure at assembly level Taking account of the above considerations, Fig. 2. 1 shows the reliability analysis procedure used in practical applications at assembly level. The procedure of Fig. 2. 1 is based on the part stress method discussed in Section 2. 2. 4 (see Section 2. 2. 7 for the part count method). Also included are a failure modes and effect analysis (FMEA/FMECA), to check the validity of the assumed failure modes, and a verification of the adherence to design guidelines for reliability in a preliminary design review (Section 5. 1, Appendices A3. 3. 5 & A4). Verification of the assumed failure modes is mandatory where redundancy appears, in particular because of the series element in the reliability block diagram (see for instance Example 2. 6, Sections 2. 3. 6 for elements with more than one failure mode & 6. 8. 7 for common cause failures, and Figs. 2. 8- 2. 9 & 6. 17- 6.

ESD TESTING

FROM COMPONENTS TO SYSTEMS

John Wiley & Sons With the evolution of semiconductor technology and global diversification of the semiconductor business, testing of semiconductor devices to systems for electrostatic discharge (ESD) and electrical overstress (EOS) has increased in importance. ESD Testing: From Components to Systems updates the reader in the new tests, test models, and techniques in the characterization of semiconductor components for ESD, EOS, and latchup. Key features: Provides understanding and knowledge of ESD models and specifications including human body model (HBM), machine model (MM), charged device model (CDM), charged board model (CBM), cable discharge events (CDE), human metal model (HMM), IEC 61000-4-2 and IEC 61000-4-5. Discusses new testing methodologies such as transmission line pulse (TLP), to very fast transmission line pulse (VF-TLP), and future methods of long pulse TLP, to ultra-fast TLP (UF-TLP). Describes both conventional testing and new testing techniques for both chip and system level evaluation. Addresses EOS testing, electromagnetic compatibility (EMC) scanning, to current reconstruction methods. Discusses latchup characterization and testing methodologies for evaluation of semiconductor technology to product testing. ESD Testing: From Components to Systems is part of the authors' series of books on electrostatic discharge (ESD) protection; this book will be an invaluable reference for the professional semiconductor chip and system-level ESD and EOS test engineer. Semiconductor device and process development, circuit designers, quality,

reliability and failure analysis engineers will also find it an essential reference. In addition, its academic treatment will appeal to both senior and graduate students with interests in semiconductor process, device physics, semiconductor testing and experimental work.

QUALITY AND RELIABILITY OF TECHNICAL SYSTEMS

THEORY - PRACTICE - MANAGEMENT

Springer Science & Business Media High reliability, maintainability, and safety are expected from complex equipment and systems. To build these characteristics into an item, failure rate and failure mode analyses have to be performed early in the design phase, starting at the component level, and have to be supported by a set of design guidelines for reliability and maintainability as well as by extensive design reviews. Before production, qualification tests of prototypes must ensure that quality and reliability targets have been reached. In the production phase, processes and procedures have to be selected and monitored to assure the required quality level. For many systems, availability requirements must also be satisfied. In these cases, stochastic processes can be used to investigate and optimize availability, including logistical support. This book presents the state of the art of the methods and procedures necessary for a cost and time effective quality and reliability assurance during the design and production of equipment and systems. It takes into consideration that: 1. Quality and reliability assurance of complex equipment and systems requires that all engineers involved in a project undertake a set of specific activities from the definition to the operating phase, which are performed concurrently to achieve the best performance, quality, and reliability for given cost and time schedule targets.

