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Nota di contenuto	ESD; Contents; Preface; Acknowledgements; Chapter 1 RF DESIGN and ESD; 1.1 Fundamental Concepts of ESD Design; 1.2 Fundamental Concepts of RF ESD Design; 1.3 Key RF ESD Contributions; 1.4 Key RF ESD Patents; 1.5 ESD Failure Mechanisms; 1.5.1 RF CMOS ESD Failure Mechanisms; 1.5.2 Silicon Germanium ESD Failure Mechanisms; 1.5.3 Silicon Germanium Carbon ESD Failure Mechanisms in Silicon Germanium Carbon Devices; 1.5.4 Gallium Arsenide Technology ESD Failure Mechanisms; 1.5.5 Indium Gallium Arsenide ESD Failure Mechanisms; 1.5.6 RF Bipolar Circuits ESD Failure Mechanisms; 1.6 RF Basics 1.7 Two-Port Network Parameters1.7.1 Z-Parameters; 1.7.2 Y-Parameters; 1.7.3. S-Parameters; 1.7.4 T-Parameters; 1.8 Stability: RF Design Stability and ESD; 1.9 Device Degradation and ESD Failure; 1.9.1 ESD-Induced D.C. Parameter Shift and Failure Criteria; 1.9.2 RF Parameters, ESD Degradation, and Failure Criteria; 1.10 RF ESD Testing;

1.10.1 ESD Testing Models; 1.10.2 RF Maximum Power-to-Failure and ESD Pulse Testing Methodology; 1.10.3 ESD-Induced RF Degradation and S-Parameter Evaluation Test Methodology; 1.11 Time Domain Reflectometry (TDR) and Impedance Methodology for ESD Testing
1.11.1 Time Domain Reflectometry (TDR) ESD Test System Evaluation1.
11.2 ESD Degradation System Level Method - Eye Tests; 1.12 Product Level ESD Test and RF Functional Parameter Failure; 1.13 Combined RF and ESD TLP Test Systems; 1.14 Closing Comments and Summary; Problems; References; Chapter 2 RF ESD Design; 2.1 ESD Design Methods: Ideal ESD Networks and RF ESD Design Windows; 2.1.1 Ideal ESD Networks and the Current-Voltage d.c. Design Window; 2.1.2 Ideal ESD Networks in the Frequency Domain Design Window; 2.2 RF ESD Design Methods: Linearity
2.3 RF ESD Design: Passive Element Quality Factors and Figures of Merit2.4 RF ESD Design Methods: Method of Substitution; 2.4.1 Method of Substitution of Passive Element to ESD Network Element; 2.4.2 Substitution of ESD Network Element to Passive Element; 2.5 RF ESD Design Methods: Matching Networks and RF ESD Networks; 2.5.1 RF ESD Method - Conversion of Matching Networks to ESD Networks; 2.5.2 RF ESD Method: Conversion of ESD Networks into Matching Networks; 2.5.2.1 Conversion of ESD Networks into L-Match Networks; 2.5.2.2 Conversion of ESD Networks into Pie-Match Networks
2.5.2.3 Conversion of ESD Networks into T-Match Networks2.6 RF ESD Design Methods: Inductive Shunt; 2.7 RF ESD Design Methods: Cancellation Method; 2.7.1 Quality Factors and the Cancellation Method; 2.7.2 Inductive Cancellation of Capacitance Load and Figures of Merit; 2.7.3 Cancellation Method and ESD Circuitry; 2.8 RF ESD Design Methods: Impedance Isolation Technique Using LC Resonator; 2.9 RF ESD Design Methods: Lumped versus Distributed Loads; 2.9.1 RF ESD Distributed Load with Coplanar Wave Guides; 2.9.2 RF ESD Distribution Coplanar Waveguides Analysis Using ABCD Matrices
2.10 ESD RF Design Synthesis and Floor Planning: RF, Analog, and Digital Integration

Sommario/riassunto

With the growth of high-speed telecommunications and wireless technology, it is becoming increasingly important for engineers to understand radio frequency (RF) applications and their sensitivity to electrostatic discharge (ESD) phenomena. This enables the development of ESD design methods for RF technology, leading to increased protection against electrical overstress (EOS) and ESD. ESD: RF Technology and Circuits:Presents methods for co-synthesizisng ESD networks for RF applications to achieve improved performance and ESD protection of semiconductor chips;discus