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details techniques for the design of complex and high performance cmos systems on chip this edition explains practices of chip design covering transistor operation cmos gate design fabrication and layout at level accessible to anyone with an elementary knowledge of digital electronics with this revision weste conveys an understanding of cmos technology circuit design layout and system design sufficient to the designer the book deals with the technology down to the layout level of detail thereby providing a bridge from a circuit to a form that may be fabricated this edition presents broad and in depth coverage of the entire field of modern cmos vlsi design the authors draw upon extensive industry and classroom experience to introduce today s most advanced and effective chip design practices 体系的に解説されたこの分野のバイブル きわめて高度化した今日のマイクロエレクトロニクスにおいて 高性能のvlsiをつくる技術として必須とされるcmosは しかしそのレイアウト設計の複雑さによって 完全オリジナルのチップを設計することは困難とされ もっぱらスタンダードセルやゲートアレイといったいわば 出来あいの部品 が用いられてきた 本書は at tベル研究所で開発されたシンボリックレイアウト手法を採用することにより 一連の複雑な設計ルールを単純化 図式化し 上記の様な状態から一歩進めて シリコン表面の能力を完全に引き出すフルカスタム設計を比較的容易に実現するために書かれたものである digital vlsi chip design with cadence and synopsys cad tools leads students through the complete process of building a ready to fabricate cmos integrated circuit using popular commercial design software detailed tutorials include step by step instructions and screen shots of tool windows and dialog boxes this hands on book is for use in conjunction with a primary textbook on digital vlsi university instructors may order digital vlsi chip design with cadence and synopsys cad tools with the following textbooks rabaey cover image digital integrated circuits 2nd edition by jan m rabaey anantha chandrakasan and borivoje nikoli to order digital integrated circuits 2nd edition packaged with digital vlsi chip design with cadence and synopsys cad tools please use isbn 0 13 509470 4 on your bookstore order form weste cover image cmos vlsi design 3rd edition by neil h e weste and david harris to order cmos vlsi design 3rd edition packaged with digital vlsi chip design with cadence and synopsys cad tools please use isbn 0 13 509469 0 on your bookstore order form for further details please contact your local pearson addison wesley and prentice hall sales representative or visit pearsonhighered com 応用編では最新実例と応用技術を満載した improve your circuit design potential with this expert guide to the devices and technology used in mixed analog digital vlsi chips for such high volume applications as hard disk drives wireless telephones and consumer electronics the book provides you with a critical understanding of device models fabrication technology and layout as they apply to mixed analog digital circuits you will learn about the many device modeling requirements for analog work as well as the pitfalls in models used today for computer simulators such as spice also included is information on fabrication technologies developed specifically for mixed signal vlsi chips plus 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special techniques that are specific to some key areas of digital chip design are discussed as well as some of the low power techniques that are just appearing on the horizon practical low power digital vlsi design will be of benefit to vlsi design engineers and students who have a fundamental knowledge of cmos digital design 全国の多くの大学のカリキュラムやシラバスに合った 集積回路 工学 の新たな定番テキスト 電気 電子 通信系の大学学部向け2単位用のテキストシリーズの一巻 本書は 電気 電子 通信系学科の専門課目である 集積回路 工学 の教科書 mosトランジスタの基本的動作の解説からはじめ cmosを中心として集積回路の原理 特性 設計 実装などをわかりやすく解説するものです 全体は1コマの講義の回数に合った15章構成をとっており 各章末とも理解度をチェックする演習問題を配しています 目次 1章 集積回路とは 2章 mosトランジスタの動作原理 3章 cmosインバータ 4章 cmosスタティック基本ゲート 5章 プロセスフローとcmosレイアウト設計 6章 cmos組合せ論理回路 7章 ラッチとフリップフロップ 8章 スイッチング特性 9章 同期設計 10章 演算回路 11章 メモリ回路 12章 ディジタル回路の設計フロー 13章 cmos回路の消費電力 14章 寄生素子と2次効果 15章 比例縮小則と微細化の課題 演習問題略解 索引 this book provides a comprehensive overview of the vlsi design process it covers end to end system on chip soc design including design methodology the design environment tools choice of design components handoff procedures and design infrastructure needs the book also offers critical guidance on the latest upf based low power design flow issues for deep submicron soc designs which will prepare readers for the challenges of working at the nanotechnology scale this practical guide will provide engineers who aspire to be vlsi designers with the techniques and tools of the trade and will also be a valuable professional reference for those already working in vlsi design and verification with a focus on complex soc designs a comprehensive practical guide for vlsi designers covers end to end vlsi soc design flow includes source code case studies and application examples 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 proceedings of the nato advanced study institute l aquila italy july 7 18 1986 this book teaches basic and advanced concepts new methodologies