PRINTED CIRCUIT BOARD DESIGN TECHNIQUES FOR EMC COMPLIANCE

A HANDBOOK FOR DESIGNERS

Wiley-IEEE Press "Electromagnetic compatibility (EMC) is an engineering discipline often identified as "black magic." This belief exists because the fundamental mechanisms on how radio frequency (RF) energy is developed within a printed circuit board (PCB) is not well understood by practicing engineers. Rigorous mathematical analysis is not required to design a PCB. Using basic EMC theory and converting complex concepts into simple analogies helps engineers understand the mitigation process that deters EMC events from occurring. This user-friendly reference covers a broad spectrum of information never before published, and is as fluid and comprehensive as the first edition. The simplified approach to PCB design and layout is based on real-life experience, training, and knowledge. Printed Circuit Board Techniques for EMC Compliance, Second Edition will help prevent the emission or reception of unwanted RF energy generated by components and interconnects, thus achieving acceptable levels of EMC for electrical equipment. It prepares one for complying with stringent domestic and international regulatory requirements. Also, it teaches how to solve complex problems with a minimal amount of theory and math. Essential topics discussed include: * Introduction to EMC * Interconnects and I/O * PCB basics * Electrostatic discharge protection * Bypassing and decoupling * Backplanes-Ribbon Cables-Daughter Cards * Clock Circuits-Trace Routing-Terminations * Miscellaneous design techniques This rules-driven book-formatted for quick access and cross-reference-is ideal for electrical and EMC engineers, consultants, technicians, and PCB designers regardless of experience or educational background." Sponsored by: IEEE Electromagnetic Compatibility Society

SAFETY DESIGN FOR SPACE SYSTEMS

Butterworth-Heinemann Progress in space safety lies in the acceptance of safety design and engineering as an integral part of the design and implementation process for new space systems. Safety must be seen as the principle design driver of utmost importance from the outset of the design process, which is only achieved through a culture change that moves all stakeholders toward front-end loaded safety concepts. This approach entails a common understanding and mastering of basic principles of safety design for space systems at all levels of the program organisation. Fully supported by the International Association for the Advancement of Space Safety (IAASS), written by the leading figures in the industry, with frontline experience from projects ranging from the Apollo missions, Skylab, the Space Shuttle and the International Space Station, this book provides a comprehensive reference for aerospace engineers in industry. It addresses each of the key elements that impact on space systems safety, including: the space environment (natural and induced); human physiology in space; human rating factors; emergency capabilities; launch propellants and oxidizer systems; life support systems; battery and fuel cell safety; nuclear power generators (NPG) safety; habitat activities; fire protection; safety-critical software development; collision avoidance systems design; operations and on-orbit maintenance. * The only comprehensive space systems safety reference, its must-have status within space agencies and suppliers, technical and aerospace libraries is practically guaranteed * Written by the leading figures in the industry from NASA, ESA, JAXA, (et cetera), with frontline experience from projects ranging from the Apollo missions, Skylab, the Space Shuttle, small and large satellite systems, and the International Space Station. * Superb quality information for engineers, programme managers, suppliers and aerospace technologists; fully supported by the IAASS (International Association for the Advancement of Space Safety)

ESD

CIRCUITS AND DEVICES

John Wiley & Sons "Electrostatic discharge (ESD)"--Page xxi.

SPACECRAFT POWER SYSTEM TECHNOLOGIES

Springer Nature This book provides an introduction to the main design principles, methods, procedures, and development trends in spacecraft power systems. It is divided into nine chapters, the first of which covers the classification and main components of primary power system design and power distribution system design. In turn, Chapters 2 to 4 focus on the spacecraft power system design experience and review the latest typical design cases concerning spacecraft power systems in China. More specifically, these chapters also introduce readers to the topological structure and key technologies used in spacecraft power systems. Chapters 5 to 7 address power system reliability and safety design, risk analysis and control, and in-orbit management in China's spacecraft engineering projects. The book's closing chapters provide essential information on new power systems and technologies, such as space nuclear power, micro- and nano-satellite power systems, and space energy interconnection systems. An outlook on future development trends rounds out the coverage.

ROBUST ELECTRONIC DESIGN REFERENCE BOOK: NO SPECIAL TITLE

Springer Science & Business Media If you design electronics for a living, you need Robust Electronic Design Reference Book. Written by a working engineer, who has put over 115 electronic products into production at Sycor, IBM, and Lexmark, Robust Electronic Design Reference covers all the various aspects of designing and developing electronic devices and systems that: -Work. -Are safe and reliable. -Can be manufactured, tested, repaired, and serviced. -May be sold and used worldwide. -Can be adapted or enhanced to meet new and changing requirements.

