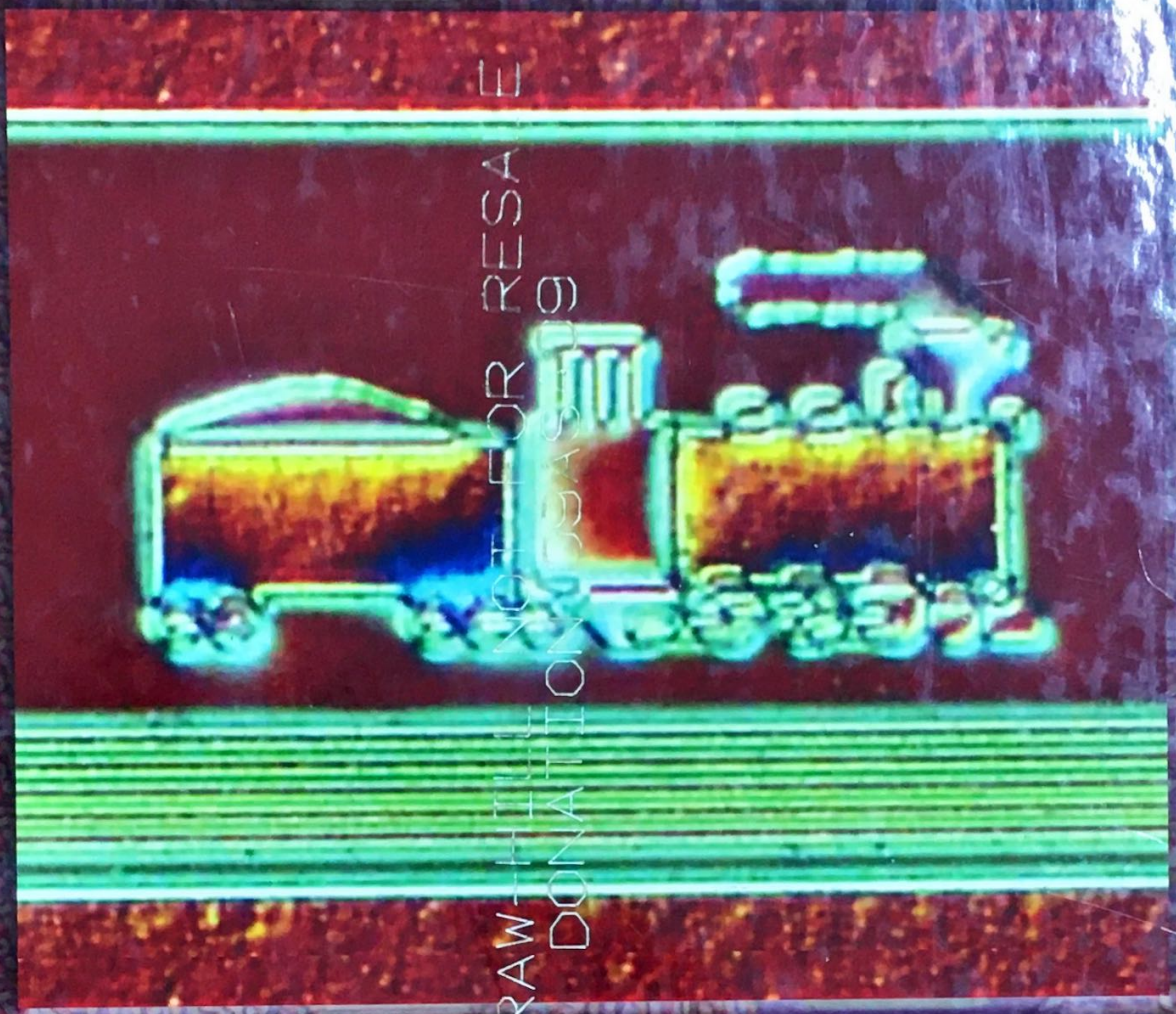
Third Edition

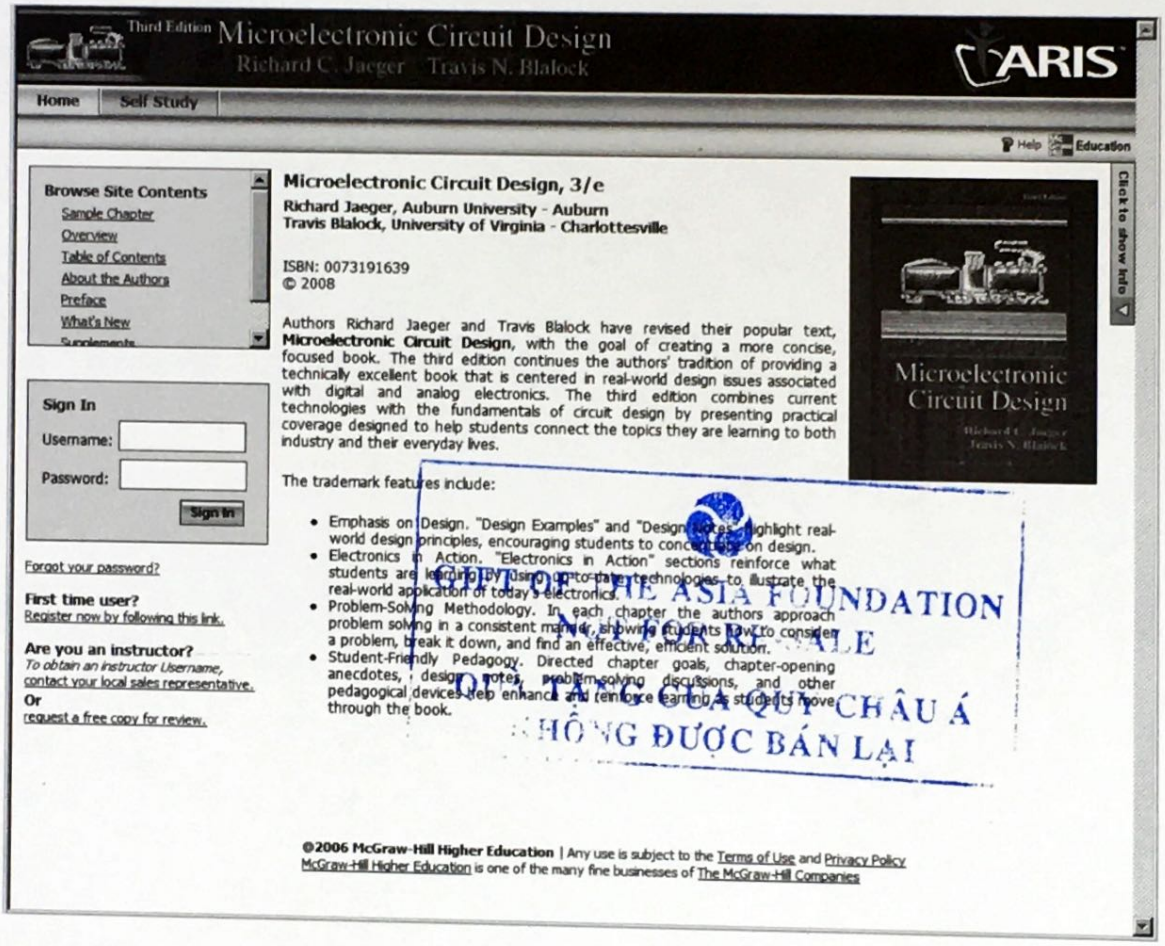


Microelectronic Circuit Design

Richard C. Jaeger
Travis N. Blalock

ARIS for *Microelectronic Circuit Design*

McGraw-Hill's ARIS—Assessment, Review, and Instruction System—for ***Microelectronic Circuit Design*** is a complete, online tutorial and course management system. The ARIS site is available at aris.mhhe.com.



