



Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3)

By Michael Collier, Svetlana Bebova, Wendy Wei

Download now

Read Online ➔

Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) By Michael Collier, Svetlana Bebova, Wendy Wei

The modern world is overrun with electronic equipment, handling huge quantities of data. At the heart of this scenario lies the digital circuitry, which provides the powerful intelligence needed. Thus, there is an increasing need for design engineers in this expanding area.

This text starts from basic ideas of logical gates, and progresses through to advanced concepts of digital systems. Each chapter comes with a wealth of illustrative examples and assignment questions for lecture-room use.

Contents List of Digital Circuit Design

Chapter 1 Introduction to Digital Systems and Logic Gates

- 1.1 The transition from analogue to digital signals
- 1.2 Digital logic levels
- 1.3 The concept of gates
- 1.4 The AND gate
- 1.5 The OR gate
- 1.6 The XOR gate (Exclusive-OR)
- 1.7 The NOT gate
- 1.8 Bubbled gates
- 1.9 The NOR gate
- 1.10 The NAND gate
- 1.11 The XNOR gate

Chapter 2 Boolean Algebra

- 2.1 Introducing Boolean algebra
- 2.2 The AND operation in Boolean algebra
- 2.3 The OR operation in Boolean algebra
- 2.4 The XOR operation in Boolean algebra
- 2.5 The NOT function in Boolean algebra
- 2.6 Examples of Boolean calculations
- 2.7 Theorems of Boolean algebra

Chapter 3 Combinational Logic

- 3.1 Illustrations of combinational logic
- 3.2 Developing Boolean expressions for combinational circuits
- 3.3 The importance of minimisation

- 3.4 Karnaugh maps (K-maps)
- 3.5 Summary of K-map looping rules
- 3.6 “Can’t Happen” states
- 3.7 Static hazards
- Chapter 4 Number Systems
- 4.1 Types of numerical system
- 4.2 The Decimal number system
- 4.3 The Binary system
- 4.4 Binary-to-Decimal conversion
- 4.5 Decimal-to-binary conversion
- 4.6 Binary operations
- 4.7 The Hexadecimal number system
- Chapter 5 Adders, Subtractors and Multipliers
- 5.1 Arithmetic in digital circuits
- 5.2 The half adder
- 5.3 The full adder
- 5.4 The parallel binary adder (Ripple carry parallel adder)
- 5.5 The half subtractor
- 5.6 The full subtractor
- 5.7 Multipliers
- Chapter 6 Multiplexers and Decoders
- 6.1 Comparators
- 6.2 Multiplexers
- 6.3 Demultiplexers
- 6.4 Encoders
- 6.5 Decoders
- Chapter 7 Latches and Flip-Flops
- 7.1 Introducing time into logic circuits
- 7.2 The bistable multivibrator (Flip-flop)
- 7.3 The SR latch
- 7.4 The SR flip-flop
- 7.5 The T-type flip-flop
- 7.6 The D-type flip-flop (Data latch)
- 7.7 The JK flip-flop
- 7.8 The Master-Slave JK flip-flop
- 7.9 Preset and Clear inputs
- 7.10 Integrated circuit flip-flops
- Chapter 8 Shift Registers
- 8.1 Basic shift register functions
- 8.2 Serial-in serial-out shift registers
- 8.3 Serial-in parallel-out shift registers
- 8.4 Parallel-in serial-out shift registers
- 8.5 Parallel-in parallel-out shift registers
- 8.6 Bidirectional shift registers
- 8.7 Shift register counters
- Chapter 9 Multivibrators and Timers
- 9.1 What are multivibrators?
- 9.2 Astable multivibrators
- 9.3 The monostable multivibrator

- 9.4 The 555 timer
- 9.5 Applications of the 555 timer
- Chapter 10 Counters
 - 10.1 Introducing counters
 - 10.2 Asynchronous counter operation
 - 10.3 Synchronous counter operation
 - 10.4 Up/down synchronous counters
 - 10.5 Cascaded counters
 - 10.6 Counter decoding
 - 10.7 Counter applications conversion
- Chapter 11 Memories and Data Storage
 - 11.1 Memory types
 - 11.2 Classification by fabrication technology
 - 11.3 Memory terminology
 - 11.4 ROM (Read-Only Memory)
 - 11.5 RAM (Random-Access Memory)
- Chapter 12 Design of Digital Integrated Circuits (ICs)
 - 12.1 Logic families
 - 12.2 Electrical characteristics of digital ICs margin
 - 12.3 RTL and DTL families
 - 12.4 The TTL logic family
 - 12.5 The ECL logic family
 - 12.6 The I²L logic family
 - 12.7 The MOSFET logic family
 - 12.8 CMOS circuits gates

