

The International

Journal of Modern Engineering

A Leading Journal For Modern Engineers

Volume 7, Number 2, Spring 2007

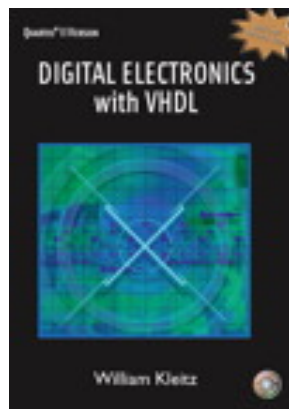
Digital Electronics with VHDL (Quartus II Version)

William Kleitz

Publisher: Prentice Hall

Copyright: 2006

Format: Cloth; 960 pp



Book Description

For Digital Electronics courses requiring a comprehensive approach to Digital concepts with an emphasis on PLD programming and the integration of the latest Quartus II software. This text presents a step-by-step, practical approach to an enhanced and easy understanding of digital circuitry fundamentals with coverage of CPLD's, VHDL and Altera's Quartus II software. Coverage begins with the basic logic gates used to perform arithmetic operations, and proceeds up through sequential logic and memory circuits used to interface to modern PCs. The author combines extensive teaching experience with practical examples in order to bring entry level students up to speed in this emerging field.

Features

- *The Altera Quartus II software. (Software included on accompanying CD)*
- *Basic Problem Sets w/3 types of problems:*
 - D (Design): require students to modify existing circuits or design one of their own.*
 - T (Troubleshooting): present students with a malfunctioning circuit.*
 - C (Challenging): the highest level of difficulty, which tests students' overall understanding of subject.*

- *Over 1000 four-color illustrations-Used to exemplify the operation of complex circuit operations, most contain annotations describing the inputs and outputs and many have circuit operational notes.*
- *Specific sequence of steps-For each topical area in the text, makes the transition from problem definition, to practical example, to VHDL definitions for CPLD implementation.*
- *Over 100 MultiSIM exercises.*
- *Over 200 step-by-step, worked-out examples.*
- *More than 1000 problems and questions throughout*
- *Troubleshooting application and problems throughout.*
- *Several tables of commercially used Integrated Circuits (IC's).*
- *Student CD Included: Contains Quartus II web version software*
- *Reference to manufacturers' data sheets throughout Over 1,000 annotated figures — offer descriptive, color annotations that reinforce the fundamental concepts of book.*

Review

This first version of this book was released in 2003. Author introduces the concept of hardware descriptive language in chapter 4 “Programmable Logic Devices”. You find many examples using real digital circuits with appropriate output files. In chapter 5, “Boolean Algebra and Reduction Techniques,” the author introduces different methods of simplifying Boolean equations. In chapter 7, “Arithmetic Operations and Circuits,” there are discussions of constructing half-adder, full adder and arithmetic logic unit. TTL 74181 chip has been extensively discussed in this chapter.

In chapter 11 the author talks about “Interfacing to the Analog World” the author covers analog to digital converting and digital to analog converting; these topics include digital and analog representations, operational amplifier basics, binary-weighted D/A converters, R/2R ladder D/A converters, integrated-circuit D/A converters, integrated-circuit data converter specifications, parallel-encoded A/D converters, counter-ramp A/D converters, successive-approximation A/D conversion, integrated-circuit A/D converters, data acquisition system application, transducers and signal conditioning.

Memory systems are covered in chapter 16; memory concepts, static RAMs, dynamic RAMs, Read-Only Memories, memory expansion and address decoding applications and magnetic/optical storage are included.

The advance chapters are about Microprocessor Fundamentals and 8051 Microcontroller; this book comes with a CD and it has MultiSIM examples. There are 18 chapters in this book. In addition to a companion site for students, the instructor recourses are great.

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The Quartus II software support for VHDL is described for the following categories of VHDL constructs. These sections match those in the IEEE Std 1076-1993 version of the IEEE Standard VHDL Language Reference Manual. The constructs of the IEEE Std 1076-2008 version of VHDL are listed in the About VHDL topic. Section One—Design Entities & Configurations: Section.