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Nota di contenuto	Improving Product Reliability; Contents; About the Authors; Series Foreword; Foreword; Preface; List of Acronyms; Acknowledgements; PART I Reliability - It's a Matter of Survival; 1 Competing in the Twenty-first Century; 1.1 Gaining competitive advantage; 1.2 Competing in the next decade - winners will compete on reliability; 1.3 Concurrent engineering; 1.4 Reducing the number of Engineering Change Orders (ECOs) at product release; 1.5 Time-to-market advantage; 1.6 Accelerating product development; 1.7 Identifying and managing risks; 1.8 ICM, a process to mitigate risk; Reference 2 Barriers to Implementing Reliability2.1 Lack of understanding; 2.2 Internal barriers; 2.3 Implementing change and change agents; 2.4 Building credibility; 2.5 Perceived external barriers; 2.6 It takes time to gain acceptance; 2.7 External barrier; 3 Understanding Why Products Fail; 3.1 Why things fail; 3.2 Parts have improved, everyone can build quality products; 3.3 Reliability - a twenty-first century paradigm shift; References; 4 Alternative Approaches to Implementing Reliability; 4.1 Hiring consultants; 4.2 Outsourcing reliability; PART II Unraveling the Mystery

5 The Product Life Cycle5.1 Six phases of the product life cycle; 5.1.1 Mitigate risk; 5.2 The ICM process for a small company; 5.2.1 DFx - Design for Manufacturability (DFM), Design for Test (DFT), Design for Serviceability (DFS) and Maintainability, and Design for Reliability (DFR); 5.2.2 Warranty; References; 6 Reliability Concepts; 6.1 The bathtub curve; 6.2 Mean Time Between Failure; 6.2.1 Mean time between repair; 6.2.2 Mean Time Between Maintenances (MTBM); 6.2.3 Mean Time To Failure (MTTF); 6.2.4 Mean Time To Repair (MTTR); 6.2.5 Mean Time To Restore System (MTTRS); 6.3 Warranty costs
6.4 Availability6.4.1 On-site manufacturer service personnel; 6.4.2 Customer trained service personnel; 6.4.3 Manufacturer training for customer service personnel; 6.4.4 Easy-to-Use service manuals; 6.4.5 Rapid diagnosis capability; 6.4.6 Repair and spare parts availability; 6.4.7 Rapid response to customer requests for service; 6.4.8 Failure data tracking; 6.5 Reliability growth; 6.6 Reliability demonstration testing; Reference; 7 The Reliability Toolbox; 7.1 The FMEA process; 7.1.1 The functional block diagram; 7.1.2 The fault tree analysis
7.1.3 Failure modes and effects analysis spreadsheet7.1.4 Preparing for the FMEA; 7.1.5 Barriers to the FMEA process; 7.1.6 FMEA ground rules; 7.2 The HALT process; 7.2.1 Types of stresses applied in HALT; 7.2.2 The theory behind the HALT process; 7.2.3 HALT testing; 7.3 Highly Accelerated Stress Screening (HASS); 7.3.1 Proof Of Screen (POS); 7.3.2 Burn-in; 7.3.3 Environmental Stress Screening (ESS); 7.3.4 Economic impact of HASS; 7.3.5 The HASA process; 7.4 Summary of HALT, HASS, HASA and POF benefits; 7.5 HALT and HASS test chambers; 7.6 SPC tool; 7.7 FIFO tool
7.8 Component derating - a first line of defense in product reliability

Sommario/riassunto

The design and manufacture of reliable products is a major challenge for engineers and managers. This book arms technical managers and engineers with the tools to compete effectively through the design and production of reliable technology products.