Reliability of Electronic Packages and Semiconductor Devices

By Giulio Di Giacomo
Senior Technical Staff Member,Technology Reliability Engineering, IBM Microelectronics
Published by McGraw-Hill (1996), Hardcover 410 pp

ABOUT THE BOOK FROM THE PUBLISHER

Reliability issues are a hot topic in the global electronics industry, and here at last is a precise tutorial on predicting and extending the functional life of semiconductor components—the first book on this extremely important subject. Using empirical modeling, Di Giacomo expertly covers all major types of failure mechanisms that can greatly reduce the active life of semiconductor components, including interconnection fatigue and electromigration. He also shows how to use statistical analysis to project failure rates. By cutting across different technologies and materials, this unique text will prove invaluable to engineers in the numerous fields that rely on semiconductor components.

SYNOPSIS

Proven Methods for Predicting and Extending the Functional Life of Seminconductor Components Reliability Of Electronic Packages and Semiconductor Devices. Learn the latest methods for dealing effectively with the failure mechanisms that greatly reduce the useful life of semiconductor components in microelectronic packages. This first-of-its-kind guide cuts across different technologies and materials to give you a practical and reliable model for predicting and extending component lifetimes. Written by one of the top experts in the field, this book offers you in-depth coverage of empirical modeling for a wide range of failure mechanisms, including interconnection fatigue, solder creep, electromigration, thermomigration, current leakage, and more. You'll find everything you need to know about packaging, service stresses, field environment, test conditions, and failure mechanism acceleration. This complete reference also takes you through early fails, wearout fails, types of fail distributions, failure mechanisms and modeling, and failure rate projection based on statistical analysis. With the help of this unique sourcebook, you'll be able to use reliability not only as a statistical tool, but also as a design and development resource for greatly improving all kinds of electronic packages and semiconductor devices. semiconductor components

FROM THE CRITICS

Booknews

Demonstrating how reliability can be used not only as a statistical tool, but also as a design and development resource, this sourcebook covers empirical modeling for a wide range of failure mechanisms, including interconnection fatigue, solder creep, electromigration, thermomigration, and current leakage. Includes information about packaging, service stresses, field environments, test conditions, failure mechanism acceleration, early fails, wearout fails, types of fail distributions, failure mechanisms and modeling, and failure rate projection based on statistical analysis. *Annotation c. by Book News, Inc., Portland, Or.*