

Cadence Orcad Pcb Designer School Of Engineering

Digital Systems Design with FPGAs and CPLDs explains how to design and develop digital electronic systems using programmable logic devices (PLDs). Totally practical in nature, the book features numerous (quantify when known) case study designs using a variety of Field Programmable Gate Array (FPGA) and Complex Programmable Logic Devices (CPLD), for a range of applications from control and instrumentation to semiconductor automatic test equipment. Key features include: * Case studies that provide a walk through of the design process, highlighting the trade-offs involved. * Discussion of real world issues such as choice of device, pin-out, power supply, power supply decoupling, signal integrity- for embedding FPGAs within a PCB based design. With this book engineers will be able to: * Use PLD technology to develop digital and mixed signal electronic systems * Develop PLD based designs using both schematic capture and VHDL synthesis techniques * Interface a PLD to digital and mixed-signal systems * Undertake complete design exercises from design concept through to the build and test of PLD based electronic hardware This book will be ideal for electronic and computer engineering students taking a practical or Lab based course on digital systems development using PLDs and for engineers in industry looking for concrete advice on developing a digital system using a FPGA or CPLD as its core. Case studies that provide a walk through of the design process, highlighting the trade-offs involved. Discussion of real world issues such as choice of device, pin-out, power supply, power supply decoupling, signal integrity- for embedding FPGAs within a PCB based design.

"Matt Scarpino has provided a great tool for the hobbyist starting out in the circuit board design world, demonstrating all the features you'll need to create your own circuit board projects. However, the experienced engineer will also benefit from the book, as it serves as a complete reference guide to all EAGLE software configuration settings and features. His insightful guidance helps simplify difficult tasks, and his handy tips will help save you hours of trial-and-error experimentation." --Rich Blum, author, Sams Teach Yourself Arduino Programming in 24 Hours and Sams Teach Yourself Python Programming for Raspberry Pi in 24 Hours Powerful, flexible, and inexpensive, EAGLE is the ideal PCB design solution for every Maker/DIYer, startup, hobbyist, or student. Today, all open source Arduino designs are released in EAGLE format: If you want to design cost-effective new PCBs, this is the tool to learn. Matthew Scarpino helps you take full advantage of EAGLE's remarkable capabilities. You won't find any differential equations here: only basic circuit theory and hands-on techniques for designing effective PCBs and getting innovative new gadgets to market. Scarpino starts with an accessible introduction to the fundamentals of PCB design. Next, he walks through the design of basic, intermediate, and complex circuit boards, starting with a simple inverting amplifier and culminating in a six-layer single-board computer with hundreds of components and thousands of routed connections. As the circuits grow more complex, you'll master advanced EAGLE features and discover how to automate crucial design-related tasks. Whatever your previous experience, Scarpino's start-to-finish examples and practical insight can help you create designs of stunning power and efficiency. Understand single-sided, double-sided, and multilayer boards Design practical circuits with the schematic editor Transform schematics into physical board designs Convert board designs into Gerber output files for fabrication Expand EAGLE's capabilities with new libraries and components Exchange designs with LTspice and simulate their responses to input Automate simple repetitive operations with editor commands Streamline circuit design and library generation with User Language programs (ULPs) Design for the advanced BeagleBone Black, with high-speed BGA devices and a 32-bit system on a chip (SoC) Use buses to draw complex connections between components Configure stackups, create/route BGA components, and route high-speed signals eagle-book.com provides an archive containing the design files for the book's circuits. It also includes EAGLE libraries, scripts, and User Language programs (ULPs).

Anyone involved in circuit design that needs the practical know-how it takes to design a successful circuit or product, will find this practical guide to using Capture-PSpice (written by a former Cadence PSpice expert for Europe) an essential book. The text delivers step-by-step guidance on using Capture-PSpice to help professionals produce reliable, effective designs. Readers will learn how to get up and running quickly and efficiently with industry standard software and in sufficient detail to enable building upon personal experience to avoid common errors and pit-falls. This book is of great benefit to professional electronics design engineers, advanced amateur electronics designers, electronic engineering students and academic staff looking for a book with a real-world design outlook. Provides both a comprehensive user guide, and a detailed overview of simulation Each chapter has worked and ready to try sample designs and provides a wide range of to-do exercises Core skills are developed using a running case study circuit Covers Capture and PSpice together for the first time

