

ESD: Failure Mechanisms and Models

By Steven H. Voldman

Download now

Read Online

ESD: Failure Mechanisms and Models By Steven H. Voldman

Electrostatic discharge (ESD) failure mechanisms continue to impact semiconductor components and systems as technologies scale from micro- to nano-electronics.

This book studies electrical overstress, ESD, and latchup from a failure analysis and case-study approach. It provides a clear insight into the physics of failure from a generalist perspective, followed by investigation of failure mechanisms in specific technologies, circuits, and systems. The book is unique in covering both the failure mechanism and the practical solutions to fix the problem from either a technology or circuit methodology.

Look inside for extensive coverage on:

- failure analysis tools, EOS and ESD failure sources and failure models of semiconductor technology, and how to use failure analysis to design more robust semiconductor components and systems;
- electro-thermal models and technologies; the state-of-the-art technologies discussed include CMOS, BiCMOS, silicon on insulator (SOI), bipolar technology, high voltage CMOS (HVCMOS), RF CMOS, smart power, gallium arsenide (GaAs), gallium nitride (GaN), magneto-resistive (MR) , giant magneto-resistors (GMR), tunneling magneto-resistor (TMR), devices; micro electro-mechanical (MEM) systems, and photo-masks and reticles;
- practical methods to use failure analysis for the understanding of ESD circuit operation, temperature analysis, power distribution, ground rule development, internal bus distribution, current path analysis, quality metrics, (connecting the theoretical to the practical analysis);
- the failure of each key element of a technology from passives, active elements to the circuit, sub-system to package, highlighted by case studies of the elements, circuits and system-on-chip (SOC) in today's products.

ESD: Failure Mechanisms and Models is a continuation of the author's series of books on ESD protection. It is an essential reference and a useful insight into the issues that confront modern technology as we enter the Nano-electronic era.

Download ESD: Failure Mechanisms and Models ...pdf

Read Online ESD: Failure Mechanisms and Models ...pdf

ESD: Failure Mechanisms and Models

By Steven H. Voldman

ESD: Failure Mechanisms and Models By Steven H. Voldman

Electrostatic discharge (ESD) failure mechanisms continue to impact semiconductor components and systems as technologies scale from micro- to nano-electronics.

This book studies electrical overstress, ESD, and latchup from a failure analysis and case-study approach. It provides a clear insight into the physics of failure from a generalist perspective, followed by investigation of failure mechanisms in specific technologies, circuits, and systems. The book is unique in covering both the failure mechanism and the practical solutions to fix the problem from either a technology or circuit methodology.

Look inside for extensive coverage on:

- failure analysis tools, EOS and ESD failure sources and failure models of semiconductor technology, and how to use failure analysis to design more robust semiconductor components and systems;
- electro-thermal models and technologies; the state-of-the-art technologies discussed include CMOS, BiCMOS, silicon on insulator (SOI), bipolar technology, high voltage CMOS (HVCMOS), RF CMOS, smart power, gallium arsenide (GaAs), gallium nitride (GaN), magneto-resistive (MR) , giant magneto-resistors (GMR), tunneling magneto-resistor (TMR), devices; micro electro-mechanical (MEM) systems, and photo-masks and reticles;
- practical methods to use failure analysis for the understanding of ESD circuit operation, temperature analysis, power distribution, ground rule development, internal bus distribution, current path analysis, quality metrics, (connecting the theoretical to the practical analysis);
- the failure of each key element of a technology from passives, active elements to the circuit, sub-system to package, highlighted by case studies of the elements, circuits and system-on-chip (SOC) in today’s products.

ESD: Failure Mechanisms and Models is a continuation of the author’s series of books on ESD protection. It is an essential reference and a useful insight into the issues that confront modern technology as we enter the Nano-electronic era.

ESD: Failure Mechanisms and Models By Steven H. Voldman Bibliography

- Sales Rank: #2524313 in Books
- Published on: 2009-08-17
- Original language: English
- Number of items: 1
- Dimensions: 9.90" h x 1.12" w x 7.00" l, 1.80 pounds
- Binding: Hardcover
- 408 pages

Download ESD: Failure Mechanisms and Models ...pdf

Read Online ESD: Failure Mechanisms and Models ...pdf

Download and Read Free Online ESD: Failure Mechanisms and Models By Steven H. Voldman

Editorial Review

From the Back Cover
Electrostatic discharge (ESD) failure mechanisms continue to impact semiconductor components and systems as technologies scale from micro- to nano-electronics.

This book studies electrical overstress, ESD, and latchup from a failure analysis and case-study approach. It provides a clear insight into the physics of failure from a generalist perspective, followed by investigation of failure mechanisms in specific technologies, circuits, and systems. The book is unique in covering both the failure mechanism and the practical solutions to fix the problem from either a technology or circuit methodology.

Look inside for extensive coverage on:

- failure analysis tools, EOS and ESD failure sources and failure models of semiconductor technology, and how to use failure analysis to design more robust semiconductor components and systems;
- electro-thermal models and technologies; the state-of-the-art technologies discussed include CMOS, BiCMOS, silicon on insulator (SOI), bipolar technology, high voltage CMOS (HVCMOS), RF CMOS, smart power, gallium arsenide (GaAs), gallium nitride (GaN), magneto-resistive (MR) , giant magneto-resistors (GMR), tunneling magneto-resistor (TMR), devices; micro electro-mechanical (MEM) systems, and photo-masks and reticles;
- practical methods to use failure analysis for the understanding of ESD circuit operation, temperature analysis, power distribution, ground rule development, internal bus distribution, current path analysis, quality metrics, (connecting the theoretical to the practical analysis);
- the failure of each key element of a technology from passives, active elements to the circuit, sub-system to package, illusterated with case studies of the elements, circuits and system-on-chip (SOC) in today’s products.

