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Nota di contenuto	RF AND MICROWAVETRANSMITTER DESIGN; Contents; Preface; Introduction; References; 1 Passive Elements and Circuit Theory; 1.1 Immittance Two-Port Network Parameters; 1.2 Scattering Parameters; 1.3 Interconnections of Two-Port Networks; 1.4 Practical Two-Port Networks; 1.4.1 Single-Element Networks; 1.4.2 - and T-Type Networks; 1.5 Three-Port Network with Common Terminal; 1.6 Lumped Elements; 1.6.1 Inductors; 1.6.2 Capacitors; 1.7 Transmission Line; 1.8 Types of Transmission Lines; 1.8.1 Coaxial Line; 1.8.2 Stripline; 1.8.3 Microstrip Line; 1.8.4 Slotline; 1.8.5 Coplanar Waveguide; 1.9 Noise 1.9.1 Noise Sources1.9.2 Noise Figure; 1.9.3 Flicker Noise; References; 2 Active Devices and Modeling; 2.1 Diodes; 2.1.1 Operation Principle; 2.1.2 Schottky Diodes; 2.1.3 p-i-n Diodes; 2.1.4 Zener Diodes; 2.2 Varactors; 2.2.1 Varactor Modeling; 2.2.2 MOS Varactor; 2.3 MOSFETs; 2.3.1 Small-Signal Equivalent Circuit; 2.3.2 Nonlinear I-V Models; 2.3.3 Nonlinear C-V Models; 2.3.4 Charge Conservation; 2.3.5 Gate-Source

Resistance; 2.3.6 Temperature Dependence; 2.3.7 Noise Model; 2.4 MESFETs and HEMTs; 2.4.1 Small-Signal Equivalent Circuit; 2.4.2 Determination of Equivalent Circuit Elements; 2.4.3 Curtice Quadratic Nonlinear Model; 2.4.4 Parker-Skellern Nonlinear Model; 2.4.5 Chalmers (Angelov) Nonlinear Model; 2.4.6 IAF (Berroth) Nonlinear Model; 2.4.7 Noise Model; 2.5 BJTs and HBTs; 2.5.1 Small-Signal Equivalent Circuit; 2.5.2 Determination of Equivalent Circuit Elements; 2.5.3 Equivalence of Intrinsic - and T-Type Topologies; 2.5.4 Nonlinear Bipolar Device Modeling; 2.5.5 Noise Model; References; 3 Impedance Matching; 3.1 Main Principles; 3.2 Smith Chart; 3.3 Matching with Lumped Elements; 3.3.1 Analytic Design Technique; 3.3.2 Bipolar UHF Power Amplifier; 3.3.3 MOSFET VHF High-Power Amplifier; 3.4 Matching with Transmission Lines; 3.4.1 Analytic Design Technique; 3.4.2 Equivalence Between Circuits with Lumped and Distributed Parameters; 3.4.3 Narrowband Microwave Power Amplifier; 3.4.4 Broadband UHF High-Power Amplifier; 3.5 Matching Networks with Mixed Lumped and Distributed Elements; References; 4 Power Transformers, Combiners, and Couplers; 4.1 Basic Properties; 4.1.1 Three-Port Networks; 4.1.2 Four-Port Networks; 4.2 Transmission-Line Transformers and Combiners; 4.3 Baluns; 4.4 Wilkinson Power Dividers/Combiners; 4.5 Microwave Hybrids; 4.6 Coupled-Line Directional Couplers; References; 5 Filters; 5.1 Types of Filters; 5.2 Filter Design Using Image Parameter Method; 5.2.1 Constant-k Filter Sections; 5.2.2 m-Derived Filter Sections; 5.3 Filter Design Using Insertion Loss Method; 5.3.1 Maximally Flat Low-Pass Filter; 5.3.2 Equal-Ripple Low-Pass Filter; 5.3.3 Elliptic Function Low-Pass Filter; 5.3.4 Maximally Flat Group-Delay Low-Pass Filter; 5.4 Bandpass and Bandstop Transformation; 5.5 Transmission-Line Low-Pass Filter Implementation; 5.5.1 Richards's Transformation; 5.5.2 Kuroda Identities; 5.5.3 Design Example; 5.6 Coupled-Line Filters

Sommario/riassunto

RF and Microwave Transmitter Design is unique in its coverage of both historical transmitter design and cutting edge technologies. This text explores the results of well-known and new theoretical analyses, while informing readers of modern radio transmitters' practical designs and their components. Jam-packed with information, this book broadcasts and streamlines the author's considerable experience in RF and microwave design and development.