Engineering the CMOS Library: Enhancing Digital Design Kits for Competitive Silicon

By David Doman

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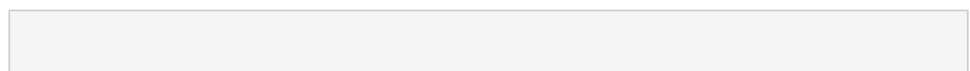
Shows readers how to gain the competitive edge in the integrated circuit marketplace

This book offers a wholly unique perspective on the digital design kit. It points to hidden value in the safety margins of standard-cell libraries and shows design engineers and managers how to use this knowledge to beat the competition.

Engineering the CMOS Library reveals step by step how the generic, foundry-provided standard-cell library is built, and how to extract value from existing std-cells and EDA tools in order to produce tighter-margined, smaller, faster, less power-hungry, and more yield-producing integrated circuits. It explores all aspects of the digital design kit, including the different views of CMOS std-cell libraries along with coverage of IO libraries, memory compilers, and small analog blocks. Readers will learn:

- How to work with overdesigned std-cell libraries to improve profitability while maintaining safety
- How functions usually found in std-cell libraries cover the design environment, and how to add any missing functions
- How to harness the characterization technique used by vendors to add characterization without having to get it from the vendor
- How to use verification and validation techniques to ensure proper descriptive views and even fix inconsistencies in vendor release views
- How to correct for possible conflicts arising from multiple versions and different vendor sources in any given integrated circuit design

Complete with real-world case studies, examples, and suggestions for further research, *Engineering the CMOS Library* will help readers become more astute designers.

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Editorial Review

About the Author

David Doman is Circuit Manager at GlobalFoundries in Austin, Texas. He has more than thirty years of experience in semiconductor intellectual property design and development.

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