 [Download Digital Circuit Design: Principles and Practice \(T ...pdf](#)

 [Read Online Digital Circuit Design: Principles and Practice ...pdf](#)

Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3)

By Michael Collier, Svetlana Bebova, Wendy Wei

Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) By Michael Collier, Svetlana Bebova, Wendy Wei

The modern world is overrun with electronic equipment, handling huge quantities of data. At the heart of this scenario lies the digital circuitry, which provides the powerful intelligence needed. Thus, there is an increasing need for design engineers in this expanding area.

This text starts from basic ideas of logical gates, and progresses through to advanced concepts of digital systems. Each chapter comes with a wealth of illustrative examples and assignment questions for lecture-room use.

Contents List of Digital Circuit Design

Chapter 1 Introduction to Digital Systems and Logic Gates

- 1.1 The transition from analogue to digital signals
- 1.2 Digital logic levels
- 1.3 The concept of gates
- 1.4 The AND gate
- 1.5 The OR gate
- 1.6 The XOR gate (Exclusive-OR)
- 1.7 The NOT gate
- 1.8 Bubbled gates
- 1.9 The NOR gate
- 1.10 The NAND gate
- 1.11 The XNOR gate

Chapter 2 Boolean Algebra

- 2.1 Introducing Boolean algebra
- 2.2 The AND operation in Boolean algebra
- 2.3 The OR operation in Boolean algebra
- 2.4 The XOR operation in Boolean algebra
- 2.5 The NOT function in Boolean algebra
- 2.6 Examples of Boolean calculations
- 2.7 Theorems of Boolean algebra

Chapter 3 Combinational Logic

- 3.1 Illustrations of combinational logic
- 3.2 Developing Boolean expressions for combinational circuits
- 3.3 The importance of minimisation
- 3.4 Karnaugh maps (K-maps)
- 3.5 Summary of K-map looping rules
- 3.6 “Can’t Happen” states
- 3.7 Static hazards

Chapter 4 Number Systems

- 4.1 Types of numerical system
- 4.2 The Decimal number system
- 4.3 The Binary system

- 4.4 Binary-to-Decimal conversion
- 4.5 Decimal-to-binary conversion
- 4.6 Binary operations
- 4.7 The Hexadecimal number system
- Chapter 5 Adders, Subtractors and Multipliers
- 5.1 Arithmetic in digital circuits
- 5.2 The half adder
- 5.3 The full adder
- 5.4 The parallel binary adder (Ripple carry parallel adder)
- 5.5 The half subtractor
- 5.6 The full subtractor
- 5.7 Multipliers
- Chapter 6 Multiplexers and Decoders
- 6.1 Comparators
- 6.2 Multiplexers
- 6.3 Demultiplexers
- 6.4 Encoders
- 6.5 Decoders
- Chapter 7 Latches and Flip-Flops
- 7.1 Introducing time into logic circuits
- 7.2 The bistable multivibrator (Flip-flop)
- 7.3 The SR latch
- 7.4 The SR flip-flop
- 7.5 The T-type flip-flop
- 7.6 The D-type flip-flop (Data latch)
- 7.7 The JK flip-flop
- 7.8 The Master-Slave JK flip-flop
- 7.9 Preset and Clear inputs
- 7.10 Integrated circuit flip-flops
- Chapter 8 Shift Registers
- 8.1 Basic shift register functions
- 8.2 Serial-in serial-out shift registers
- 8.3 Serial-in parallel-out shift registers
- 8.4 Parallel-in serial-out shift registers
- 8.5 Parallel-in parallel-out shift registers
- 8.6 Bidirectional shift registers
- 8.7 Shift register counters
- Chapter 9 Multivibrators and Timers
- 9.1 What are multivibrators?
- 9.2 Astable multivibrators
- 9.3 The monostable multivibrator
- 9.4 The 555 timer
- 9.5 Applications of the 555 timer
- Chapter 10 Counters
- 10.1 Introducing counters
- 10.2 Asynchronous counter operation
- 10.3 Synchronous counter operation
- 10.4 Up/down synchronous counters
- 10.5 Cascaded counters

