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6 - The physics of failure of portable electronic devices in drop impact6.1 Product drop testing; 6.2 The physics of failure; References; 7 - Subsystem testing of solder joints against drop impact; 7.1 Board-level testing; 7.2 Component-level testing; References; 8 - Fatigue resistance of solder joints: strain-life representation; 8.1 Introduction; 8.2 Design of test specimens; 8.3 Fatigue resistance equations: materials; 8.4 Fatigue resistance equations: frequency; 8.5 Fatigue resistance equations: environment; References; 9 - Fatigue crack growth in solder joints at high strain rate
9.1 Introduction9.2 Establishment of continuous crack growth tracking capability; 9.3 Crack propagation characteristics: board-level drop shock test; 9.4 Crack propagation characteristics: high-speed cyclic bending test; 9.5 Three-dimensional fracture mechanics modelling of the crack front; 9.6 Crack propagation in the solder joints of a mobile phone experiencing drop impact; References; 10 - Dynamic deformation of a printed circuit board in drop-shock; 10.1 Introduction; 10.2 Vibration of a test board in the JESD22-B111 drop-shock test
10.3 Analytical solutions for a spring-mass system subjected to half-sine shock

Sommario/riassunto

Robust Design of Microelectronics Assemblies Against Mechanical Shock, Temperature and Moisture discusses how the reliability of packaging components is a prime concern to electronics manufacturers. The text presents a thorough review of this important field of research, providing users with a practical guide that discusses theoretical aspects, experimental results, and modeling techniques. The authors use their extensive experience to produce detailed chapters covering temperature, moisture, and mechanical shock induced failure, adhesive interconnects, and viscoelasticity. Useful progr