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Nota di contenuto	Front Cover; Intuitive Analog Circuit Design; Copyright; Dedication; In memoriam; Contents; Preface to the Second Edition; Changes in the second edition; Software used by the author; Thanks; From a Next Generation Analog Designer (?); Chapter 1 - Introduction and Motivation; The need for analog designers; Some early history of technological advances in analog integrated circuits; Digital vs. analog implementation: designer's choice; So, why do we become analog designers?; Note on nomenclature in this text; Note on coverage in this book; Further reading Chapter 2 - Review of Signal Processing BasicsReview of Laplace transforms, transfer functions, and pole-zero plots; First-order system response; Second-order systems; Free vibration of damped, second-order system; Logarithmic decrement13; Higher order systems; Review of resonant electrical circuits; Use of energy methods to analyze undamped resonant circuits; Risetime for cascaded systems; Chapter 2 problems; Further reading; Chapter 3 - Review of Diode Physics and the Ideal (and Later, Nonideal) Diode; Current flow in insulators, good conductors, and semiconductors; Electrons and holes Drift, diffusion, recombination, and generationEffects of semiconductor doping; PN junction under thermal equilibrium; PN junction under applied forward bias; Reverse-biased diode; The ideal diode equation; Charge storage in diodes; Charge storage in the diode under forward bias; Reverse recovery in bipolar diodes; Reverse breakdown; Taking a look at a diode datasheet; Some quick comments on Schottky diodes; Further reading; Chapter 4 - Bipolar Transistor Models; A little bit of

history; Basic NPN transistor; Transistor models in different operating regions

Low-frequency incremental bipolar transistor model; High-frequency incremental model; Reading a transistor datasheet; Limitations of the hybrid- π model; 2N3904 datasheet excerpts; Further reading; Chapter 5 - Basic Bipolar Transistor Amplifiers and Biasing; The issue of transistor biasing; Some transistor amplifiers; Further reading; Chapter 6 - Amplifier Bandwidth Estimation Techniques; Introduction to open-circuit time constants; Transistor amplifier examples; Short-circuit time constants; Further reading; Chapter 7 - Advanced Amplifier Topics and Design Examples

Note on cascaded gain stages and the effects of loading; Worst-case open-circuit time constants calculations; High-frequency output and input impedance of emitter follower buffers; Bootstrapping; Pole splitting; Further reading; Chapter 8 - BJT High-Gain Amplifiers and Current Mirrors; The need to augment the hybrid- π model; Base-width modulation and the extended hybrid- π model; Calculating small-signal parameters using a transistor datasheet; Building blocks; Further reading; Chapter 9 - Introduction to Field-Effect Transistors (FETs) and Amplifiers; Early history of field-effect transistors; Qualitative discussion of the basic signal MOSFET

Sommario/riassunto

Intuitive Analog Circuit Design outlines ways of thinking about analog circuits and systems that let you develop a feel for what a good, working analog circuit design should be. This book reflects author Marc Thompson's 30 years of experience designing analog and power electronics circuits and teaching graduate-level analog circuit design, and is the ideal reference for anyone who needs a straightforward introduction to the subject. In this book, Dr. Thompson describes intuitive and "back-of-the-envelope" techniques for designing and analyzing analog circuits, including tran