ESD: Failure Mechanisms and Models is a continuation of the author’s series of books on ESD protection. It is an essential reference and a useful insight into the issues that confront modern technology as we enter the Nano-electronic era.

About the Author
Dr Steven H. Voldman received his B.S. in Engineering Science from the University of Buffalo (1979); M.S. EE (1981) and Electrical Engineer Degree (1982) from M.I.T; MS Engineering Physics (1986) and Ph.D EE (1991) from the University of Vermont under IBM's Resident Study Fellow Program. At M.I.T, he worked as a member of the M.I.T. Plasma Fusion Center, and the High Voltage Research Laboratory (HVRL). At IBM, as a reliability device engineer, his work include pioneering work in bipolar/ CMOS SRAM alpha particle and cosmic ray SER simulation, MOSFET gate-induced drain leakage (GIDL) mechanism, hot electron, epitaxy/well design, CMOS latchup, and ESD. Since 1986, he has been responsible for defining the IBM ESD/latchup strategy for CMOS, SOI, BiCMOS and RF CMOS and SiGe technologies. He has authored ESD and latchup publications in the area of MOSFET Scaling, device simulations, copper, low-k, MR heads, CMOS, SOI , Sage and SiGeC technology. Voldman served as SEMATECH ESD Working Group Chairman (1996-2000), ESD Association General Chairman and Board of Directors, International Reliability Physics (IRPS) ESD/Latchup Chairman, International Physical and Failure Analysis (IPFA) Symposium ESD Sub-Committee Chairman, ESD Association Standard Development Chairman on

Transmission Line Pulse Testing, ESD Education Committee, and serves on the ISQED Committee, Taiwan ED Conference (T-ESDC) Technical Program Committee. Voldman has provided ESD lectures for universities (e.g. MIT Lecture Series, Taiwan National Chiao-Tung University, and Singapore Nanyang Technical University). He is a recipient of over 125 US patents, over 100 publications, and also provides talks on patenting, and invention. He has been featured in *EE Times, Intellectual Property Law and Business* and authored the first article on ESD phenomena for the October 2002 edition of *Scientific American* entitled *Lightening Rods for Nanostructures*, and *Pour La Science, Le Scienze, and Swiat Nauk* international editions. Dr. Voldman was recently accepted as the first IEEE Fellow for ESD phenomena in semiconductors for ' contributions to electrostatic discharge protection CMOS, SOI and SiGe technologies'.

Users Review

From reader reviews:

Todd Grossi:

In this 21st one hundred year, people become competitive in most way. By being competitive currently, people have do something to make these individuals survives, being in the middle of often the crowded place and notice simply by surrounding. One thing that at times many people have underestimated the idea for a while is reading. Yes, by reading a reserve your ability to survive boost then having chance to stand up than other is high. For you who want to start reading some sort of book, we give you this ESD: Failure Mechanisms and Models book as starter and daily reading reserve. Why, because this book is more than just a book.

Doris Rice:

Information is provisions for those to get better life, information nowadays can get by anyone on everywhere. The information can be a knowledge or any news even a problem. What people must be consider when those information which is in the former life are challenging to be find than now's taking seriously which one is suitable to believe or which one typically the resource are convinced. If you receive the unstable resource then you understand it as your main information you will have huge disadvantage for you. All those possibilities will not happen in you if you take ESD: Failure Mechanisms and Models as the daily resource information.

Luann Bowen:

This ESD: Failure Mechanisms and Models is new way for you who has fascination to look for some information as it relief your hunger of knowledge. Getting deeper you on it getting knowledge more you know otherwise you who still having tiny amount of digest in reading this ESD: Failure Mechanisms and Models can be the light food for you personally because the information inside this kind of book is easy to get through anyone. These books create itself in the form and that is reachable by anyone, sure I mean in the e-book form. People who think that in guide form make them feel drowsy even dizzy this publication is the answer. So there is no in reading a publication especially this one. You can find actually looking for. It should be here for you. So , don't miss it! Just read this e-book type for your better life and also knowledge.

Cary Freeman:

A lot of book has printed but it differs from the others. You can get it by world wide web on social media. You can choose the top book for you, science, comic, novel, or whatever by means of searching from it. It is called of book ESD: Failure Mechanisms and Models. You'll be able to your knowledge by it. Without making the printed book, it could add your knowledge and make an individual happier to read. It is most important that, you must aware about book. It can bring you from one destination to other place.

Download and Read Online ESD: Failure Mechanisms and Models By Steven H. Voldman #JF8OS370G6P

Read ESD: Failure Mechanisms and Models By Steven H. Voldman for online ebook

ESD: Failure Mechanisms and Models By Steven H. Voldman Free PDF d0wnl0ad, audio books, books to read, good books to read, cheap books, good books, online books, books online, book reviews epub, read books online, books to read online, online library, greatbooks to read, PDF best books to read, top books to read ESD: Failure Mechanisms and Models By Steven H. Voldman books to read online.

Online ESD: Failure Mechanisms and Models By Steven H. Voldman ebook PDF download

ESD: Failure Mechanisms and Models By Steven H. Voldman Doc

ESD: Failure Mechanisms and Models By Steven H. Voldman Mobipocket

ESD: Failure Mechanisms and Models By Steven H. Voldman EPub