and recent developments in vlsi technology with a focus on low power design it provides insight on how to use tanner spice cadence tools xilinx tools vhdl programming and synopsis to design simple and complex circuits using latest state of the art technologies emphasis is placed on fundamental transistor circuit level design concepts n a in 1993 the first edition of the electrical engineering handbook set a new standard for breadth and depth of coverage in an engineering reference work now this classic has been substantially revised and updated to include the latest information on all the important topics in electrical engineering today every electrical engineer should have an opportunity to expand his expertise with this definitive guide in a single volume this handbook provides a complete reference to answer the questions encountered by practicing engineers in industry government or academia this well organized book is divided into 12 major sections that encompass the entire field of electrical engineering including circuits signal processing electronics electromagnetics electrical effects and devices and energy and the emerging trends in the fields of communications digital devices computer engineering systems and biomedical engineering a compendium of physical chemical material and mathematical data completes this comprehensive resource every major topic is thoroughly covered and every important concept is defined described and illustrated conceptually challenging but carefully explained articles are equally valuable to the practicing engineer researchers and students a distinguished advisory board and contributors including many of the leading authors professors and researchers in the field today assist noted author and professor richard dorf in offering complete coverage of this rapidly expanding field no other single volume available today offers this combination of broad coverage and depth of exploration of the topics the electrical engineering handbook will be an invaluable resource for electrical engineers for years to come the current cutting edge vlsi circuit design technologies provide end users with many applications increased processing power and improved cost effectiveness this trend is accelerating with significant implications on future vlsi and systems design vlsi design engineers are always in demand for front end and back end design applications the book aims to give future and current vsli design engineers a robust understanding of the underlying principles of the subject it not only focuses on circuit design processes obeying vlsi rules but also on technological aspects of fabrication the hardware description language hdl verilog is explained along with its modelling style the book also covers cmos design from the digital systems level to the circuit level the book clearly explains fundamental principles and is a guide to good design practices the book is intended as a reference book for senior undergraduate first year post graduate students researchers as well as academicians in vlsi design electronics electrical engineering and materials science the basics and applications of vlsi design from digital system design to ic fabrication and fpga prototyping are each covered in a comprehensive manner at the end of each unit is a section with technical questions including solutions which will serve as an excellent teaching aid to all readers technical topics discussed in the book include digital system design design flow for ic fabrication and fpga based prototyping verilog hdl ic fabrication technology cmos vlsi design miscellaneous it covers basics of electronics and reconfigurable computing plds latest technology etc コンピュータアーキテクチャの定番教科書 待望の新版 コンピュータ科学を学ぶ際 心臓部であるマイクロプロセッサの 構造 アーキテクチャ を理解することは避けては通れない道ですが マイクロプロセッサを自ら作成することにより その理解をより一層 進めることができます そんな マイクロプロセッサを作りながら学ぶディジタル回路設計と コンピュータアーキテクチャ が system verilogに対応して バージョンアップしました 本書は初版同様 特にコンピュータ科学を学ぶ学生のために 数の体系 半導体のしくみや論理ゲートといった基本的内容 ブール代数を実現したり ラッチ フリップフロップといった回路設計 system verilog vhdlといったhdl ハードウエア記述言語 を使った実装 さまざまな応用的演算回路 パイプライン処理やメモリ i oシステム など マイクロアーキテクチャを作り 理解するための内容を網羅しています 古典的でありながら今も無数の製品に使われ続けるmipsアーキテクチャを 中心に 最新の先進的アーキテクチャにいたる解説と より理解を深めるための 演習や口頭試問 そして豊富なhdl記述例によって コンピュータアーキテクチャの 基礎をじっくり学べる一冊です 本電子書籍は同名出版物を底本として作成しました 記載内容は印刷出版当時のものです 印刷出版再現のため電子書籍としては不要な情報を含んでいる場合があります 印刷出版とは異なる表記 表現の場合があります 予めご了承ください プレビューにてお手持ちの電子端末での表示状態をご確認の上 商品をお買い求めください 翔泳社 systemverilogによる回路設計を実践的に解説 systemverilogによるfpga asic 設計方法を解説する入門書です systemverilog は はデジタル回路設計のデファクトスタンダードであるverilog hdlを拡張した言語で 検証に関する機能が強化されています verilog hdlは ライバルであるvhdlに比べて比較的書きやすい言語といわれています 本書は 若い技術者や学生向けに最近のsystemverilogによるデジタル回路設計を解説するものです fpgaへの実装やデジタル回路自体の基礎からsystemverilogによるrisc v リスク ファイブ 設計 verilog hdlと比較しての注意点など 実践的な内容を解説しています このような方におすすめ ディジタル回路設計者 電気 電子 情報系の学生 ディジタル回路を設計したいmaker 主要目次 第1章 ハードウェア記述言語による fpga asic 設計 第2章 fpga への実装入門 第3章 ディジタル回路入門 第4章 systemverliog による順序回路設計 第5章 systemverilog による fpga の設計と実装 第6章