Instructor Resources:

- **PowerPoints** with figures and lecture notes.
- **Complete Solutions** password protected for instructors.
- **JPEG Images** are available for creation of presentation materials.
- **Additional content,** including the treatment of dc-to-dc converters, JFET devices and circuits, the Ebers-Moll Model, the bandgap reference, the Gilbert multiplier, Gilbert mixer, D/A and A/D converters, and switched-capacitor circuits has been included on the ARIS site.

Student Resources:

- **Study Outlines** for students include learning objectives, chapter overviews, and chapter summaries.
- **Student Answers** provide answers to selected problems.
- **Listing** of key terms.
- **More on Electronics in Action**—additional material on applications found in the book, including weblinks.
- **Datasheet links** provide specifications for industry chips.

Electronics in Action

Chapter 1: Introduction to Electronics

Cellular Phone Evolution
Amplifiers in a Familiar Electronic System —The FM Stereo Receiver

Chapter 2: Solid-State Electronics

CCD Cameras
Lab-on-a-chip

Chapter 3: Solid-State Diodes and Diode Circuits

The PTAT Voltage and Electronic Thermometry
Power Cubes and Cell Phone Chargers
Three-Terminal IC Voltage Regulators
Solar Power for the Home

Chapter 4: Field-Effect Transistors

CMOS Camera on a Chip
Thermal Inkjet Printers

Chapter 5: Bipolar Junction Transistors

The Bipolar Transistor PTAT Cell
Optical Isolators

Chapter 6: Introduction to Digital Electronics

Silicon Art
MEMS-Based Computer Projector

Chapter 7: Complementary MOS (CMOS) Logic Design

And-Or-Invert Gates in a Standard Cell Library
CMOS—The Enabler for Handheld Technologies

Chapter 8: MOS Memory and Storage Circuits

Field Programmable Gate Arrays (FPGAs)
Flash Memory

Chapter 9: Bipolar Logic Circuits

Electronics for Optical Communications

Chapter 10: Analog Systems

Laptop Computer Touchpad
Player Characteristics

Chapter 11: Ideal Operational Amplifiers

Digital-to-Analog Converter (DAC) Circuits
Dual-Ramp or Dual-Slope Analog-to-Digital Converters (ADCs)
Fiber Optic Receiver
Band-Pass Filters in BFSK Reception
Function Generators

Chapter 12: Characteristics and Limitations of Operational Amplifiers

Sample-and-Hold Circuits
CMOS Navigation Chip Prototype for Optical Mice

Chapter 13: Small-Signal Modeling and Linear Amplification

Noise in Electronic Circuits
Electric Guitar Distortion Circuits

Chapter 14: Single-Transistor and Multistage ac-Coupled Amplifiers

Revisiting the CMOS Imager Circuitry
Humbucker Guitar Pickup

Chapter 15: Differential Amplifiers and Operational Amplifier Design

Limiting Amplifiers for Optical Communications
Class D Audio Amplifiers
The PTAT Voltage
Legends of Analog Design
The Bandgap Reference
G_m-C Integrated Filters
Medical Ultrasound Imaging

Chapter 16: Frequency Response

Graphic Equalizer

Chapter 17: Feedback, Stability, and Oscillators

A MEMS Oscillator
Numerically Controlled Oscillators and Direct Digital Synthesis

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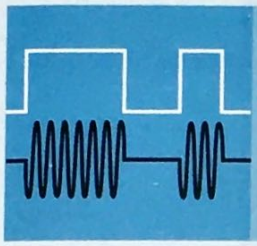

MICROELECTRONIC CIRCUIT DESIGN

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BRIEF CONTENTS

CONTENTS

CHAPTER 17
FEEDBACK, STABILITY, AND OSCILLATORS 1068

APPENDIXES