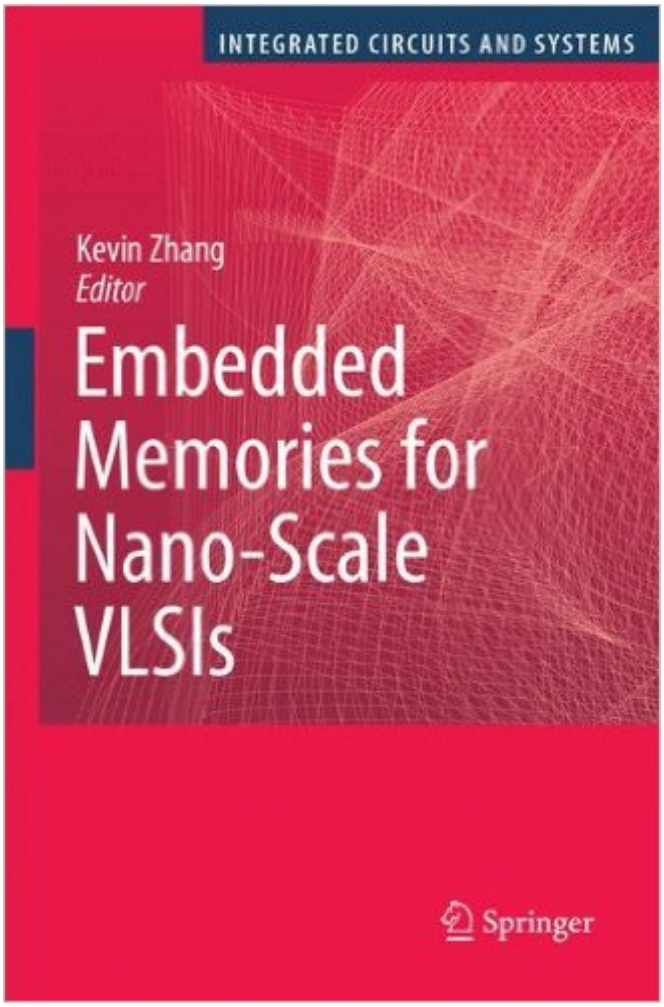
Embedded Memories For Nano-Scale VLSIs (Integrated Circuits And Systems)



Synopsis

Kevin Zhang Advancement of semiconductor technology has driven the rapid growth of very large scale integrated (VLSI) systems for increasingly broad applications, incl- ing high-end and mobile computing, consumer electronics such as 3D gaming, multi-function or smart phone, and various set-top players and ubiquitous sensor and medical devices. To meet the increasing demand for higher performance and lower power consumption in many different system applications, it is often required to have a large amount of on-die or embedded memory to support the need of data bandwidth in a system. The varieties of embedded memory in a given system have alsobecome increasingly more complex, ranging fromstatictodynamic and volatile to nonvolatile. Among embedded memories, six-transistor (6T)-based static random access memory (SRAM) continues to play a pivotal role in nearly all VLSI systems due to its superior speed and full compatibility with logic process technology. But as the technology scaling continues, SRAM design is facing severe challenge in mainta- ing suf?cient cell stability margin under relentless area scaling. Meanwhile, rapid expansion in mobile application, including new emerging application in sensor and medical devices, requires far more aggressive voltage scaling to meet very str- gent power constraint. Many innovative circuit topologies and techniques have been extensively explored in recent years to address these challenges.

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Embedded Memories for Nano-Scale VLSIs (Integrated Circuits and Systems) Ultra-Low Voltage Nano-Scale Memories (Integrated Circuits and Systems) Advances in 3D Integrated Circuits and Systems (Series on Emerging Technologies in Circuits and Systems) Design of 3D Integrated Circuits and Systems (Devices, Circuits, and Systems) Low-Voltage/Low-Power Integrated Circuits and Systems: Low-Voltage Mixed-Signal Circuits (IEEE Press Series on Microelectronic Systems) Introduction to Embedded Systems: Using ANSI C and the Arduino Development Environment (Synthesis Lectures on Digital Circuits and Systems) Engineering Embedded Systems: Physics, Programs, Circuits Radio Frequency Integrated Circuits and Systems DSP Software Development Techniques for Embedded and Real-Time Systems (Embedded Technology) Embedded Systems Architecture: A Comprehensive Guide for Engineers and Programmers (Embedded Technology) Applied Control Theory for Embedded Systems (Embedded Technology) Design Patterns for Embedded Systems in C: An Embedded Software Engineering Toolkit Analog Interfacing to Embedded Microprocessor Systems, Second Edition (Embedded Technology Series) Real-Time UML Workshop for Embedded Systems, Second Edition (Embedded Technology) Integrated Assessment of Scale Impacts of Watershed Intervention: Assessing Hydrogeological and Bio-physical Influences on Livelihoods Principles of Transistor Circuits, Eighth Edition: Introduction and guide to the design of amplifiers, function generators, receivers and digital circuits Electronic Circuits: The Definitive Guide to Circuit Boards, Testing Circuits and Electricity Principles Design With Operational Amplifiers And Analog Integrated Circuits (McGraw-Hill Series in Electrical and Computer Engineering) CMOS SRAM Circuit Design and Parametric Test in Nano-Scaled Technologies: Process-Aware SRAM Design and Test (Frontiers in Electronic Testing) Enzyme Nanoparticles: Preparation, Characterisation, Properties and Applications (Micro and Nano Technologies)