ACQUISITION MANAGEMENT

A GUIDE FOR PROGRAM MANAGEMENT

ELECTRICAL OVERSTRESS (EOS)

DEVICES, CIRCUITS AND SYSTEMS

John Wiley & Sons "This book addresses EOS phenomena and distinguish it from other forms of phenomena such as electrostatic discharge (ESD), latchup, and EMC events"--

ESD BASICS

FROM SEMICONDUCTOR MANUFACTURING TO PRODUCT USE

John Wiley & Sons Electrostatic discharge (ESD) continues to impact semiconductor manufacturing, semiconductor components and systems, astechologies scale from micro- to nano electronics. This book introduces the fundamentals of ESD, electrical overstress (EOS), electromagnetic interference (EMI), electromagnetic compatibility (EMC), and latchup, as well as provides a coherent overview of these semiconductor manufacturing environment and the final system assembly. It provides an illuminating look into the integration of ESD protection networks followed by examples in specific technologies, circuits, and chips. The text is unique in covering semiconductor chip manufacturing issues, ESD semiconductor chip design, and system problems confronted today as well as the future of ESD phenomena and nano-technology. Look inside for extensive coverage on: The fundamentals of electrostatics, triboelectric charging, and how they relate to present day manufacturing environments of micro-electronics to nano-technology Semiconductor manufacturing handling and auditing processing to avoid ESD failures ESD, EOS, EMI, EMC, and latchup semiconductor component and system level testing to demonstrate product resilience from human body model (HBM), transmission line pulse (TLP), charged device model (CDM), human metal model (HMM), cable discharge events (CDE), to system level IEC 61000-4-2 tests ESD on-chip design and process manufacturing practices and solutions to improve ESD semiconductor chip solutions, also practical off-chip ESD protection and system level solutions to provide more robust systems System level concerns in servers, laptops, disk drives, cellphones, digital cameras, hand held devices, automobiles, and space applications Examples of ESD design for state-of-the-art technologies, including CMOS, BiCMOS, SOI, bipolar technology, high voltage CMOS (HVCMOS), RF CMOS, smart power, magnetic recording technology, micro-machines (MEMs) to nano-structures ESD Basics: From Semiconductor Manufacturing to Product Use complements the author's series of books on ESD protection. For those new to the field, it is an essential reference and a useful insight into the issues that confront modern technology as we enter the Nano-electronic Era.

EDN DESIGNERS GUIDE TO ELECTROMAGNETIC COMPATIBILITY

Newnes In 1996, enforcement of the mandatory European Union EMI/EMC (electromagnetic interference and compatibility) began. Before that time, many designers were just beginning to worry about "EMI problems". Now, 8 years later, the same old EMI problems are still with us, and some new ones have emerged as well. Anyone selling components or equipment of any sort in Europe and therefore the world for most globally based companies requires compliance with the EMC directive. There is no alternative. The information in this book enables faster, cheaper compliance.

ELECTROMAGNETIC COMPATIBILITY IN MEDICAL EQUIPMENT

A GUIDE FOR DESIGNERS AND INSTALLERS

Routledge Co-published with the IEEE Press, this book is a practical, hands-on guide to EMC issues for medical device designers and installers. It addresses electromagnetic interference and covers the basics of EMC design, physics, and installation, minimizing theory and concentrating upon the correct way to ground and shield. Covering EMC from the inside out, the book provides the basics of electronics, discusses and evaluates problems and common causes, and explores effective remedial techniques at three levels: circuit, box, and interconnect. It contains appendices that provide important reference material such as constants and conversion factors.

NAVAL SHORE ELECTRONICS CRITERIA

NAVAL TRAINING FACILITIES

TESTING FOR EMC COMPLIANCE

APPROACHES AND TECHNIQUES

John Wiley & Sons The Keep It Simple (KISS) philosophy is the primary focus of this book. It is written in very simple language with minimal math, as a compilation of helpful EMI troubleshooting hints. Its light-hearted tone is at odds with the extreme seriousness of most engineering reference works that become boring after a few pages. This text tells engineers what to do and how to do it. Only a basic knowledge of math, electronics, and a basic understanding of EMI/EMC are necessary to understand the concepts and circuits described. Once EMC troubleshooting is demystified, readers learn there are quick and simple techniques to solve complicated problems a key aspect of this book. Simple and inexpensive methods to resolve EMI issues are discussed to help generate unique ideas and methods for developing additional diagnostic tools and measurement procedures. An appendix on how to build probes is included. It can be a fun activity, even humorous at times with bizarre techniques (i.e., the sticky finger probe).