During the academic year 2002-2003, the Faculty of Automatic Control and Computer Engineering of Iași (Romania), and its Departments of Automatic Control and Industrial Informatics and of Computer Engineering respectively, celebrated 25 years from the establishment of the specialization named Automatic Control and Computer Engineering within the framework of the former Faculty of Electrical Engineering of Iași, and, at the same time, 40 years since the first courses on Automatic Control and Computers respectively, were introduced in the curricula of the former specializations of Electromechanical Engineering and Electrical Power Engineering at the already mentioned Faculty of Electrical Engineering. The reader interested to know some important moments of our evolution during the last five decades is invited to see the Addendum of this volume, where a short history is presented. And, to highlight once more the nice coincidences, it must be noted here that in 2003 our Technical University "Gheorghe Asachi" of Iași celebrated 190 years from the emergence of the first cadastral engineering degree course in Iași (thanks to the endeavor of Gheorghe Asachi), which is today considered to be the beginning of the engineering higher education in Romania. Generally speaking, an anniversary is a celebration meant to mark special events of the past, with festivities to be performed solemnly and publicly according to a specific ritual.

Build secure IoT devices and networks for a wide range of industries This practical guide fully explains the technology behind the Internet of Things, machine-to-machine communication, and automation. Written by a team of experts from leading firms, Design of Secure IoT Systems: A Practical Approach Across Industries covers all aspects of system architecture, protocols, requirements, and design. You will discover how to design and engineer IoT devices and networks with trust and security. The book features industrial automation case studies and simulation examples from a wide range of fields. Coverage includes: IoT architecture and technology fundamentals Connected machines and M2M communication Network protocols and architecture IoT hardware design fundamentals WAN, IP, and MAC configuration IoT data systems design Designing with trust and security Data security policies and regulations Cybersecurity threats and risks Automation Use cases across industries Industry compliance and standards

This is a readable, hands-on self-tutorial through basic digital electronic design methods. The format and content allows readers faced with a design problem to understand its unique requirements and then research and evaluate the components and technologies required to solve it. * Begins with basic design elements and expands into full systems * Covers digital, analog, and full-system designs * Features real world implementation of complete digital systems

Complete PCB Design Using OrCAD Capture and Layout Academic Press

This book was written for new designers looking for a solid foundation in PCB design although designers with more experience will find the reference material, software, and explanations of the values that manufacturers use invaluable as well.

The Ultimate AndroidDAQ Guide is an in-depth look into the techniques of data acquisition and process control, using the parallel processing micro-controller on the AndroidDAQ module. It teaches you sensing and electronic drive circuits, and

how to implement these circuits in programming languages like Android, LabVIEW, Java, and Python. The book also shows you how to leverage and use the menu command structure used in the AndroiDAQ open source firmware, for the many data acquisition tasks that are used in robotic and product design. Many examples are given to allow you to control your AndroiDAQ module in ways other popular development modules can not, via USB, Bluetooth, or Wi-Fi communication. It is a guide to help you make your next project be part of the Internet of Things.

Using the book and the software provided with it, the reader can build his/her own tester arrangement to investigate key aspects of analog-, digital- and mixed system circuits Plan of attack based on traditional testing, circuit design and circuit manufacture allows the reader to appreciate a testing regime from the point of view of all the participating interests Worked examples based on theoretical bookwork, practical experimentation and simulation exercises teach the reader how to test circuits thoroughly and effectively

This book features selected papers presented at the Fourth International Conference on Nanoelectronics, Circuits and Communication Systems (NCCS 2018). Covering topics such as MEMS and nanoelectronics, wireless communications, optical communications, instrumentation, signal processing, the Internet of Things, image processing, bioengineering, green energy, hybrid vehicles, environmental science, weather forecasting, cloud computing, renewable energy, RFID, CMOS sensors, actuators, transducers, telemetry systems, embedded systems, and sensor network applications in mines, it offers a valuable resource for young scholars, researchers, and academics alike.

FREE PCB SOFTWARE! The EagleCAD light software inside does all the tasks described in this book -- schematic capture, layout, and autorouting. Run it on Windows or Linux. **DESIGN TO PRODUCTION -- EVERYTHING YOU NEED TO MAKE YOUR OWN PCBs** With Build Your Own Printed Circuit Board, you can eliminate or reduce your company's reliance on outsourcing to board houses, and cut costs significantly. Perfect for advanced electronics hobbyists as well, this easy-to-follow guide is by far the most up-to-date source on making PCBs. Complete in itself, the handbook even gives you PCB CAD software, on CD, ready to run on either Windows or Linux. (Some PCB software costs from \$10,000 to \$15,000!) **STEP-BY-STEP DIRECTIONS, AND A PRACTICE RUNTHROUGH** Written by a PCB designer and electronics expert, Build Your Own Printed Circuit Board gives you absolutely everything you need to design and construct a professional-looking prototype or production-ready PCB files with modern CAD tools. You get: * Instructions for every phase of project flow, from design schematics, sizing, layout, and autorouting fabrication * The latest in PCB tips, tricks, and techniques * Cutting-edge tactics for shrinking boards * Guidance on generating CAM (computer-aided manufacturing) files to produce the board yourself or send it out * A sample project, demonstrating all the book's techniques, that you can build and use in practical applications * Discussions on using service bureaus to produce designs * Expert comparison of CAD program options **THE BEST GUIDE TO BUILDING YOUR OWN PCBs!**