systemverilog による asic 設計 第7章 systemverilogとverilog hdlの対比と記述の罠 handbook of vlsi chip design and expert systems provides information pertinent to the fundamental aspects of expert systems which provides a knowledge based approach to problem solving this book discusses the use of expert systems in every possible subtask of vlsi chip design as well as in the interrelations between the subtasks organized into nine chapters this book begins with an overview of design automation which can be identified as computer aided design of circuits and systems cadcas this text then presents the progress in artificial intelligence with emphasis on expert systems other chapters consider the impact of design automation which exploits the basic capabilities of computers to perform complex calculations and to handle huge amounts of data with a high speed and accuracy this book discusses as well the characterization of microprocessors the final chapter deals with interactive i o devices this book is a valuable resource for system design experts circuit analysts and designers logic designers device engineers technologists and application specific designers vlsi is an important area of electronic and computer engineering however there are few textbooks available for undergraduate postgraduate study of vlsi design automation and chip layout vlsi physical design automation theory and practice fills the void and is an essential introduction for senior undergraduates postgraduates and anyone starting work in the field of cad for vlsi it covers all aspects of physical design together with such related areas as automatic cell generation silicon compilation layout editors and compaction a problem solving approach is adopted and each solution is illustrated with examples each topic is treated in a standard format problem definition cost functions and constraints possible approaches and latest developments special features the book deals with all aspects of vlsi physical design from partitioning and floorplanning to layout generation and silicon compilation provides a comprehensive treatment of most of the popular algorithms covers the latest developments and gives a bibliography for further research offers numerous fully described examples problems and programming exercises this book constitutes the refereed proceedings of the 22st international symposium on vlsi design and test vdat 2018 held in madurai india in june 2018 the 39 full papers and 11 short papers presented together with 8 poster papers were carefully reviewed and selected from 231 submissions the papers are organized in topical sections named digital design analog and mixed signal design hardware security micro bio fluidics vlsi testing analog circuits and devices network on chip memory quantum computing and noc sensors and interfaces クラウド時代のコンピュータ アーキテクチャを完全解説 risc 育ての親 ヘネシー パターソン両教授によるコンピュータ アーキテクチャの定番書 着実に版を重ね 第5版となる本書はcpuアーキテクチャ設計中心にハードウェアにおけるシステム アーキテクチャを詳細に解説 googleやamazonを支える大規模コンピューティング環境や スマホやタブレットなど小型pcにおけるアーキテクチャにも目を向けます コンピュータの仕組みを学べる定番書として欠かせない1冊です during the ten years since the appearance of the groundbreaking bestselling first edition of the electronics handbook the field has grown and changed tremendously with a focus on fundamental theory and practical applications the first edition guided novice and veteran engineers along the cutting edge in the design production installation operation and maintenance of electronic devices and systems completely updated and expanded to reflect recent advances this second edition continues the tradition the electronics handbook second edition provides a comprehensive reference to the key concepts models and equations necessary to analyze design and predict the behavior of complex electrical devices circuits instruments and systems with 23 sections that encompass the entire electronics field from classical devices and circuits to emerging technologies and applications the electronics handbook second edition not only covers the engineering aspects but also includes sections on reliability safety and engineering management the book features an individual table of contents at the beginning of each chapter which enables engineers from industry government and academia to navigate easily to the vital information they need this is truly the most comprehensive easy to use reference on electronics available this book covers layout design and layout migration methodologies for optimizing multi net wire structures in advanced vlsi interconnects scaling dependent models for interconnect power interconnect delay and crosstalk noise are covered in depth and several design optimization problems are addressed such as minimization of interconnect power under delay constraints or design for minimal delay in wire bundles within a given routing area a handy reference or a guide for design methodologies and layout automation techniques this book provides a foundation for physical design challenges of interconnect in advanced integrated circuits verilog and its usage has come a long way since its original invention in the mid 80s by phil moorby at the time the average design size was around ten thousand gates and simulation to validate the design was its primary usage but between then and now designs have increased dramatically in size and automatic logic synthesis from rtl has become the standard design flow for most design indeed the language has evolved and been re standardized too overtheyears manybookshavebeenwrittenaboutverilog myown coauthored with phil moorby had the goal of defining the language and its usage providing amples along the way it has been updated with five new editions as the language and its usage evolved however this new book takes a very different and unique view that of the designer john michael williams has a long history of working and teaching in the field of ic and asic design he brings an indepth presentation of verilog and how to use it with logic synthesis tools no other verilog book has dealt with this topic as deeply as he has if you need to learn verilog and get up to speed quickly to use it for synthesis this book is for you it is sectioned around a set of lessons including presentation and explanation of new concepts and approaches to design along with lab sessions this book provides an overview of emerging semiconductor devices and their applications in electronic circuits which form the foundation of electronic devices device circuit co design issues in fets provides readers with a better understanding of the ever growing field of low power electronic devices and their applications in the wireless biosensing and circuit domains the book brings researchers and engineers from various disciplines of the vlsi domain together to tackle the emerging challenges in the field of engineering and applications of advanced low power devices in an effort to improve the performance of these technologies the chapters examine the challenges and scope of finfet device circuits 3d fets and advanced fet for circuit applications the book also discusses low power memory design neuromorphic computing and issues related to thermal reliability the authors provide a good understanding of device physics and circuits and discuss transistors based on the new channel dielectric materials and device architectures to achieve low power dissipation and ultra high switching speeds to fulfill the requirements of the semiconductor industry this book is intended for students researchers and professionals in the field of semiconductor devices and nanodevices as well as those working on device circuit co design issues スマホ からスーパーコンピュータまで 現代のコンピュータの全体像がわかる 本書は コンピュータアーキテクチャを学ぶ大学学部生 院生や企業の技術者 研究者を対象として 並列コンピュータを基礎から解説するものです ムーアの法則が頭打ちとなり回路の動作周波数に限界が見え始めたことから コンピュータアーキテクチャは 従来の微細化 集積化型の成長から マルチコア メニーコア化による並列化 分散化型の成長へ舵を切りました その結果 スマートフォンからスーパーコンピュータまで 現在あらゆるコンピュータが並列化されています 本書では この並列コンピュータについて体系的に整理し 基礎 歴史 アーキテクチャ 記述言語などをていねいに紹介します 現代のコンピュータにかかわるすべての方の座右の書です このような方におすすめ コンピュータアーキテクチャを学ぶ大学学部生 院生 半導体の設計者 開発者 研究者 コンピュータシステムの開発者 研究者 主要目次 第1章 並列コンピュータとは 第2章 集中メモリ型並列コンピュータ 第3章 共有メモリを用いた並列プログラム 第4章 分散共有メモリ numa 第5章 クラスタ nora norma 第6章 相互結合網 第7章 アクセラレータ algorithms for vlsi physical design automation second edition is a core reference text for graduate students and cad professionals based on the very successful first edition it provides a comprehensive treatment of the principles and algorithms of vlsi physical design presenting the concepts and algorithms in an intuitive manner each chapter contains 3 4 algorithms that are discussed in detail additional algorithms are presented in a somewhat shorter format references to advanced algorithms are presented at the end of each chapter algorithms for vlsi physical design automation covers all aspects of physical design in 1992 when the first edition was published the largest available microprocessor had one million transistors and was fabricated using three metal layers now we process with six metal layers fabricating 15 million transistors on a chip designs are moving to the 500 700 mhz frequency goal these stunning developments have significantly altered the vlsi field over the cell routing and early floorplanning have come to occupy a central place in the physical design flow this second edition introduces a realistic picture to the reader exposing the concerns facing the vlsi industry while maintaining the theoretical flavor of the first edition new material has been added to all chapters new sections have been added to most chapters and a few chapters have been completely rewritten the textual material is supplemented and clarified by many helpful figures audience an invaluable reference for professionals in layout design automation and physical design cmos processors and memories addresses the state of the art in integrated circuit design in the context of emerging computing systems new design opportunities in memories and processor are discussed emerging materials that can take system performance beyond standard cmos like carbon nanotubes graphene ferroelectrics and tunnel junctions are explored cmos processors and memories is divided into two parts processors and memories in the first part we start with high performance low power processor design followed by a chapter on multi core processing they both represent state of the art concepts in current computing industry the third chapter deals with asynchronous design that still carries lots of promise for future computing needs at the end we present a hardware design space exploration methodology for implementing and analyzing the hardware for the bayesian inference framework this particular methodology involves analyzing the computational cost and exploring candidate hardware components proposing various custom architectures using both traditional cmos and hybrid nanotechnology cmol the first part concludes with hybrid cmos nano architectures the second memory part covers state of the art sram dram and flash memories as well as emerging device concepts semiconductor memory is a good example of the full custom design that applies various analog and logic circuits to utilize the memory cell s device physics critical physical effects that include tunneling hot electron injection charge trapping flash memory are discussed in detail emerging memories like fram pram and reram that depend on magnetization electron spin alignment ferroelectric effect built in potential well quantum effects and thermal melting are also described cmos processors and memories is a must for anyone serious about circuit design for future computing technologies the book is written by top notch international experts in industry and academia it can be used in graduate course curriculum