THE ESD HANDBOOK

John Wiley & Sons A practical and comprehensive reference that explores Electrostatic Discharge (ESD) in semiconductor components and electronic systems The ESD Handbook offers a comprehensive reference that explores topics relevant to ESD design in semiconductor components and explores ESD in various systems. Electrostatic discharge is a common problem in the semiconductor environment and this reference fills a gap in the literature by discussing ESD protection. Written by a noted expert on the topic, the text offers a topic-by-topic reference that includes illustrative figures, discussions, and drawings. The handbook covers a wide-range of topics including ESD in manufacturing (garments, wrist straps, and shoes); ESD Testing; ESD device physics; ESD semiconductor process effects; ESD failure mechanisms; ESD circuits in different technologies (CMOS, Bipolar, etc.); ESD circuit types (Pin, Power, Pin-to-Pin, etc.); and much more. In addition, the text includes a glossary, index, tables, illustrations, and a variety of case studies. Contains a well-organized reference that provides a quick review on a range of ESD topics Fills the gap in the current literature by providing information from purely scientific and physical aspects to practical applications Offers information in clear and accessible terms Written by the accomplished author of the popular ESD book series Written for technicians, operators, engineers, circuit designers, and failure analysis engineers, The ESD Handbook contains an accessible reference to ESD design and ESD systems.

GUIDE TO MITIGATING SPACECRAFT CHARGING EFFECTS

John Wiley & Sons The definitive guide to the modern body of spacecraft charging knowledge, this book authoritatively blends the theoretical and practical aspects of spacecraft charging. It defines the environment that can have significant effects on spacecraft, such as disruption of science measurements and solar arrays from electrostatic discharge (ESD). Combining the authors' extensive experience in spacecraft charging and in their provision of design support to NASA, JPL, and the commercial satellite market, this incredible book offers practical advice for neophytes in the field as well as experienced plasma physicists and spacecraft engineers.

A PRACTICAL GUIDE TO EMC ENGINEERING

Artech House This practical new resource explores the fundamentals of EMC engineering and examines the concepts and underpinnings of electromagnetics. This book highlights the procedures from design to market for both technical and non-technical issues, including market control, accreditation, calibration, EMC tests and measurement, and EMC protection. Basic electrical engineering theories, Maxwell equations, EM scattering, diffraction and propagation in the electromagnetic model are presented. The circuit model, including lumped parameter circuit elements, two-port circuit definitions, grounding, common and differential model currents, and microstripline circuits are explored. This book also covers antennas and antenna calibration, including communication antennas, normalized site attenuation (NSA), loop antennas, and loop antenna calibration (LAC). Noise and frequency analysis on fundamental electromagnetic signals, noise, and transforms is explained. Readers find insight into EMC test and measurement environments and devices. Time-saving MATLAB code is included in this resource to help engineers with their projects in the field.

NEWNES COMMUNICATIONS TECHNOLOGY HANDBOOK

Elsevier Newnes Communications Technology Handbook provides a discussion on different topics relevant to communications technology. The book is comprised of 39 chapters that tackle a wide variety of concern in communications technology. The coverage of the text includes technologies, such as analog digital communications systems, radio frequency receiver, and satellite systems. The book also discusses some methods and techniques used in communications technology, including mixer signal processing, modulation and demodulation, and spread spectrum techniques. The text will be of great use to engineers, technicians, and professionals involved in telecommunications.

SYSTEM LEVEL ESD PROTECTION

Springer Science & Business Media This book addresses key aspects of analog integrated circuits and systems design related to system level electrostatic discharge (ESD) protection. It is an invaluable reference for anyone developing systems-on-chip (SoC) and systems-on-package (SoP), integrated with system-level ESD protection. The book focuses on both the design of semiconductor integrated circuit (IC) components with embedded, on-chip system level protection and IC-system co-design. The readers will be enabled to bring the system level ESD protection solutions to the level of integrated circuits, thereby reducing or completely eliminating the need for additional, discrete components on the printed circuit board (PCB) and meeting system-level ESD requirements. The authors take a systematic approach, based on IC-system ESD protection co-design. A detailed description of the available IC-level ESD testing methods is provided, together with a discussion of the correlation between IC-level and system-level ESD testing methods. The IC-level ESD protection design is demonstrated with representative case studies which are analyzed with various numerical simulations and ESD testing. The overall methodology for IC-system ESD co-design is presented as a step-by-step procedure that involves both ESD testing and numerical simulations.

PRACTICAL RELIABILITY OF ELECTRONIC EQUIPMENT AND PRODUCTS

CRC Press Practical Reliability of Electronic Equipment and Products will help electrical, electronics, manufacturing, mechanical, systems design, and reliability engineers; electronics production managers; electronic circuit designers; and upper-level undergraduate and graduate students in these disciplines.