10.6 Counter decoding
10.7 Counter applications conversion
Chapter 11 Memories and Data Storage
11.1 Memory types
11.2 Classification by fabrication technology
11.3 Memory terminology
11.4 ROM (Read-Only Memory)
11.5 RAM (Random-Access Memory)
Chapter 12 Design of Digital Integrated Circuits (ICs)
12.1 Logic families
12.2 Electrical characteristics of digital ICs margin
12.3 RTL and DTL families
12.4 The TTL logic family
12.5 The ECL logic family
12.6 The I²L logic family
12.7 The MOSFET logic family
12.8 CMOS circuits gates

Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) By Michael Collier, Svetlana Bebova, Wendy Wei Bibliography

- Sales Rank: #2917410 in Books
- Published on: 2014-06-12
- Original language: English
- Dimensions: 10.00" h x .47" w x 7.00" l,
- Binding: Paperback
- 208 pages

 [Download Digital Circuit Design: Principles and Practice \(T ...pdf](#)

 [Read Online Digital Circuit Design: Principles and Practice ...pdf](#)

Editorial Review

About the Author

Michael Collier studied engineering at Cambridge University, and undertook research into satellite communications for the British government. He has held the post of professor in Shandong University of Science and Technology in China, as well as the National University of Science and Technology in Zimbabwe. He is married with two grown-up sons.

Svetlana Bebova graduated from the Higher Mechanical and Electrical Institute, Sofia with an M.Sc degree, and is currently a lecturer in the Department of Electronic Engineering at the National University of Science and Technology in Zimbabwe.

Wendy Wei gained a Bachelor degree from North China Electric Power University and a PhD from Shandong University of Science and Technology, where she is now a lecturer in the College of Information and Electronic Engineering. Her major area of interest is electronic information engineering.

Users Review

From reader reviews:

Thomas Rinaldi:

Here thing why this Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) are different and reputable to be yours. First of all reading through a book is good nevertheless it depends in the content from it which is the content is as yummy as food or not. Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) giving you information deeper as different ways, you can find any publication out there but there is no e-book that similar with Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3). It gives you thrill looking at journey, its open up your own eyes about the thing this happened in the world which is might be can be happened around you. You can easily bring everywhere like in recreation area, café, or even in your technique home by train. For anyone who is having difficulties in bringing the printed book maybe the form of Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) in e-book can be your choice.

Karena Figueroa:

The knowledge that you get from Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) may be the more deep you excavating the information that hide within the words the more you get enthusiastic about reading it. It doesn't mean that this book is hard to know but Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) giving you joy feeling of reading. The article author conveys their point in certain way that can be understood simply by anyone who read that because the author of this reserve is well-known enough. That book also makes your vocabulary increase well. That makes it easy to understand then can go together with you, both in printed or e-book style are available. We suggest you for having this Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) instantly.

Martin Thomas:

Are you kind of busy person, only have 10 or perhaps 15 minute in your day time to upgrading your mind ability or thinking skill actually analytical thinking? Then you are having problem with the book than can satisfy your small amount of time to read it because all this time you only find reserve that need more time to be read. Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) can be your answer because it can be read by you who have those short extra time problems.

Guadalupe Marshall:

You can spend your free time to read this book this publication. This Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) is simple to bring you can read it in the recreation area, in the beach, train along with soon. If you did not include much space to bring often the printed book, you can buy often the e-book. It is make you simpler to read it. You can save the actual book in your smart phone. So there are a lot of benefits that you will get when you buy this book.

Download and Read Online Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) By Michael Collier, Svetlana Bebova, Wendy Wei #K2V1MA0JOBH

Read Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) By Michael Collier, Svetlana Bebova, Wendy Wei for online ebook

Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) By Michael Collier, Svetlana Bebova, Wendy Wei Free PDF d0wnl0ad, audio books, books to read, good books to read, cheap books, good books, online books, books online, book reviews epub, read books online, books to read online, online library, greatbooks to read, PDF best books to read, top books to read Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) By Michael Collier, Svetlana Bebova, Wendy Wei books to read online.

Online Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) By Michael Collier, Svetlana Bebova, Wendy Wei ebook PDF download

Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) By Michael Collier, Svetlana Bebova, Wendy Wei Doc

Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) By Michael Collier, Svetlana Bebova, Wendy Wei Mobipocket

Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) By Michael Collier, Svetlana Bebova, Wendy Wei EPub

K2V1MA0JOBH: Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) By Michael Collier, Svetlana Bebova, Wendy Wei