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Reliability physics and engineering time-to-failure modeling

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Abstrak

This third edition textbook provides the basics of reliability physics and engineering that are needed by electrical engineers, mechanical engineers, civil engineers, biomedical engineers, materials scientists, and applied physicists to help them to build better devices/products. The information contained within should help all fields of engineering to develop better methodologies for: more reliable product designs, more reliable materials selections, and more reliable manufacturing processes-all of which should help to improve product reliability. A mathematics level through differential equations is needed. Also, a familiarity with the use of excel spreadsheets is assumed. Any needed statistical training and tools are contained within the text. While device failure is a statistical process (thus making statistics important), the emphasis of this book is clearly on the physics of failure and developing the reliability engineering tools required for product improvements during device-design and device-fabrication phases.

- Provides a comprehensive textbook on reliability physics of semiconductors, from fundamentals to applications;
- Explains the fundamentals of reliability physics and engineering tools for building better products;
- Contains statistical training and tools within the text;
- Includes new chapters on Physics of Degradation, and Resonance and Resonance-Induced Degradation.