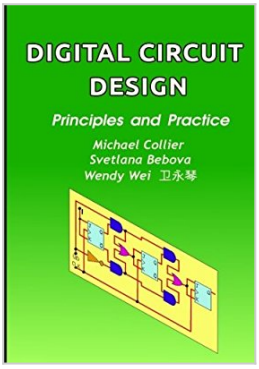


# Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3)

*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

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

## 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:**

**Greg Little:**

Information is provisions for folks to get better life, information currently can get by anyone with everywhere. The information can be a information or any news even a problem. What people must be consider whenever those information which is from the former life are difficult to be find than now could be taking seriously which one is suitable to believe or which one often the resource are convinced. If you receive the unstable resource then you get it as your main information there will be huge disadvantage for you. All those possibilities will not happen throughout you if you take Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) as the daily resource information.

**Frank Bullard:**

Typically the book Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) will bring someone to the new experience of reading a new book. The author style to elucidate the idea is very unique. In the event you try to find new book to learn, this book very acceptable to you. The book Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) is much recommended to you to learn. You can also get the e-book from your official web site, so you can easier to read the book.

**Daniel Engle:**

As we know that book is important thing to add our know-how for everything. By a guide we can know everything we wish. A book is a pair of written, printed, illustrated or blank sheet. Every year ended up being exactly added. This guide Digital Circuit Design: Principles and Practice (Technology Today series)

(Volume 3) was filled in relation to science. Spend your time to add your knowledge about your technology competence. Some people has several feel when they reading the book. If you know how big benefit from a book, you can truly feel enjoy to read a e-book. In the modern era like now, many ways to get book that you wanted.

**Hector Medlin:**

As a college student exactly feel bored to reading. If their teacher inquired them to go to the library in order to make summary for some e-book, they are complained. Just small students that has reading's heart and soul or real their pastime. They just do what the teacher want, like asked to the library. They go to presently there but nothing reading really. Any students feel that examining is not important, boring as well as can't see colorful pictures on there. Yeah, it is to become complicated. Book is very important for yourself. As we know that on this time, many ways to get whatever we would like. Likewise word says, many ways to reach Chinese's country. Therefore , this Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) can make you really feel more interested to read.


# Download and Read Online Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) By Michael Collier, Svetlana Bebova, Wendy Wei #XQWD02JHS51

# 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**

**XQWD02JHS51: Digital Circuit Design: Principles and Practice (Technology Today series) (Volume 3) By Michael Collier, Svetlana Bebova, Wendy Wei**