Integrated Circuit, Hybrid, and Multichip Module Package Design Guidelines: A Focus on Reliability
Michael Pecht

DESCRIPTION

Circuit designers, packaging engineers, printed board fabricators, and procurement personnel will find this book's microelectronic package design-for-reliability guidelines and approaches essential for achieving their life-cycle, cost-effectiveness, and on-time delivery goals.

Its uniquely organized, time-phased approach to design, development, qualification, manufacture, and in-service management shows you step-by-step how to:

* Define realistic system requirements in terms of mission profile, operating life, performance expectations, size, weight, and cost

* Define the system usage environment so that all operating, shipping, and storage conditions, including electrical, thermal, radiation, and mechanical loads, are assessed using realistic data

* Identify potential failure modes, sites, mechanisms, and architecture-stress interactions--PLUS appropriate measures you can take to reduce, eliminate, or accommodate expected failures

* Characterize materials and processes by the key controllable factors, such as types and levels of defects, variations in material properties and dimensions, and the manufacturing and assembly processes involved

* Use experiment, step-stress, and accelerated methods to ensure optimum design before production begins
Detailed design guidelines for substrate...wire and wire, tape automated, and flip-chip bonding...element attachment and case, lead, lead and lid seals--incorporating dimensional and geometric configurations of package elements, manufacturing and assembly conditions, materials selection, and loading conditions--round out this guide's comprehensive coverage. Detailed guidelines for substrate...wire and wire, tape automated, and flip-chip bonding...element attachment and case, lead, lead and lid seals--incorporating dimensional and geometric configurations of package elements, manufacturing and assembly conditions, materials selection, and loading conditions--round out this guide's comprehensive coverage.

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SOLDERING PROCESSES AND EQUIPMENT --Michael G. Pecht

This comprehensive, fundamentals first handbook outlines the soldering methods and techniques used in the manufacture of microelectronic chips and electronic circuit boards. In a clear, easy-to-access format, the book discusses: soldering processes and classification; the material dynamics of heat soldering when assembling differing materials; wave and reflow soldering; controlling contamination during manufacturing cleanings; techniques for assuring reliability and quality control during manufacturing; rework, repair, and manual assembly; the modern assembly / repair station; and more. The book also provides clear guidelines on assembly techniques as well as an appendix of various solder equipment manufacturers.

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