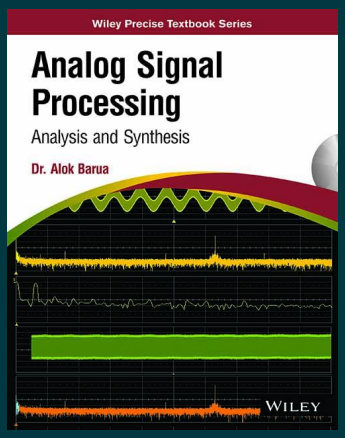
WILEY



Analog Signal Processing: Analysis and Synthesis

By Dr. Alok Barua

Paperback 9788126541980 ₹895.00

Pages: 296

Description

Analog Signal Processing is essential even for a digital system that has an analog signal as input. Analog Signal Processing: Analysis and Synthesis is a textbook for advanced undergraduate and graduate level students as well as circuit designers. It is addressed to Electrical, Electronic Engineering students and practicing engineers interested in instrumentation system design and in understanding the analysis and synthesis of signal processing in analog domain. A basic knowledge of analog circuits is desirable but not essential.

About the Author

Dr. Alok Barua

Dr. Alok Barua is Professor in the Department of Electrical Engineering

Table of Contents

Chapter 1 Fundamentals of Analog Signal Processing

1.1 Introduction

1.2 Fundamentals of an Active Filter

1.3 Filter Types

1.4 Operational Amplifiers

1.5 Admittance Matrix Approach in Analysis of Analog Circuits

1.6 Synthesis of Active Filters

1.7 Oscillators

1.8 Switched Capacitor and Switched Current Circuits

1.9 Approximation Functions

Chapter 2 Analysis

2.1 Introduction

2.2 The Indefinite Admittance Matrix Method

2.3 AM Analysis of Networks Constrained by Op-Amps

2.4 Algorithm for Finding the Transfer Function of a Network Constrained by a Single Op-Amp

2.5 Analysis of Multi-Op-Amp-Constrained RC Networks

2.6 Algorithms

2.7 Conclusion

Chapter 3 Synthesis
3.1 Introduction
3.2 Single Amplifier Filter
3.3 Adjustment of Gain Constant in a Single Amplifier Filter
3.4 Sensitivity
3.5 Sallen and Key Filter
3.6 Friend Biquad
3.7 Two Amplifier Biquad
3.8 Four Amplifier Biquad
3.9 Three Amplifier Feedforward Biquad
3.10 Introduction to the Expert System for Biquad Synthesis
3.11 Conclusion
Chapter 4 High Pole Selectivity Filter
4.1 Introduction
4.2 New Enhanced Pole Selectivity Biquad with Reduced Component Spread
4.3 Conclusion
Chapter 5 High-Order Filter Design
5.1 Introduction
5.2 Design Rules
5.3 Approximation Function
5.4 A Unifying Approach for High-Order Filter Design
5.5 Synthesis of High-Order Bandpass Filter
5.6 Expert System-Based Synthesis of High-Order Filter
5.7 Conclusion
Chapter 6 Oscillators
6.1 Introduction
6.2 Sinusoidal Oscillator Circuits
6.3 Digital Generation of Analog Periodic Signals
6.4 Delta-Sigma Signal Generation
6.5 Stimulus Generation for Testing of Analog Circuit
6.6 Non-Linear Wave-Shaping Circuit
6.7 Circuit Implementation of a Four-Level Comparator
6.8 Conclusion
Chapter 7 Switched Capacitor Circuits
7.1 Introduction
7.2 Switched Capacitor Resistor
7.3 Resistor Simulation
7.4 Switched Capacitor Integrator

7.5 Parasitic Capacitance
7.6 Clock Feedthrough
7.7 Effect of On-Resistance of MOS Switches
7.8 Switched Capacitor State Variable Second-Order Filter Circuit
7.9 Sensitivities
7.10 Limitations of Switched Capacitor Filters
7.11 Conclusion
Chapter 8 Switched Current Techniques
8.1 Introduction
8.2 Limitations of Switched Capacitor Circuit
8.3 Switched Current Architecture and Algorithms
8.4 Delay Cell and Integrator Module
8.5 Switched Current Filters
8.6 Synthesis
8.7 Conclusion
Chapter 9 Approximation Functions
9.1 Introduction
9.2 Lowpass Loss Function
9.3 Butterworth Approximation
9.4 Chevyshev Approximation
9.5 Inverse Chevyshev Approximation
9.6 Elliptic Approximation
9.7 Bessel Approximation
9.8 Frequency Transformation
9.9 Conclusion

To purchase this product, please visit:
https://www.wileyindia.com/analog-signal-processing-analysis-and-synthesis.html

Scan to buy