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3.1.3 Other Discrete Distributions; 3.2 Continuous Distributions; 3.2.1 Weibull Distribution; 3.2.2 Exponential Distribution; 3.2.3 Estimation of Reliability for Exponential Distribution; 3.2.4 The Normal (Gaussian) Distribution; 3.2.5 The Lognormal Distribution; 3.2.6 Gamma Distribution; 3.3 Probability Plots; 3.4 Summary; Problems; 4: Design for Six Sigma; 4.1 What Is Six Sigma?; 4.2 Why Six Sigma?; 4.3 How Is Six Sigma Implemented? 4.3.1 Steps in the Six Sigma Process 4.3.2 Summary of the Six Sigma Steps; 4.4 Optimization Problems in the Six Sigma Process; 4.4.1 System Transfer Function; 4.4.2 Variance Transmission Equation; 4.4.3 Economic Optimization and Quality Improvement; 4.4.4 Tolerance Design Problem; 4.5 Design for Six Sigma; 4.5.1 Identify (I); 4.5.2 Characterize (C); 4.5.3 Optimize (O); 4.5.4 Verify (V); 4.6 Summary; Problems; 5: Product Development; 5.1 Product Requirements and Constraints; 5.2 Product Life Cycle Conditions; 5.3 Reliability Capability; 5.4 Parts and Materials Selection 5.5 Human Factors and Reliability 5.6 Deductive versus Inductive Methods; 5.7 Failure Modes, Effects, and Criticality Analysis; 5.8 Fault Tree Analysis; 5.8.1 Role of FTA in Decision-Making; 5.8.2 Steps of Fault Tree Analysis; 5.8.3 Basic Paradigms for the Construction of Fault Trees; 5.8.4 Definition of the Top Event; 5.8.5 Faults versus Failures; 5.8.6 Minimal Cut Sets; 5.9 Physics of Failure; 5.9.1 Stress Margins; 5.9.2 Model Analysis of Failure Mechanisms; 5.9.3 Derating; 5.9.4 Protective Architectures; 5.9.5 Redundancy; 5.9.6 Prognostics; 5.10 Design Review; 5.11 Qualification 5.12 Manufacture and Assembly

Sommario/riassunto

Using the authors' extensive experience in both industry and academia, this book presents an integrated approach for design, engineering and management of the reliability activities throughout the life cycle of a product which includes concept, research and development, design, manufacturing, assembly, sales and service. The coverage explains how to integrate reliability methods and techniques in the Six Sigma Process and Design for Six Sigma. It also discusses relationships between warranty and reliability, as well as legal and liability issues. This useful guide teaches readers how to effect
