1. Record Nr. UNINA9911019806303321

Autore	Raut Rabin
Titolo	Modern analog filter analysis and design : a practical approach / / Rabin Raut and M.N.S. Swamy
Pubbl/distr/stampa	Weinheim, Germany, : Wiley-VCH, 2010
ISBN	9786613302342 9781283302340 1283302349 9783527631513 3527631518 9783527631506 352763150X
Descrizione fisica	1 online resource (380 p.)
Altri autori (Persone)	SwamyM. N. S
Disciplina	621.3815324
Soggetti	Electric filters Analog electronic systems
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Modern Analog Filter Analysis and Design: A Practical Approach; Contents; Preface; Abbreviations; 1 Introduction; 2 A Review of Network Analysis Techniques; 2.1 Transformed Impedances; 2.2 Nodal Analysis; 2.3 Loop (Mesh) Analysis; 2.4 Network Functions; 2.5 One-Port and Two-Port Networks; 2.5.1 One-Port Networks; 2.5.2 Two-Port Networks; 2.5.2.1 Admittance Matrix Parameters; 2.5.2.2 Impedance Matrix Parameters; 2.5.2.3 Chain Parameters (Transmission Parameters); 2.5.2.4 Interrelationships; 2.5.2.5 Three-Terminal Two-Port Network; 2.5.2.6 Equivalent Networks 2.5.2.7 Some Commonly Used Nonreciprocal Two-Ports2.6 Indefinite Admittance Matrix; 2.6.1 Network Functions of a Multiterminal Network; 2.7 Analysis of Constrained Networks; 2.8 Active Building Blocks for Implementing Analog Filters; 2.8.1 Operational Amplifier; 2.8.2 Operational Transconductance Amplifier; 2.8.3 Current Conveyor; Practice Problems; 3 Network Theorems and Approximation of Filter Functions; 3.1 Impedance Scaling; 3.2 Impedance Transformation; 3.3

Dual and Inverse Networks; 3.3.1 Dual and Inverse One-Port Networks; 3.3.2 Dual Two-Port Networks; 3.4 Reversed Networks
3.5 Transposed Network3.6 Applications to Terminated Networks; 3.7 Frequency Scaling; 3.8 Types of Filters; 3.9 Magnitude Approximation; 3.9.1 Maximally Flat Magnitude (MFM) Approximation; 3.9.1.1 MFM Filter Transfer Function; 3.9.2 Chebyshev (CHEB) Magnitude Approximation; 3.9.2.1 CHEB Filter Transfer Function; 3.9.3 Elliptic (ELLIP) Magnitude Approximation; 3.9.4 Inverse-Chebyshev (ICHEB) Magnitude Approximation; 3.10 Frequency Transformations; 3.10.1 LP to HP Transformation; 3.10.2 LP to BP Transformation; 3.10.3 LP to BR Transformation; 3.11 Phase Approximation
3.11.1 Phase Characteristics of a Transfer Function3.11.2 The Case of Ideal Transmission; 3.11.3 Constant Delay (Linear Phase) Approximation; 3.11.4 Graphical Method to Determine the BT Filter Function; 3.12 Delay Equalizers; Practice Problems; 4 Basics of Passive Filter Design; 4.1 Singly Terminated Networks; 4.2 Some Properties of Reactance Functions; 4.3 Singly Terminated Ladder Filters; 4.4 Doubly Terminated LC Ladder Realization; Practice Problems; 5 Second-Order Active-RC Filters; 5.1 Some Basic Building Blocks using an OA; 5.2 Standard Biquadratic Filters or Biquads
5.3 Realization of Single-Amplifier Biquadratic Filters5.4 Positive Gain SAB Filters (Sallen and Key Structures); 5.4.1 Low-Pass SAB Filter; 5.4.2 RC:CR Transformation; 5.4.3 High-Pass Filter; 5.4.4 Band-Pass Filter; 5.5 Infinite-Gain Multiple Feedback SAB Filters; 5.6 Infinite-Gain Multiple Voltage Amplifier Biquad Filters; 5.6.1 KHN State-Variable Filter; 5.6.2 Tow-Thomas Biquad; 5.6.3 Fleischer-Tow Universal Biquad Structure; 5.7 Sensitivity; 5.7.1 Basic Definition and Related Expressions; 5.7.2 Comparative Results for ?p and Qp Sensitivities
5.7.3 A Low-Sensitivity Multi-OA Biquad with Small Spread in Element Values

Sommario/riassunto

Starting from the fundamentals, the present book describes methods of designing analog electronic filters and illustrates these methods by providing numerical and circuit simulation programs. The subject matters comprise many concepts and techniques that are not available in other text books on the market. To name a few - principle of transposition and its application in directly realizing current mode filters from well known voltage mode filters; an insight into the technological aspect of integrated circuit components used to implement an integrated circuit filter; a careful blending of basi