CMOS VLSI Design 2005

details techniques for the design of complex and high performance cmos systems on chip this edition explains practices of chip design covering transistor operation cmos gate design fabrication and layout at level accessible to anyone with an elementary knowledge of digital electronics

Principles of CMOS VLSI Design *1993*

with this revision weste conveys an understanding of cmos technology circuit design layout and system design sufficient to the designer the book deals with the technology down to the layout level of detail thereby providing a bridge from a circuit to a form that may be fabricated

CMOS VLSI Design: A Circuits and Systems Perspective *2011*

this edition presents broad and in depth coverage of the entire field of modern cmos vlsi design the authors draw upon extensive industry and classroom experience to introduce today s most advanced and effective chip design practices

CMOS VLSI Design 2006

体系的に解説されたこの分野のバイブル

Integrated Circuit Design *2011*

きわめて高度化した今日のマイクロエレクトロニクスにおいて 高性能のvlsiをつくる技術として必須とされるcmosは しかしそのレイアウト設計の複雑さによって 完全オリジナルのチップを設計することは困難とされ もっぱらスタンダードセルやゲートアレイといったいわば 出来あいの部品 が用いられてきた 本書は at tベル研究所で開発されたシンボリックレイアウト手法を採用することにより 一連の複雑な設計ルールを単純化 図式化し上記の様な状態から一歩進めて シリコン表面の能力を完全に引き出すフルカスタム設計を比較的容易に実現するために書かれたものである

