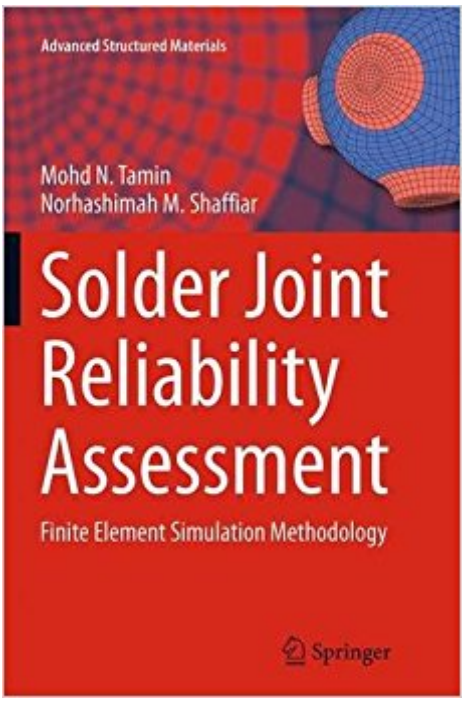
Solder Joint Reliability Assessment: Finite Element Simulation Methodology (Advanced Structured Materials)



Synopsis

This book offers a systematic approach to assessing reliability of solder joints using Finite Element simulation, including problems in solder reflow cooling, temperature cycling and mechanical fatigue of a BGA package, mechanisms of joint fatigue and more.

Book Information

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This book presents a systematic approach in performing reliability assessment of solder joints using Finite Element (FE) simulation. Essential requirements for FE modelling of an electronic package or a single reflowed solder jointÂ subjected to reliability test conditions are elaborated. These cover assumptions considered for a simplified physical model, FE model geometry development, constitutive models for solder joints and aspects of FE model validation. Fundamentals of the mechanics of solder material are adequately reviewed in relation to FE formulations. Concept of damage is introduced along with deliberation of cohesive zone model and continuum damage model for simulation of solder/IMC interface and bulk solder joint failure, respectively. Applications of the deliberated methodology to selected problems in assessing reliability of solder joints are demonstrated.Â These industry-defined research-based problems include solder reflow cooling, temperature cycling and mechanical fatigue of a BGA package, JEDEC board-level drop test and mechanisms of solder joint fatigue. Emphasis is placed on accurate quantitative assessment of

solder joint reliability through basic understanding of the mechanics of materials as interpreted from results of FE simulations. The FE simulation methodology is readily applicable to numerous other problems in mechanics of materials and structures.

Solder Joint Reliability Assessment: Finite Element Simulation Methodology (Advanced Structured Materials) Solder Joint Reliability: Theory and Applications The Finite Element Method: Linear Static and Dynamic Finite Element Analysis (Dover Civil and Mechanical Engineering) Introduction to Finite Element Analysis Using SOLIDWORKS Simulation 2017 The Structured Studio: French Horn: A structured guide to teaching private lessons Temporomandibular Joint Total Joint Replacement Ã¢â ¬â œ TMJ TJR: A Comprehensive Reference for Researchers, Materials Scientists, and Surgeons The Handbook of Five Element Practice (Five Element Acupuncture) Percutaneous Absorption: Drugs--Cosmetics--Mechanisms--Methodology: Drugs--Cosmetics--Mechanisms--Methodology, Third Edition, (Drugs and the Pharmaceutical Sciences) Advanced Health Assessment of Women, Third Edition: Clinical Skills and Procedures (Advanced Health Assessment of Women: Clinical Skills and Pro) Concepts and Applications of Finite Element Analysis, 4th Edition Finite Element Simulations with ANSYS Workbench 17 Finite-Element Design of Concrete Structures, 2nd edition The Finite Element Analysis of Shells - Fundamentals (Computational Fluid and Solid Mechanics) Extended Finite Element Method: Theory and Applications (Wiley Series in Computational Mechanics) A First Course in the Finite Element Method (Activate Learning with these NEW titles from Engineering!) Introduction to Finite Element Analysis and Design The Mathematical Theory of Finite Element Methods (Texts in Applied Mathematics) Introduction to Nonlinear Finite Element Analysis Finite Element Analysis (Engineering) A First Course in the Finite Element Method