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2.3.5 The Impulse Response and System Function; 2.3.6 Periodic Signals; 2.3.7 The Uncertainty Principle; 2.4 The Laplace Transform and Analog Systems; 2.4.1 The Complex Frequency; 2.4.2 Properties of the Laplace Transform; 2.4.3 The System Function
3.4.1 Low-pass to Low-pass Transformation; 3.4.2 Low-pass to High-pass Transformation; 3.4.3 Low-pass to Band-pass Transformation; 3.4.4 Low-pass to Band-stop Transformation; 3.5 Examples; 3.6 Phase-oriented Design; 3.6.1 Phase and Delay Functions; 3.6.2 Maximally Flat Delay Response; 3.7 Passive Filters; 3.8 Active Filters; 3.9 Use of MATLAB® for the Design of Analog Filters; 3.9.1 Butterworth Filters; 3.9.2 Chebyshev Filters; 3.9.3 Elliptic Filters; 3.9.4 Bessel Filters; 3.10 Examples of the use of MATLAB®; 3.11 A Comprehensive Application: Pulse Shaping for Data Transmission; 3.12 Conclusion
Problems
Chapter 4 Discrete Signals and Systems; 4.1 Introduction; 4.2 Digitization of Analog Signals; 4.2.1 Sampling; 4.2.2 Quantization and Encoding; 4.3 Discrete Signals and Systems; 4.4 Digital Filters; 4.5 Conclusion; Problems; Chapter 5 Design of Digital Filters; 5.1 Introduction; 5.2 General Considerations; 5.3 Amplitude-oriented Design of IIR Filters; 5.3.1 Low-pass Filters; 5.3.2 High-pass Filters; 5.3.3 Band-pass Filters; 5.3.4 Band-stop Filters; 5.4 Phase-oriented Design of IIR Filters; 5.4.1 General Considerations; 5.4.2 Maximally Flat Group-delay Response; 5.5 FIR Filters
5.5.1 The Exact Linear Phase Property

Sommario/riassunto

This book provides a balanced account of analog, digital and mixed-mode signal processing with applications in telecommunications. Part I Perspective gives an overview of the areas of Systems on a Chip (Soc) and mobile communication which are used to demonstrate the complementary relationship between analog and digital systems. Part II Analog (continuous-time) and Digital Signal Processing contains both fundamental and advanced analysis, and design techniques, of analog and digital systems. This includes analog and digital filter design; fast Fourier transform