Principles CMOS VLSI Design 2015

digital vlsi chip design with cadence and synopsys cad tools leads students through the complete process of building a ready to fabricate cmos integrated circuit using popular commercial design software detailed tutorials include step by step instructions and screen shots of tool windows and dialog boxes this hands on book is for use in conjunction with a primary textbook on digital vlsi university instructors may order digital vlsi chip design with cadence and synopsys cad tools with the following textbooks rabaey cover image digital integrated circuits 2nd edition by jan m rabaey anantha chandrakasan and borivoje nikoli to order digital integrated circuits 2nd edition packaged with digital vlsi chip design with cadence and synopsys cad tools please use isbn 0 13 509470 4 on your bookstore order form weste cover image cmos vlsi design 3rd edition by neil h e weste and david harris to order cmos vlsi design 3rd edition packaged with digital vlsi chip design with cadence and synopsys cad tools please use isbn 0 13 509469 0 on your bookstore order form for further details please contact your local pearson addison wesley and prentice hall sales representative or visit pearsonhighered com

CMOS VLSI Design *2014-01*

応用編では最新実例と応用技術を満載した

Uesuto ando harisu shimosu vuieruesuai kairo sekkei 1999-04-15

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

CMOSVLSI設計の原理 *2010*

practical low power digital vlsi design emphasizes the optimization and trade off techniques that involve power dissipation in the hope that the readers are better prepared the next time they are presented with a low power design problem the book highlights the basic principles methodologies and techniques that are common to most cmos digital designs the advantages and disadvantages of a particular low power technique are discussed besides the classical area performance trade off the impact to design cycle time complexity risk testability and reusability are discussed the wide impacts to all aspects of design are what make low power problems challenging and interesting heavy emphasis is given to top down structured design style with occasional coverage in the semicustom design methodology the examples and design techniques cited have been known to be applied to production scale designs or laboratory settings the goal of practical low power digital vlsi design is to permit the readers to practice the low power techniques using current generation design style and process technology practical low power digital vlsi design considers a wide range of design abstraction levels spanning circuit logic architecture and system substantial basic knowledge is provided for qualitative and quantitative analysis at the different design abstraction levels low power techniques are presented at the circuit logic architecture and system levels special techniques that are specific to some key areas of digital chip design are discussed as well as some of the low power techniques that are just appearing on the horizon practical low power digital vlsi design will be of benefit to vlsi design engineers and students who have a fundamental knowledge of cmos digital design

CMOS VLSI Design *2010*

全国の多くの大学のカリキュラムやシラバスに合った 集積回路 工学 の新たな定番テキスト 電気 電子 通信系の大学学部向け2単位用のテキストシリーズの一巻 本書は 電気 電子 通信系学科の専門課目である 集積回路 工学 の教科書 mosトランジスタの基本的動作の解説からはじめ cmosを中心として集積回路の原理 特性 設計 実装などをわかりやすく解説するものです 全体は1コマの講義の回数に合った15章構成をとっており 各章末とも理解度をチェックする演習問題を配しています 目次 1章 集積回路とは 2章 mosトランジスタの動作原理 3章 cmosインバータ 4章 cmosスタティック基本ゲート 5章 プロセスフローとcmosレイアウト設計 6章 cmos組合せ論理回路 7章 ラッチとフリップフロップ 8章 スイッチング特性 9章 同期設計 10章 演算回路 11章 メモリ回路 12章 ディジタル回路の設計フロー 13章 cmos回路の消費電力 14章 寄生素子と2次効果 15章 比例縮小則と微細化の課題 演習問題略解 索引

Digital VLSI Chip Design with Cadence and Synopsys CAD Tools *1985*

this book provides a comprehensive overview of the vlsi design process it covers end to end system on chip soc design including design methodology the design environment tools choice of design components handoff procedures and design infrastructure needs the book also offers critical guidance on the latest upf based low power design flow issues for deep submicron soc designs which will prepare readers for the challenges of working at the nanotechnology scale this practical guide will provide engineers who aspire to be vlsi designers with the techniques and tools of the trade and will also be a valuable professional reference for those already working in vlsi design and verification with a focus on complex soc designs a comprehensive practical guide for vlsi designers covers end to end vlsi soc design flow includes source code case studies and application examples

VLSI Design *2003-03*

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

アナログCMOS集積回路の設計応用編 *2002*

proceedings of the nato advanced study institute l aquila italy july 7 18 1986

Mixed Analog-digital VLSI Devices and Technology 2012-12-06

this book teaches basic and advanced concepts new methodologies and recent developments in vlsi technology with a focus on low power design it provides insight on how to use tanner spice cadence tools xilinx tools vhdl programming and synopsis to design simple and complex circuits using latest state of the art technologies emphasis is placed on fundamental transistor circuit level design concepts

