1. Record Nr. UNINA9910511428203321

Autore	Morgan Matthew A.
Titolo	Reflectionless filters / / Matthew A. Morgan
Pubbl/distr/stampa	Norwood : , : Artech House, , 2017 [Piscataqay, New Jersey] : , : IEEE Xplore, , [2017]
ISBN	1-5231-1756-7 1-63081-405-9
Descrizione fisica	1 online resource (258 pages) : illustrations
Collana	Artech House microwave library
Disciplina	621.3813224
Soggetti	Microwave filters Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	6.3 Chebyshev Type II Reflectionless Filters.
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Preface; Chapter 1; 1.1 Two-Port Networks; 1.2 Properties of Immittance and Transfer Functions; 1.2.1 The Laplace Frequency Domain; 1.2.2 Immittance Functions; 1.2.3 Transfer Functions; 1.3 Duality; 1.4 Filter Transfer Functions; 1.4.1 Pole-Zero Configuration; 1.4.2 Butterworth Filter Response; 1.4.3 Chebyshev Type I Filter Response; 1.4.4 Chebyshev Type II Filter Response; 1.4.5 Elliptic Filter Response; 1.4.6 Group Delay; 1.5 Conventional Filter Topologies; 1.5.1 Frequency Transformations; 1.6 Even- and Odd-Mode Analysis; 1.7 Transmission Lines. 1.7.1 The Telegrapher's Equations and Wave Solutions1.7.2 The Standard Transmission-Line Model; 1.7.3 Special Cases; 1.7.4 Impedance and Scattering Parameters; 1.7.5 Coupled Transmission Lines; Chapter 2; 2.1 Diplexers; 2.2 Directional Filters; 2.3 Hybrid-Coupled Filters; 2.4 Empirical Approaches; 2.4.1 Damped Resonators; 2.4.2 Absorptive Gaussian Filters; 2.4.3 Absorptive Transmission-Line Equalizers; 2.5 Constant-Resistance Networks; 2.5.1 Topologies; 2.5.2 Realizability; 2.5.3 Chebyshev Type I Example; 2.5.4 Higher-Order Solutions; Chapter 3; 3.1 Basic Filter Derivation; 3.1.1 Methodology. 3.1.2 Procedure3.1.3 Performance; 3.1.4 Third-Order Case; 3.2 Normalized Element Scaling; 3.2.1 Stop-Band Specification (s = 1); 3.2.2 Pass-Band 3 dB Corner Specification (3dB = 1); 3.2.3 Pass-Band 1

Sommario/riassunto

This invaluable resource introduces progressive techniques for the creation of sophisticated reflectionless filter topologies that have identically zero reflection coefficient at all frequencies. Practical implementations are discussed along with their advantages when compared to classical absorptive filters and their benefits in real-world systems such as up/down converters, multiplier chains, broadband amplifiers, analog-to-digital converters, and time-domain applications. This book offers insight into the innovative process of developing reflectionless filters from first principles using both lumped elements and transmission lines. Tools for the creation of reflectionless multiplexers, matched sloped equalizers, and advanced, high-order, and nonplanar topologies are also presented.