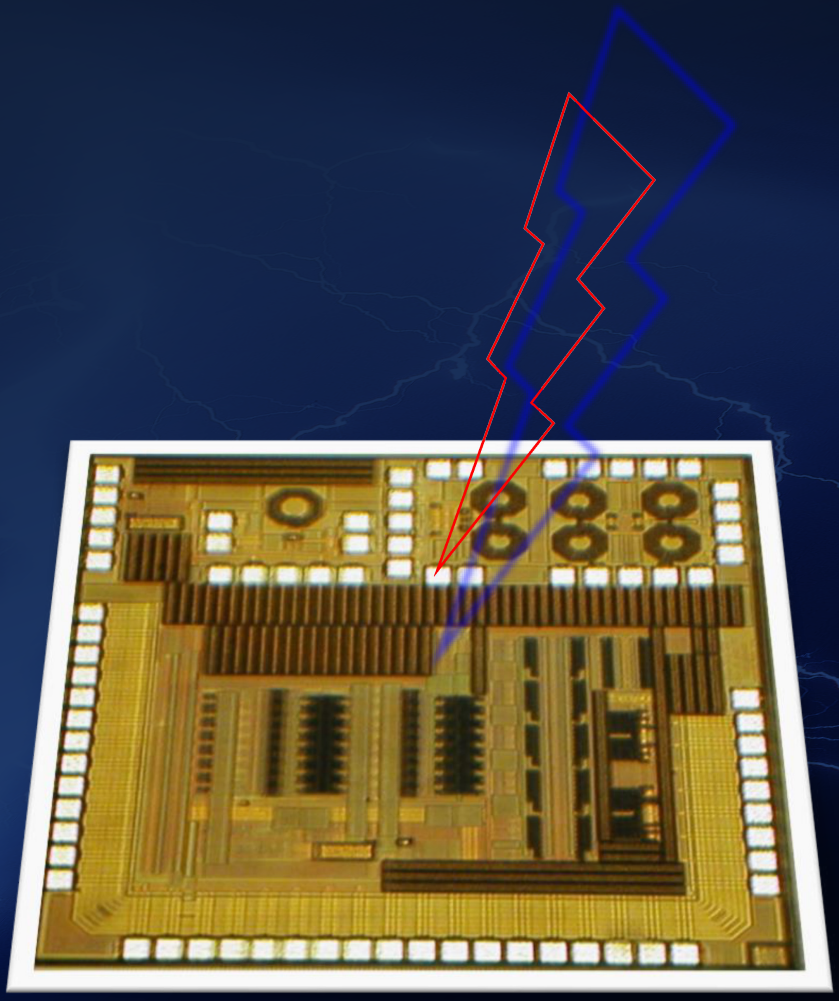
ALBERT WANG

PRACTICAL ESD PROTECTION DESIGN



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Practical ESD Protection Design

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An authoritative single-volume reference on the design and analysis of ESD protection for ICs

Electrostatic discharge (ESD) is a major reliability challenge to semiconductors, integrated circuits (ICs), and microelectronic systems. On-chip ESD protection is a vital to any electronic products, such as smartphones, laptops, tablets, and other electronic devices. Practical ESD Protection Design provides comprehensive and systematic guidance on all major aspects of designs of on-chip ESD protection for integrated circuits (ICs).

Written for students and practicing engineers alike, this one-stop resource covers essential theories, hands-on design skills, computer-aided design (CAD) methods, characterization and analysis techniques, and more on ESD protection designs. Detailed chapters examine an array of topics ranging from fundamental to advanced, including ESD phenomena, ESD failure analysis, ESD testing models, ESD protection devices and circuits, ESD design layout and technology effects, ESD design flows and co-design methods, ESD modelling and CAD techniques, and future ESD protection concepts. Based on the author's decades of design, research and teaching experiences, Practical ESD Protection Design:

- Features numerous real-world ESD protection design examples
- Emphasizes on ESD protection design techniques and procedures
- Describes ESD-IC co-design methodology for high-performance mixed-signal ICs and broadband radio-frequency (RF) ICs
- Discusses CAD-based ESD protection design optimization and prediction using both Technology and Electrical Computer-Aided Design (TCAD/ECAD) simulation
- Addresses new ESD CAD algorithms and tools for full-chip ESD physical design verification
- Explores the disruptive future outlook of ESD protection

Practical ESD Protection Design is a valuable reference for industrial engineers and academic researchers in the field, and an excellent textbook for electronic engineering courses in semiconductor microelectronics and integrated circuit designs.

Albert Wang, PhD, is a Professor in the Department of Electrical and Computer Engineering at the University of California, Riverside, USA. He was an IC designer in the Silicon Valley before joining the academia. His research resulted in two books, more than 300 peer-reviewed papers, and 16 granted U.S. patents. He was the President of IEEE Electron Devices Society. He is a Fellow of the National Academy of Inventors and a Fellow of IEEE.

Cover Design: Wiley
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Also available as an e-book

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ISBN 978-1-119-85040-3
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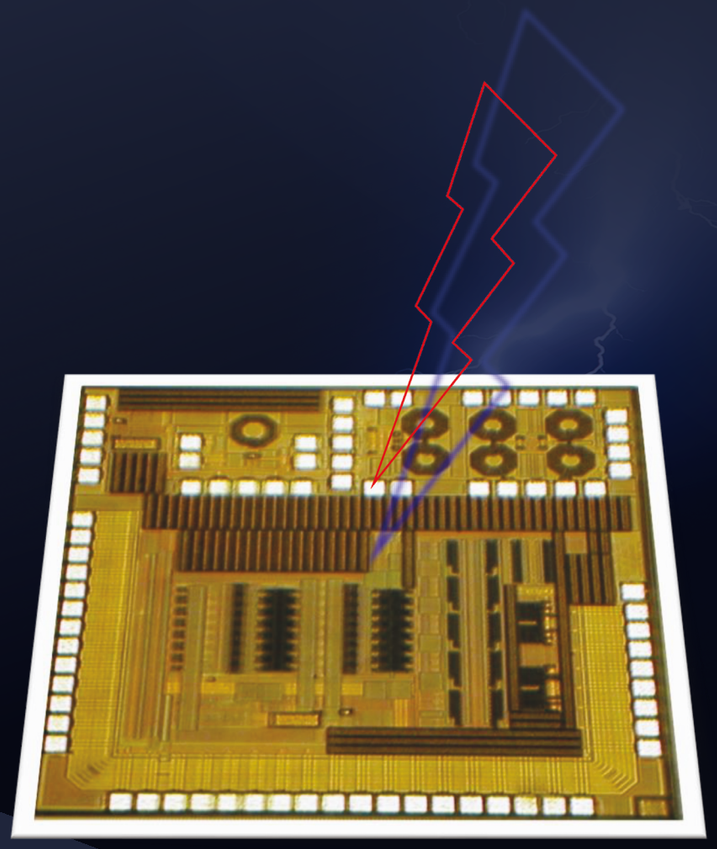

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