Practical Low Power Digital VLSI Design 2015

n a

Cmos Vlsi Design: a Circuits and Systems Perspective *2013-09-20*

in 1993 the first edition of the electrical engineering handbook set a new standard for breadth and depth of coverage in an engineering reference work now this classic has been substantially revised and updated to include the latest information on all the important topics in electrical engineering today every electrical engineer should have an opportunity to expand his expertise with this definitive guide in a single volume this handbook provides a complete reference to answer the questions encountered by practicing engineers in industry government or academia this well organized book is divided into 12 major sections that encompass the entire field of electrical engineering including circuits signal processing electronics electromagnetics electrical effects and devices and energy and the emerging trends in the fields of communications digital devices computer engineering systems and biomedical engineering a compendium of physical chemical material and mathematical data completes this comprehensive resource every major topic is thoroughly covered and every important concept is defined described and illustrated conceptually challenging but carefully explained articles are equally valuable to the practicing engineer researchers and students a distinguished advisory board and contributors including many of the leading authors professors and researchers in the field today assist noted author and professor richard dorf in offering complete coverage of this rapidly expanding field no other single volume available today offers this combination of broad coverage and depth of exploration of the topics the electrical engineering handbook will be an invaluable resource for electrical engineers for years to come

*OHM*大学テキスト 集積回路工学 *2019-09-25*

the current cutting edge vlsi circuit design technologies provide end users with many applications increased processing power and improved cost effectiveness this trend is accelerating with significant implications on future vlsi and systems design vlsi design engineers are always in demand for front end and back end design applications the book aims to give future and current vsli design engineers a robust understanding of the underlying principles of the subject it not only focuses on circuit design processes obeying vlsi rules but also on technological aspects of fabrication the hardware description language hdl verilog is explained along with its modelling style the book also covers cmos design from the digital systems level to the circuit level the book clearly explains fundamental principles and is a guide to good design practices the book is intended as a reference book for senior undergraduate first year post graduate students researchers as well as academicians in vlsi design electronics electrical engineering and materials science the basics and applications of vlsi design from digital system design to ic fabrication and fpga prototyping are each covered in a comprehensive manner at the end of each unit is a section with technical questions including solutions which will serve as an excellent teaching aid to all readers technical topics discussed in the book include digital system design design flow for ic fabrication and fpga based prototyping verilog hdl ic fabrication technology cmos vlsi design miscellaneous it covers basics of electronics and reconfigurable computing plds latest technology etc

A Practical Approach to VLSI System on Chip (SoC) Design 2016-06-06

コンピュータアーキテクチャの定番教科書 待望の新版 コンピュータ科学を学ぶ際 心臓部であるマイクロプロセッサの 構造 アーキテクチャ を理解することは避けては通れない道ですが マイクロプロセッサを自ら作成することにより その理解をより一層 進めることができます そんな マイクロプロセッサを作りながら学ぶ ディジタル回路設計と コンピュータアーキテクチャが system verilogに対応して バージョンアップしました 本書は初版同様 特にコンピュータ科学を学ぶ学生のために 数の体系 半導体のしくみや論理ゲートといった基本的内容 ブール代数を実現したり ラッチ フリップフロップといった回路設計 system verilog vhdlといったhdl ハードウエア記述言語 を使った実装 さまざまな応用的演算回路 パイプライン処理やメモリ i oシステム など マイクロアーキテクチャを作り 理解するための内容を網羅しています 古典的でありながら今も無数の製品に使われ続けるmipsアーキテクチャを 中心に 最新の先進的アーキテクチャにいたる解説と より理解を深めるための 演習や口頭試問 そして豊富なhdl記述例によって コンピュータアーキテクチャの 基礎をじっくり学べる一冊です 本電子書籍は同名出版物を底本として作成しました 記載内容は印刷出版当時のものです 印刷出版再現のため電子書籍としては不要な情報を含んでいる場合があります 印刷出版とは異なる表記 表現の場合があります 予めご了承ください プレビューにてお手持ちの電子端末での表示状態をご確認の上 商品をお買い求めください 翔泳社

Design and Modeling of Low Power VLSI Systems *1987-07-31*

systemverilogによる回路設計を実践的に解説 systemverilogによるfpga asic 設計方法を解説する入門書です systemverilog は はデジタル回路設計のデファクトスタンダードであるverilog hdlを拡張した言語で 検証に関する機能が強化されています verilog hdlは ライバルであるvhdlに比べて比較的書きやすい言語といわれています 本書は 若い技術者や学生向けに最近のsystemverilogによるデジタル回路設計を解説するものです fpgaへの実装やデジタル回路自体の基礎からsystemverilogによるrisc v リスク ファイブ 設計 verilog hdlと比較しての注意点など 実践的な内容を解説しています このような方におすすめ ディジタル回路設計者 電気 電子 情報系の学生 ディジタル回路を設計したいmaker 主要目次 第1章 ハードウェア記述言語による fpga asic 設計 第2章 fpga への実装入門 第3章 ディジタル回路入門 第4章 systemverliog による順序回路設計 第5章 systemverilog による fpga の設計と実装 第6章 systemverilog による asic 設計 第7章 systemverilogとverilog hdlの対比と記述の罠

