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ANALOG CIRCUIT DESIGN DISCRETE AND INTEGRATED

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McGraw-Hill Education, ©2015

ISBN: 978-0078028199

Hardcover / 861 pages

Overview

Analog Circuit Design: Discrete and Integrated is intended for electrical engineering majors envisioning industrial careers in analog electronics. Analog integrated-circuit (IC) designers, product, process, and reliability engineers, test and test-development engineers, analog applications, marketing, and customer-support engineers are always in strong demand.

The first three chapters, covering *diodes*, *bipolar junction transistors*, and *MOS field-effect transistors*, and emphasizing the more traditional discrete design approach, are suited for a first course in electronics, typically at the junior level. Pedagogically, it makes sense to start with basic discrete circuits before progressing to multitransistor systems—so much the better if this first course is accompanied by a lab, where it is easier to investigate simpler circuits. The objective of these chapters is to establish strong foundations based on intuition and on physical insight of the type engineers use daily on the job, as well as a thinking style and a problem-solving methodology that will prove invaluable in the subsequent chapters.

The remaining four chapters, covering *analog integrated circuit building blocks*, *representative analog*

integrated circuits, frequency and time responses, and feedback, stability and noise, are suited for a junior/graduate-level course for IC designers but also for all other categories of engineers involved in fabrications, test, and applications. Application engineers, by far the largest group, need a working familiarity both with the technology (in order to make educated selections), and with the IC's inner functioning (in order to optimize its application). The book's aim is to promote a balance between the ability to *design on chip* and the ability to *design on board*.

Semiconductor theory is covered in sufficient depth to serve the daily needs of a practicing engineer in industry. Every analog function is inextricably rooted in a physical phenomenon, so analog engineers—particularly IC designers and product/process/reliability engineers—need to be conversant with the physics of semiconductors in order to function optimally.

The book makes abundant use of SPICE both as a software oscilloscope to display device characteristics, transfer curves, and waveforms, and as a verification tool for hand calculations.

Website

The book is accompanied by a Website (<http://www.mhhe.com/franco>) containing information about the book and a collection of useful resources for the instructor. Among the Instructor Resources are a Solutions Manual, a set of PowerPoint lecture slides, and a link to the Errata. (Please *do not* contact the Author for access to the Solutions Manual. Permission is granted solely by the Publisher—please contact McGraw-Hill's sales representative.)

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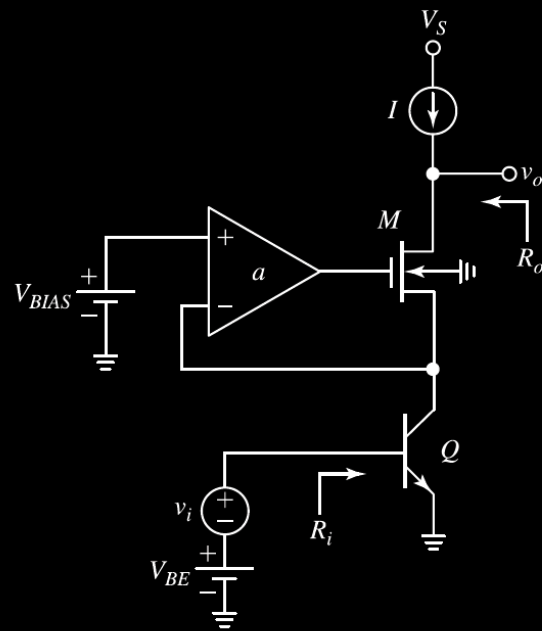
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Preproduction Version

Before being turned into the current hardcover version, the manuscript was produced in 2011 by The McGraw-Hill Companies – Learning Solutions, in a spiral-bound student version. Book distributors may still have copies available. Its international standard book number was **ISBN 9780073408941**.

Analog Circuit Design

Discrete & Integrated



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