Jens Lienig · Matthias Thiele

Fundamentals of Electromigration-Aware Integrated Circuit Design

The book provides a comprehensive overview of electromigration and its effects on the reliability of electronic circuits. It introduces the physical process of electromigration, which gives the reader the requisite understanding and knowledge for adopting appropriate counter measures. A comprehensive set of options is presented for modifying the present IC design methodology to prevent electromigration. Finally, the authors show how specific effects can be exploited in present and future technologies to reduce electromigration's negative impact on circuit reliability.

- Enables readers to understand and meet challenges of electromigration, including its effects on the reliability of electronic systems;
- Accessible to readers of varying backgrounds and experience levels, combining practical application with theoretical underpinnings;
- Extensive use of multi-color illustrations, for rapid and clear understanding;
- Multiple examples and hands-on instructions for the practical application of counter measures.

"This unique book provides the fundamental science necessary for a sound grounding from which to make practical use of the complete and indispensable application-oriented information regarding the electromigration-aware design of electronic systems. It is a foundational reference for today's design professionals, as well as for the next generation of engineering students."

Prof. Worthy Martin, University of Virginia

"This is a long-awaited book bridging the design and reliability methodologies imperative for generating robust and high-performing semiconductor devices. A deep insight into physics of the electromigration induced degradation of on-chip interconnect components as well as explaining a design specific failure development are beneficial for both the chip-design and materials engineering communities."

Dr. Valeriy Sukharev, D2S Calibre Division of Mentor, a Siemens Business

"As digital electronic circuits scale down, it is getting increasingly difficult to maintain digital abstractions against a variety of physical phenomena, such as electromigration. This book summarizes our current understanding of electromigration and how its effects can be moderated in practice. Particularly important and valuable are techniques that can address electromigration in modern automated design flows."

Prof. Igor Markov, University of Michigan

Electrical Engineering

ISBN 978-3-319-73557-3

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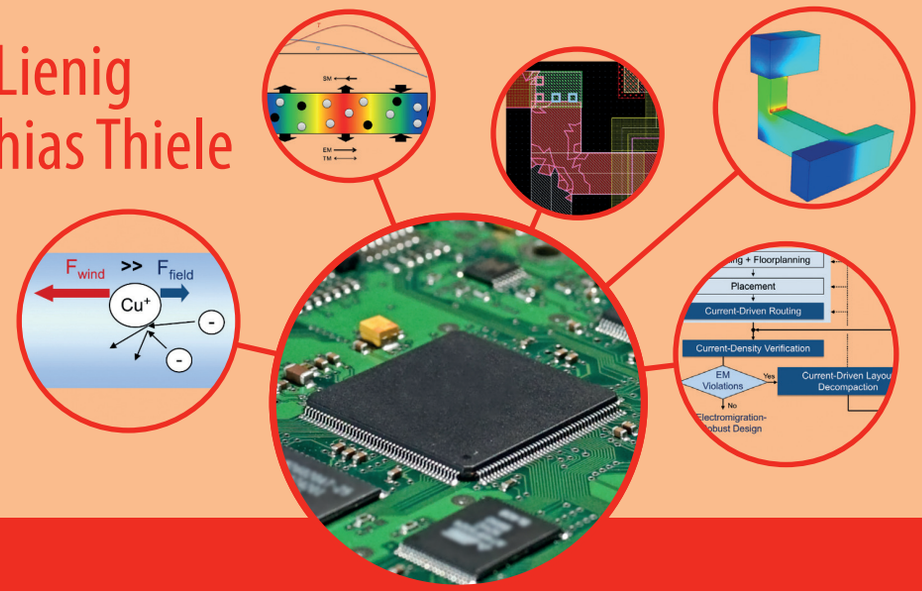

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Springer