Design systems for VLSI circuits *2016-08-08*

handbook of vlsi chip design and expert systems provides information pertinent to the fundamental aspects of expert systems which provides a knowledge based approach to problem solving this book discusses the use of expert systems in every possible subtask of vlsi chip design as well as in the interrelations between the subtasks organized into nine chapters this book begins with an overview of design automation which can be identified as computer aided design of circuits and systems cadcas this text then presents the progress in artificial intelligence with emphasis on expert systems other chapters consider the impact of design automation which exploits the basic capabilities of computers to perform complex calculations and to handle huge amounts of data with a high speed and accuracy this book discusses as well the characterization of microprocessors the final chapter deals with interactive i o devices this book is a valuable resource for system design experts circuit analysts and designers logic designers device engineers technologists and application specific designers

Low Power VLSI Design *1997-09-26*

vlsi is an important area of electronic and computer engineering however there are few textbooks available for undergraduate postgraduate study of vlsi design automation and chip layout vlsi physical design automation theory and practice fills the void and is an essential introduction for senior undergraduates postgraduates and anyone starting work in the field of cad for vlsi it covers all aspects of physical design together with such related areas as automatic cell generation silicon compilation layout editors and compaction a problem solving approach is adopted and each solution is illustrated with examples each topic is treated in a standard format problem definition cost functions and constraints possible approaches and latest developments special features the book deals with all aspects of vlsi physical design from partitioning and floorplanning to layout generation and silicon compilation provides a comprehensive treatment of most of the popular algorithms covers the latest developments and gives a bibliography for further research offers numerous fully described examples problems and programming exercises

VLSI Design 2023-06-09

this book constitutes the refereed proceedings of the 22st international symposium on vlsi design and test vdat 2018 held in madurai india in june 2018 the 39 full papers and 11 short papers presented together with 8 poster papers were carefully reviewed and selected from 231 submissions the papers are organized in topical sections named digital design analog and mixed signal design hardware security micro bio fluidics vlsi testing analog circuits and devices network on chip memory quantum computing and noc sensors and interfaces

The Electrical Engineering Handbook,Second Edition *2022-09-01*

クラウド時代のコンピュータ アーキテクチャを完全解説 risc 育ての親 ヘネシー パターソン両教授によるコンピュータ アーキテクチャの定番書 着実に版を重ね 第5版となる本書はcpuアーキテクチャ設計中心にハードウェアにおけるシステム アーキテクチャを詳細に解説 googleやamazonを支える大規模コンピューティング環境や スマホやタブレットなど小型pcにおけるアーキテクチャにも目を向けます コンピュータの仕組みを学べる定番書として欠かせない1冊です

Introduction to VLSI Design Flow *2017-10-17*

during the ten years since the appearance of the groundbreaking bestselling first edition of the electronics handbook the field has grown and changed tremendously with a focus on fundamental theory and practical applications the first edition guided novice and veteran engineers along the cutting edge in the design production installation operation and maintenance of electronic devices and systems completely updated and expanded to reflect recent advances this second edition continues the tradition the electronics handbook second edition provides a comprehensive reference to the key concepts models and equations necessary to analyze design and predict the behavior of complex electrical devices circuits instruments and systems with 23 sections that encompass the entire electronics field from classical devices and circuits to emerging technologies and applications the electronics handbook second edition not only covers the engineering aspects but also includes sections on reliability safety and engineering management the book features an individual table of contents at the beginning of each chapter which enables engineers from industry government and academia to navigate easily to the vital information they need this is truly the most comprehensive easy to use reference on electronics available

Low Power VLSI Design and Technology 2023-11-25

this book covers layout design and layout migration methodologies for optimizing multi net wire structures in advanced vlsi interconnects scaling dependent models for interconnect power interconnect delay and crosstalk noise are covered in depth and several design optimization problems are addressed such as minimization of interconnect power under delay constraints or design for minimal delay in wire bundles within a given routing area a handy reference or a guide for design methodologies and layout automation techniques this book provides a foundation for physical design challenges of interconnect in advanced integrated circuits

Basic VLSI Design Technology *2014-05-10*

verilog and its usage has come a long way since its original invention in the mid 80s by phil moorby at the time the average design size was around ten thousand gates and simulation to validate the design was its primary usage but between then and now designs have increased dramatically in size and automatic logic synthesis from rtl has become the standard design flow for most design indeed the language has evolved and been re standardized too overtheyears manybookshavebeenwrittenaboutverilog myown coauthored with phil moorby had the goal of defining the language and its usage providing amples along the way it has been updated with five new editions as the language and its usage evolved however this new book takes a very different and unique view that of the designer john michael williams has a long history of working and teaching in the field of ic and asic design he brings an indepth presentation of verilog and how to use it with logic synthesis tools no other verilog book has dealt with this topic as deeply as he has if you need to learn verilog and get up to speed quickly to use it for synthesis this book is for you it is sectioned around a set of lessons including presentation and explanation of new concepts and approaches to design along with lab sessions

