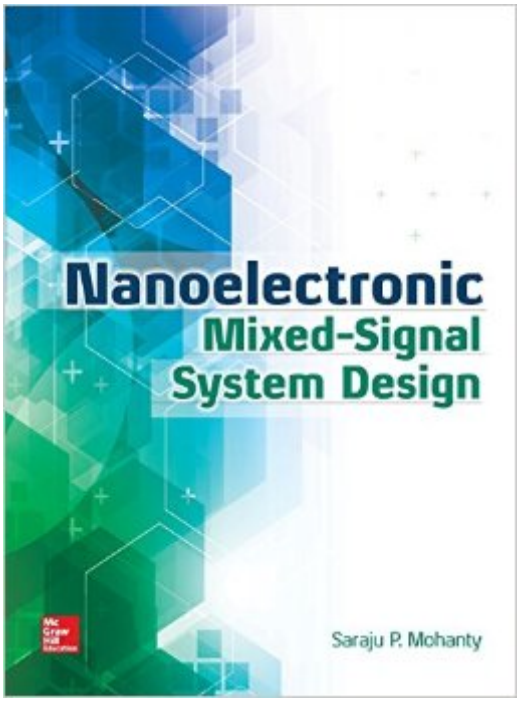
Nanoelectronic Mixed-Signal System Design



Synopsis

Cutting-edge nanoelectronic mixed-signal system design methodsWinner of the Association of American Publishers' 2016 PROSE Award in the Textbook/Physical Sciences & Mathematics category.Written by the director of the NanoSystem Design Laboratory at the University of North Texas, this authoritative resource discusses mixed-signal circuit and system design based on existing and emerging nanoelectronic technologies. The book features coverage of both digital and analog applications using nanoscale CMOS and post-CMOS. Key techniques required for design for excellence and manufacturability are discussed in this practice-driven text. Nanoelectronic Mixed-Signal System Design covers: Opportunities and challenges of nanoscale technology and systemsEmerging systems designed as analog/mixed-signal system-on-chips (AMS-SoCs)Nanoelectronics issues in design for excellencePhase-locked loop component circuitsElectronic signal converter circuitsSensor circuits and systemsMemory in the AMS-SoCsMixed-signal circuit and system design flowMixed-signal circuit and system simulationPower-, parasitic-, and thermal-aware AMS-SoC design methodologiesVariability-aware AMS-SoC design methodologiesMetamodel-based fast AMS-SoC design methodologies

Book Information

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Customer Reviews

This book is a MUST for VLSI students, especially for mixed signal processing, but not limited to it. It discusses the most recent topics in VLSI from application point of view. It gives an in-depth idea

for modeling in different platforms from Simscape, Simulink to SPICE. Various case studies have been considered while explaining the topics, along with their design. It has covered various process technologies from 180 nm to 45 nm, along with recent state-in-art topics like Memristor, FinFET, CNT and others. The AMS processing has been covered in details from different hierarchical level and each level has been analyzed in depth. For a research students, this book is a perfect place to start from. It gives all required idea about what is in current research and shows challenges and possible research areas. I have gone through this book and I found it very good.

This is a must have book for all the students. It is very helpful especially for the Masters students. This book covers almost all the topics from basics to the recently invented FinFET, Graphene FET and memristor. This book alone gives a student what he wants in the area of VLSI and Mixed signal system design. It has covered all the technologies. Each chapter, with its references, guides the reader to numerous published papers on each topic for indepth knowledge. For research this is the best place to start from.

Its a 800 pages book has everything you need to know about the Mixed signal and Nano-electronics.

DISCLAIMER: I am a colleague and collaborator of the author. Still, I wouldnâ ™t give high praises if I didnâ ™t think the book was worth it.This is THE book for those (students as well as practicing engineers) that want to get up to speed with mixed-signal (analog and digital) IC design as practiced today, namely in the nanometer scale. It differs from other, older VLSI books in two aspects: 1) it covers both digital AND analog IC design (usually separate subjects) and 2) not only nanoCMOS but other state-of-the-art technologies (graphene, carbon nanotubes, memristors etc.) are illustrated.At nearly 800 letter-size pages, it is a reference and textbook into one. The text is lavishly illustrated with hundreds of figures (unfortunately in black and white â “ Iâ ™d be happy to see a color edition), tables and plots. There are 12 chapters, each with one hundred or more references at the end.The topics cover the entire spectrum of mixed-signal IC design: starting from general system description all the way to advanced topics such as design for excellence and metamodeling. A small sample of topics includes: application of nanoelectronic systems, parasitics, thermals and yield, oscillators and PLLs, analog/digital conversion, sensors, most currently used memory technologies, system design flows, system and circuit level simulation, process variation awareness and finally, design space exploration and optimization using surrogate modeling (metamodeling)

techniques.This is one textbook that will remain current for years to come.

Nanoelectronic Mixed-Signal System Design Mixed-signal and DSP Design Techniques (Analog Devices) Elijah: An Oratorio for Full Chorus of Mixed Voices, Soprano, Alto, Tenor, and Baritone Soli (Double Solo Quartet of Mixed Voices) and Piano (G. Schirmer's Editions of Oratorios and Cantatas) Mixed Blessing (Mixed Blessing Mystery, Book 1): A Romantic Urban Fantasy & Murder Mystery Series (Kindred) An Introduction to Mixed-Signal IC Test and Measurement (Oxford Series in Electrical and Computer Engineering (Hardco) Low-Voltage/Low-Power Integrated Circuits and Systems: Low-Voltage Mixed-Signal Circuits (IEEE Press Series on Microelectronic Systems) Bayesian Signal Processing: Classical, Modern and Particle Filtering Methods (Adaptive and Cognitive Dynamic Systems: Signal Processing, Learning, Communications and Control) Multidimensional Digital Signal Processing (Prentice-Hall Signal Processing Series) Digital Signal Processing with Examples in MATLABÂ®, Second Edition (Electrical Engineering & Applied Signal Processing Series) Discrete-Time Signal Processing (3rd Edition) (Prentice-Hall Signal Processing Series) Signal Processing Algorithms in Fortran and C (Prentice-Hall Signal Processing Series) Digital Signal Processing: with Selected Topics: Adaptive Systems, Time-Frequency Analysis, Sparse Signal Processing Power Integrity for I/O Interfaces: With Signal Integrity/ Power Integrity Co-Design (Prentice Hall Modern Semiconductor Design) Polymer Clay Surface Design Recipes: 100 Mixed-Media Techniques Plus Project Ideas Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, 4th Edition Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, 3rd Edition Internet, Phone, Mail, and Mixed-Mode Surveys: The Tailored Design Method Feng Shui: Wellness and Peace- Interior Design, Home Decorating and Home Design (peace, home design, feng shui, home, design, home decor, prosperity) Fault Detectability in DWDM: Towards Higher Signal Quality and System Reliability System Analysis & Design with Case Studies: start system presentation