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# Power Integrity Analysis and Management for Integrated Circuits (Prentice Hall Modern Semiconductor Design)

*Raj Nair, Donald Bennett*

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**Power Integrity Analysis and Management for Integrated Circuits (Prentice Hall Modern Semiconductor Design)** Raj Nair, Donald Bennett
**New Techniques and Tools for Ensuring On-Chip Power Integrity—Down to Nanoscale**

As chips continue to scale, power integrity issues are introducing unexpected project complexity and cost. In this book, two leading industry innovators thoroughly discuss the power integrity challenges that engineers face in designing at nanoscale levels, introduce new analysis and management techniques for addressing these issues, and provide breakthrough tools for hands-on problem solving.

Raj Nair and Dr. Donald Bennett first provide a complete foundational understanding of power integrity, including ULSI issues, practical aspects of power delivery, and the benefits of a total power integrity approach to optimizing chip physical designs. They introduce advanced power distribution network modeling, design, and analysis techniques that highlight abstraction and physics-based analysis, while also incorporating traditional circuit- and field-solver based approaches. They also present advanced techniques for floorplanning and power integrity management, and help designers anticipate emerging challenges associated with increased integration. Anasim RLCSim.exe, a new tool for power integrity aware floorplanning, is downloadable for free at anasim.com/category/software.

The authors

- Systematically explore power integrity implications, analysis, and management for integrated circuits
- Present practical examples and industry best practices for a broad spectrum of chip design applications
- Discuss distributed and high-bandwidth voltage regulation, differential power path design, and the significance of on-chip inductance to power integrity
- Review both traditional and advanced modeling techniques for integrated circuit power integrity analysis, and introduce continuum modeling
- Explore chip, package, and board interactions for power integrity and EMI, and bring together industry best practices and examples
- Introduce advanced concepts for power integrity management, including non-linear capacitance devices, impedance modulation, and active noise regulation

***Power Integrity Analysis and Management for Integrated Circuits*** ' coverage of both fundamentals and advanced techniques will make this book indispensable to all engineers responsible for signal integrity, power integrity, hardware, or system design—especially those working at the nanoscale level.

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