ディジタル回路設計とコンピュータアーキテクチャ 第2版 *1999-10-04*

this book provides an overview of emerging semiconductor devices and their applications in electronic circuits which form the foundation of electronic devices device circuit co design issues in fets provides readers with a better understanding of the ever growing field of low power electronic devices and their applications in the wireless biosensing and circuit domains the book brings researchers and engineers from various disciplines of the vlsi domain together to tackle the emerging challenges in the field of engineering and applications of advanced low power devices in an effort to improve the performance of these technologies the chapters examine the challenges and scope of finfet device circuits 3d fets and advanced fet for circuit applications the book also discusses low power memory design neuromorphic computing and issues related to thermal reliability the authors provide a good understanding of device physics and circuits and discuss transistors based on the new channel dielectric materials and device architectures to achieve low power dissipation and ultra high switching speeds to fulfill the requirements of the semiconductor industry this book is intended for students researchers and professionals in the field of semiconductor devices and nanodevices as well as those working on device circuit co design issues

*SystemVerilog*による*FPGA/*ディジタル回路設計入門 *2019-01-24*

スマホ からスーパーコンピュータまで 現代のコンピュータ の全体像がわかる 本書は コンピュータアーキテクチャを学ぶ大学学部生 院生や企業の技術者 研究者を対象として 並列コンピュータを基礎から解説するものです ムーアの法則が頭打ちとなり回路の動作周波数に限界が見え始めたことから コンピュータアーキテクチャは 従来の微細化 集積化型の成長から マルチコア メニーコア化による並列化 分散化型の成長へ舵を切りました その結果 スマートフォンからスーパーコンピュータまで 現在あらゆるコンピュータが並列化されています 本書では この並列コンピュータについて体系的に整理し 基礎 歴史 アーキテクチャ 記述言語などをていねいに紹介します 現代のコンピュータにかかわるすべての方の座右の書です このような方におすすめ コンピュータアーキテクチャを学ぶ大学学部生 院生 半導体の設計者 開発者 研究者 コンピュータシステムの開発者 研究者 主要目次 第1章 並列コンピュータとは 第2章 集中メモリ型並列コンピュータ 第3章 共有メモリを用いた並列プログラム 第4章 分散共有メモリ numa 第5章 クラスタ nora norma 第6章 相互結合網 第7章 アクセラレータ

Handbook of VLSI Chip Design and Expert Systems *2014-03-17*

algorithms for vlsi physical design automation second edition is a core reference text for graduate students and cad professionals based on the very successful first edition it provides a comprehensive treatment of the principles and algorithms of vlsi physical design presenting the concepts and algorithms in an intuitive manner each chapter contains 3 4 algorithms that are discussed in detail additional algorithms are presented in a somewhat shorter format references to advanced algorithms are presented at the end of each chapter algorithms for vlsi physical design automation covers all aspects of physical design in 1992 when the first edition was published the largest available microprocessor had one million transistors and was fabricated using three metal layers now we process with six metal layers fabricating 15 million transistors on a chip designs are moving to the 500 700 mhz frequency goal these stunning developments have significantly altered the vlsi field over the cell routing and early floorplanning have come to occupy a central place in the physical design flow this second edition introduces a realistic picture to the reader exposing the concerns facing the vlsi industry while maintaining the theoretical flavor of the first edition new material has been added to all chapters new sections have been added to most chapters and a few chapters have been completely rewritten the textual material is supplemented and clarified by many helpful figures audience an invaluable reference for professionals in layout design automation and physical design

VLSI Physical Design Automation *2008*

cmos processors and memories addresses the state of the art in integrated circuit design in the context of emerging computing systems new design opportunities in memories and processor are discussed emerging materials that can take system performance beyond standard cmos like carbon nanotubes graphene ferroelectrics and tunnel junctions are explored cmos processors and memories is divided into two parts processors and memories in the first part we start with high performance low power processor design followed by a chapter on multi core processing they both represent state of the art concepts in current computing industry the third chapter deals with asynchronous design that still carries lots of promise for future computing needs at the end we present a hardware design space exploration methodology for implementing and analyzing the hardware for the bayesian inference framework this particular methodology involves analyzing the computational cost and exploring candidate hardware components proposing various custom architectures using both traditional cmos and hybrid nanotechnology cmol the first part concludes with hybrid cmos nano architectures the second memory part covers state of the art sram dram and flash memories as well as emerging device concepts semiconductor memory is a good example of the full custom design that applies various analog and logic circuits to utilize the memory cell s device physics critical physical effects that include tunneling hot electron injection charge trapping flash memory are discussed in detail emerging memories like fram pram and reram that depend on magnetization electron spin alignment ferroelectric effect built in potential well quantum effects and thermal melting are also described cmos processors and memories is a must for anyone serious about circuit design for future computing technologies the book is written by top notch international experts in industry and academia it can be used in graduate course curriculum

VLSI Design and Test *2018-10-03*

ヘネシー＆パターソン コンピュータアーキテクチャ 定量的アプローチ 第5版

2014-11-07

Modern VLSI Design *2008-06-06*

The Electronics Handbook *2023-08-22*

Multi-Net Optimization of VLSI Interconnect *2020-09-26*

Digital VLSI Design with Verilog *2012-12-06*

Device Circuit Co-Design Issues in FETs *2010-08-09*

並列コンピュータ 非定量的アプローチ

Algorithms for VLSI Physical Design Automation

CMOS Processors and Memories

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