* The perfect tutorial for learning the mechanical, software, and electronic systems of LEGO Mindstorms and other hybrid robots * Focuses on "hot technology" topics: electronics, embedded systems, object-oriented technology, software development, and robotics * Includes projects for each concept, including a LEGO camera for the remote control vision chapter, an interface for a robotic warning system, and a tele-operated robot * CD includes: complete computer programs for controlling the robots; circuit simulation models; diagnostic tools

Why do the lights in a house turn on when you flip a switch? How does a remote-controlled car move? And what makes lights on TVs and microwaves blink? The technology around you may seem like magic, but most of it wouldn't run without electricity. Electronics for Kids demystifies electricity with a collection of awesome hands-on projects. In Part 1, you'll learn how current, voltage, and circuits work by making a battery out of a lemon, turning a metal bolt into an electromagnet, and transforming a paper cup and some magnets into a spinning motor. In Part 2, you'll make even more cool stuff as you: –Solder a blinking LED circuit with resistors, capacitors, and relays –Turn a circuit into a touch sensor using your finger as a resistor –Build an alarm clock triggered by the sunrise –Create a musical instrument that makes sci-fi sounds Then, in Part 3, you'll learn about digital electronics—things like logic gates and memory circuits—as you make a secret code checker and an electronic coin flipper. Finally, you'll use everything you've learned to make the LED Reaction Game—test your reaction time as you try to catch a blinking light! With its clear explanations and assortment of hands-on projects, Electronics for Kids will have you building your own circuits in no time.

Praise for CMOS: Circuit Design, Layout, and Simulation Revised Second Edition from the Technical Reviewers "A refreshing industrial flavor. Design concepts are presented as they are needed for 'just-in-time' learning. Simulating and designing circuits using SPICE is emphasized with literally hundreds of examples. Very few textbooks contain as much detail as this one. Highly recommended!" --Paul M. Furth, New Mexico State University "This book builds a solid knowledge of CMOS circuit design from the ground up. With coverage of process integration, layout, analog and digital models, noise mechanisms, memory circuits, references, amplifiers, PLLs/DLLs, dynamic circuits, and data converters, the text is an excellent reference for both experienced and novice designers alike." --Tyler J. Gomm, Design Engineer, Micron Technology, Inc. "The Second Edition builds upon the success of the first with new chapters that cover additional material such as oversampled converters and non-volatile memories. This is becoming the de facto standard textbook to have on every analog and mixed-signal designer's bookshelf." --Joe Walsh, Design Engineer, AMI Semiconductor CMOS circuits from design to implementation CMOS: Circuit Design, Layout, and Simulation, Revised Second Edition covers the practical design of both analog and digital integrated circuits, offering a vital, contemporary view of a wide range of analog/digital circuit blocks, the BSIM model, data converter architectures, and much more. This edition takes a two-path approach to the topics: design techniques are developed for both long- and short-channel CMOS technologies and then compared. The results are multidimensional explanations that allow readers to gain deep insight into the design process. Features include: Updated materials to reflect CMOS technology's movement into nanometer sizes Discussions on phase- and delay-locked loops, mixed-signal circuits, data converters, and circuit noise More than 1,000 figures, 200 examples, and over 500 end-of-chapter problems In-depth coverage of both analog and digital circuit-level design techniques Real-world process parameters and design rules The book's Web site, CMOSedu.com, provides: solutions to the book's problems; additional

homework problems without solutions; SPICE simulation examples using HSPICE, LTspice, and WinSpice; layout tools and examples for actually fabricating a chip; and videos to aid learning

Electric relays pervade the electronics that dominate our world. They exist in many forms, fulfill many roles, and each have their own behavioral nuances and peculiarities. To date, there exists no comprehensive reference surveying the broad spectrum of electric relays, save one-Electric Relays: Principles and Applications. This ambitious work is not only unique in its scope, but also in its practical approach that focuses on the operational and functional aspects rather than on theory and mathematics.