MIXED-SIGNAL CIRCUITS

CRC Press Mixed-Signal Circuits offers a thoroughly modern treatment of integrated circuit design in the context of mixed-signal applications. Featuring chapters authored by leading experts from industry and academia, this book: Discusses signal integrity and large-scale simulation, verification, and testing Demonstrates advanced design techniques that enable digital circuits and sensitive analog circuits to coexist without any compromise Describes the process technology needed to address the performance challenges associated with developing complex mixed-signal circuits Deals with modeling topics, such as reliability, variability, and crosstalk, that define pre-silicon design methodology and trends, and are the focus of companies involved in wireless applications Develops methods to move analog into the digital domain quickly, minimizing and eliminating common trade-offs between performance, power consumption, simulation time, verification, size, and cost Details approaches for very low-power performances, high-speed interfaces, phase-locked loops (PLLs), voltage-controlled oscillators (VCOs), analog-to-digital converters (ADCs), and biomedical filters Delineates the respective parts of a full system-on-chip (SoC), from the digital parts to the baseband blocks, radio frequency (RF) circuitries, electrostatic-discharge (ESD) structures, and built-in self-test (BIST) architectures Mixed-Signal Circuits explores exciting opportunities in wireless communications and beyond. The book is a must for anyone involved in mixed-signal circuit design for future technologies.

TECHNICAL ABSTRACT BULLETIN

APPLIED ELECTROMAGNETICS AND ELECTROMAGNETIC COMPATIBILITY

John Wiley & Sons Applied Electromagnetics and Electromagnetic Compatibility deals with Radio Frequency Interference (RFI), which is the reception of undesired radio signals originating from digital electronics and electronic equipment. With today's rapid development of radio communication, these undesired signals as well as signals due to natural phenomena such as lightning, sparking, and others are becoming increasingly important in the general area of Electro Magnetic Compatibility (EMC). EMC can be defined as the capability of some electronic equipment or system to be operated at desired levels of performance in a given electromagnetic environment without generating EM emissions unacceptable to other systems operating in the vicinity.

COMPLIANCE WITH REQUIREMENTS OF THE COAST GUARD'S DEEPWATER CONTRACT

HEARING BEFORE THE COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE, HOUSE OF REPRESENTATIVES, ONE HUNDRED TENTH CONGRESS, FIRST SESSION, APRIL 18, 2007

EMC OF ANALOG INTEGRATED CIRCUITS

Springer Science & Business Media Environmental electromagnetic pollution has drastically increased over the last decades. The omnipresence of communication systems, various electronic appliances and the use of ever increasing frequencies, all contribute to a noisy electromagnetic environment which acts detrimentally on sensitive electronic equipment. Integrated circuits must be able to operate satisfactorily while cohabiting harmoniously in the same appliance, and not generate intolerable levels of electromagnetic emission, while maintaining a sound immunity to potential

electromagnetic disturbances: analog integrated circuits are in particular more easily disturbed than their digital counterparts, since they don't have the benefit of dealing with predefined levels ensuring an innate immunity to disturbances. The objective of the research domain presented in EMC of Analog Integrated Circuits is to improve the electromagnetic immunity of considered analog integrated circuits, so that they start to fail at relevantly higher conduction levels than before.

THE ART OF HARDWARE ARCHITECTURE

DESIGN METHODS AND TECHNIQUES FOR DIGITAL CIRCUITS

Springer Science & Business Media This book highlights the complex issues, tasks and skills that must be mastered by an IP designer, in order to design an optimized and robust digital circuit to solve a problem. The techniques and methodologies described can serve as a bridge between specifications that are known to the designer and RTL code that is final outcome, reducing significantly the time it takes to convert initial ideas and concepts into right-first-time silicon. Coverage focuses on real problems rather than theoretical concepts, with an emphasis on design techniques across various aspects of chip-design.

