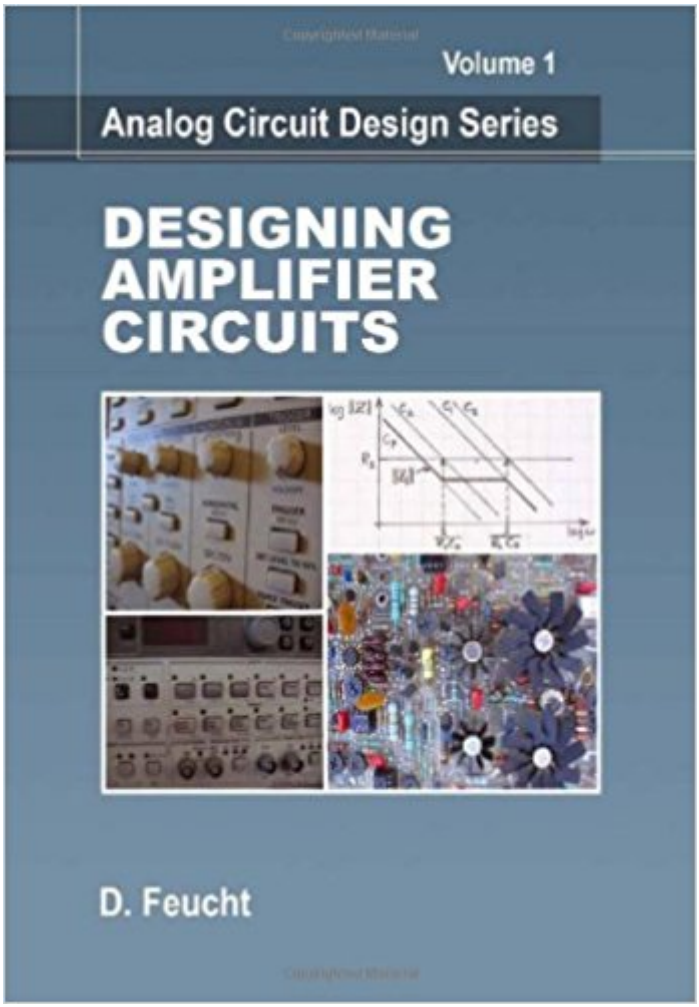
Designing Amplifier Circuits (Analog Circuit Design)



Synopsis

The Analog Circuit Design Series set reduces the concepts of analog electronics to their simplest, most obvious form which can easily be applied (even quantitatively) with minimal effort. The emphasis of the set is to help you intuitively learn through inspection how circuits work and apply the same techniques to circuits of the same class. This first volume, Designing Amplifier Circuits, presents the basic principles of transistor circuit analysis, basic per-stage building blocks, and feedback. The content is restricted to quasi-static (low-frequency) considerations, to emphasize basic topological principles. The reader will be able to analyze and design multi-stage amplifiers with feedback, including calculation and specification of gain, input and output resistances, including the effects of transistor output resistance. Of note is the presentation of feedback analysis, a subject rarely covered by other books, with insights and from angles that will reduce to analysis by inspection for readers. Some circuit transformations outlined within are especially helpful in reducing circuits to simpler forms for analysis. They are usefully applied in considering transistor circuits for which collector-emitter (or drain-source) resistance is not negligible, another often omitted topic which this book details.

Book Information

Series: Analog Circuit Design (Book 1)
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Customer Reviews

Key Features: - Little known circuits and techniques are revealed that can improve your circuit design and analysis skills. - Explains fast, accurate, and simple circuit methods. - Simulators will not

create your circuits: this shows how. - Graphically-driven presentation of concepts; like a series of seminars. - Written by 30 year veteran designer. --This text refers to an alternate Paperback edition.

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There is some merit to this series. Unfortunately it is hard to follow some of the analysis, and it will leave the inexperienced young electronics professional unable to follow....I have a fair bit of experience, and I find certain sections hard to follow.Another thing is there are examples of bad amplifier analysis or circuits that just won't work.Two examples:Botched amplifier noise analysis.ON page 95, in Volume 3, under his example of opamp input noise he has a completely botched analysis of the output noise. He doesn't give an equation (see what I mean?), but it's not too hard to figure out what he is doing.His equation (not given, but intuited from data given):eno=sqrt(eni^2 + 2(enR)^2+ (in*rin||Rfb)^2) = 61.1nV/rtHz All Wrong!The proper equation:eno=sqrt(((1+Rfb/rin)*eni)^2 + (in*Rfb)^2 + 2(enR)^2) = 70.8nV/rtHzThe only reason he ends up somewhat close to the correct answer is because the 100k resistors used in his example comprise the dominant source of noise. Its obvious if you are in an inverting gain of 1 that the amplifier itself is in a noise gain of 2, which means you have to at least get 2x the input referred voltage noise at the output.....(1+Rfb/rin)*eni or 40nV^rtHz. The resistors contribute the sqrt(2)*40.7nV/rtHz...or 57.55nV/rtHz....the current noise is only gained up to the output by the feedback resistor in*rfb = 10nV/rtHz. Rss those together you get the 70.8nV/rtHz.Another example of a circuit that will not work is the one on page 125, which has positive feedback, and would latch at one supply rail or the other depending on amplifier offset.

For any person wanting to learn the fine details of analog solid state design the series of books by Feucht is excellent.He is an experienced and competent engineer who handles his subject clearly and professionally.His background as a vertical amplifier designer at Tektronix gives him a solid foundation for this book on amplifier design. Here transistor modelling is covered in detail and several working circuits are given and can be checked with SPICE or by construction.Young engineers in training will benefit from the foundational approach used. Those who are accustomed mainly to using opamps as building blocks will learn the fundamentals of discrete transistor

multistage amplifier design. As a seasoned analog designer myself, I recommend the book highly.

Designing Amplifier Circuits (Analog Circuit Design) Integrated circuit devices and components (Integrated-circuit technology, analog and logic circuit design, memory and display devices) Analog Circuit Design, Volume 2: Immersion in the Black Art of Analog Design Selected Topics in RF, Analog and Mixed Signal Circuits and Systems (Tutorials in Circuits and Systems) Winter Circuit (Show Circuit Series -- Book 2) (The Show Circuit) Analog Circuit Design Volume Three: Design Note Collection CMOS Analog Circuit Design (The Oxford Series in Electrical and Computer Engineering) Zen of Analog Circuit Design Analog Circuit Design: A Tutorial Guide to Applications and Solutions An Analog Electronics Companion: Basic Circuit Design for Engineers and Scientists Analog Integrated Circuit Design Analog Circuit Design Series Introduction to RF Power Amplifier Design and Simulation Design of Analog CMOS Integrated Circuits (Irwin Electronics & Computer Enginering) Analysis and Design of Analog Integrated Circuits, 5th Edition Foundations of Analog and Digital Electronic Circuits (The Morgan Kaufmann Series in Computer Architecture and Design) Design with Operational Amplifiers and Analog Integrated Circuits Design of Analog CMOS Integrated Circuits Integrated Circuit Design: International Version: A Circuits and Systems Perspective Analog Methods for Computer-Aided Circuit Analysis and Diagnosis (Electrical and Computer Engineering)