SPACECRAFT SYSTEMS ENGINEERING

John Wiley & Sons This fourth edition of the bestselling Spacecraft Systems Engineering title provides the reader with comprehensive coverage of the design of spacecraft and the implementation of space missions, across a wide spectrum of space applications and space science. The text has been thoroughly revised and updated, with each chapter authored by a recognized expert in the field. Three chapters - Ground Segment, Product Assurance and Spacecraft System Engineering - have been rewritten, and the topic of Assembly, Integration and Verification has been introduced as a new chapter, filling a gap in previous editions. This edition addresses 'front-end system-level issues' such as environment, mission analysis and system engineering, but also progresses to a detailed examination of subsystem elements which represents the core of spacecraft design. This includes mechanical, electrical and thermal aspects, as well as propulsion and control. This quantitative treatment is supplemented by an emphasis on the interactions between elements, which deeply influences the process of spacecraft design. Adopted on courses worldwide, Spacecraft Systems Engineering is already widely respected by students, researchers and practising engineers in the space engineering sector. It provides a valuable resource for practitioners in a wide spectrum of disciplines, including system and subsystem engineers, spacecraft equipment designers, spacecraft operators, space scientists and those involved in related sectors such as space insurance. In summary, this is an outstanding resource for aerospace engineering students, and all those involved in the technical aspects of design and engineering in the space sector.

A GUIDE TO THE WIRELESS ENGINEERING BODY OF KNOWLEDGE (WEBOK)

John Wiley & Sons

EMC FOR PRINTED CIRCUIT BOARDS

BASIC AND ADVANCED DESIGN & LAYOUT TECHNIQUES

STRUCTURAL FOAM

A PURCHASING AND DESIGN GUIDE

CRC Press From conception and design to tooling and production of molds -- and for each critical step in the purchasing of structural foam -- this concise, well-illustrated guide is the only source you need for practical understanding of this unique plastic material form. Structural Foam is your quick route to important information you can rely on in your work. This convenient, easy-to-use resource describes structural foam and how it can be utilized in various applications ... explains how structural foam is produced, and how to choose the materials best suited for your needs ... sets forth key tooling and design criteria, emphasizing elements unique to structural foam ... examines the purchaser-molder relationship, detailing responsibilities of both parties and stressing the need for coordination ... and much more, including secondary operations and quality control procedures. Backed by the author's extensive experience in the field, this invaluable desktop reference serves the needs of all professionals involved with designing, selling, or purchasing structural foam, including design, plastics, and mechanical engineers; plastic product designers; sales personnel; and purchasing personnel in any industry using plastic or structural foam products. Moreover, the volume is an ideal reference for professional seminars on structural foam. Book jacket.

EMBEDDED MICROPROCESSOR SYSTEMS

REAL WORLD DESIGN

Elsevier The less-experienced engineer will be able to apply Ball's advice to everyday projects and challenges immediately with amazing results. In this new edition, the author has expanded the section on debug to include avoiding common hardware, software and interrupt problems. Other new features include an expanded section on system integration and debug to address the capabilities of more recent emulators and debuggers, a section about combination microcontroller/PLD devices, and expanded information on industry standard embedded platforms. * Covers all 'species' of embedded system chips rather than specific hardware * Learn how to cope with 'real world' problems * Design embedded systems products that are reliable and work in real applications

PCB DESIGN FOR REAL-WORLD EMI CONTROL

Springer Science & Business Media Proper design of printed circuit boards can make the difference between a product passing emissions requirements during the first cycle or not. Traditional EMC design practices have been simply rule-based, that is, a list of rules-of-thumb are presented to the board designers to implement. When a particular rule-of-thumb is difficult to implement, it is often ignored. After the product is built, it will often fail emission requirements and various time consuming and costly add-ons are then required. Proper EMC design does not require advanced degrees from universities, nor does it require strenuous mathematics. It does require a basic understanding of the underlying principles of the potential causes of EMC emissions. With this basic understanding, circuit board designers can make trade-off decisions during the design phase to ensure optimum EMC design. Consideration of these potential sources will allow the design to pass the emissions requirements the first time in the test laboratory. A number of other books have been published on EMC. Most are general books on EMC and do not focus on printed circuit board is intended to help EMC engineers and design design. This book engineers understand the potential sources of emissions and how to reduce, control, or eliminate these sources. This book is intended to be a 'hands-on' book, that is, designers should be able to apply the concepts in this book directly to their designs in the real-world.

EMI TROUBLESHOOTING COOKBOOK FOR PRODUCT DESIGNERS

IET This hands-on trouble-shooting style book offers step-by-step 'recipes' to assist those who are trying to solve EMI problems, by detailing exactly what to do and how to do it.