Accomplished engineer Dr. Vladimir Gurevich builds the presentation from first principles, unfolding the concepts and constructions via discussion of their historical development from the earliest ideas to modern technologies. He uses a show-not-tell approach that employs nearly 1300 illustrations and reveals valuable insight based on his extensive experience in the field. The book begins with the basic principles of relay construction and the major functional parts, such as contact and magnetic systems. Then, it devotes individual chapters to the various types of relays. The author describes the principles of function and construction for each type as well as features of several relays belonging to a type that operate on different principles. Remarkably thorough and uniquely practical, Electric Relays: Principles and Applications serves as the perfect introduction to the plethora of electric relays and offers a quick-reference guide for the experienced engineer.

Complete PCB Design Using OrCAD Capture and PCB Editor, Second Edition provides practical instruction on how to use the OrCAD design suite to design and manufacture printed circuit boards. Chapters cover how to Design a PCB using OrCAD Capture and OrCAD Layout, adding PSpice simulation capabilities to a design, how to develop custom schematic parts, how to create footprints and PSpice models, and how to perform documentation, simulation and board fabrication from the same schematic design. This book is suitable for both beginners and experienced designers, providing basic principles and the program's full capabilities for optimizing designs. Presents a fully updated edition on OrCAD Capture, Version 17.2 Combines the theoretical and practical parts of PCB design Includes real-life design examples that show how and why designs work, providing a comprehensive toolset for understanding OrCAD software Provides the exact order in which a circuit and PCB are designed Introduces the IPC, JEDEC and IEEE standards relating to PCB design

A very important part of printed circuit board (PCB) design involves sizing traces and vias to carry the required current. This exciting new book will explore how hot traces and vias should be and what board, circuit, design, and environmental parameters are the most important. PCB materials (copper and dielectrics) and the role they play in the heating and cooling of traces are covered. The IPC curves found in IPC 2152, the equations that fit those curves and computer simulations that fit those curves and equations are detailed. Sensitivity analyses that show what happens when environments are varied, including adjacent traces and planes, changing trace lengths, and thermal gradients are presented. Via temperatures and what determines them are explored, along with fusing issues and what happens when traces are overloaded. Voltage drops across traces and vias, the thermal effects going around right-angle corners, and frequency effects are covered. Readers learn how to measure the thermal conductivity of dielectrics and how to measure the resistivity of copper traces and why many prior attempts to do so have been doomed to failure. Industrial CT Scanning, and whether or not they might replace microsections for measuring trace parameters are also considered. The PIC microcontroller from Microchip is one of the most widely used 8-bit microcontrollers in the world. In this book, the authors use a step-by-step and systematic approach to show the programming of the PIC18 chip. Examples in both Assembly language and C show how to program many of the PIC18 features such as timers, serial communication, ADC, and SPI.

JAX: Java APIs for XML Kick Start covers the JAX APIs - fundamental for development of Java-based Web service applications as well as other e-Commerce applications requiring the exchange and manipulation of data. The book includes an overview of Web service fundamentals including SOAP, UDDI, and WSDL, all of which will be built upon in later examples. The book then covers the current set of JAX APIs for data processing, for messaging, for writing data to registries and for calling remote applications. Each API is covered from an architectural and implementation perspective, using real-world examples and case studies throughout to illustrate their usefulness. The author will demonstrate both Web service and traditional JAX applications, giving a complete picture of the uses of JAX. The final chapter looks ahead to new developments and new APIs in progress at Sun.

Want to create a solid, manufacturable PCB the first time? Well, you're in luck. Get the only book you will ever need to upgrade your PCB knowledge and launch your career to new heights. Forget the school of hard-knocks and learn all the things industry experts wish they knew when starting out. With over 100 pages of content including checklists, pro-tips, and detailed illustrations, you'll gain decades of wisdom in a fraction of the time. Read the Hitchhikers Guide to PCB Design to be entertained and learn - How to create a robust and manufacturable PCB layout beyond routing the rats - Why it's important to incorporate DFX (Design for Excellence) and the many topics it covers - Who your project stakeholders are and why their involvement is essential for design success - PCB Design best practices you need to know and more BONUS- You can get a FREE digital download of the guide by visiting the EMA Design Automation website.

New, updated and expanded topics in the fourth edition include: EBCDIC, Grey code, practical applications of flip-flops, linear and shaft encoders, memory elements and FPGAs. The section on fault-finding has been expanded. A new chapter is dedicated to the interface between digital components and analog voltages. *A highly accessible, comprehensive and fully up to date digital systems text *A well known and respected text now revamped for current courses *Part of the Newnes suite of texts for HND/1st year modules

This book provides a thorough overview of cutting-edge research on electronics applications relevant to industry, the environment, and society at large. It covers a broad spectrum of application domains, from automotive to space and from health to security, while devoting special attention to the use of embedded devices and sensors for imaging, communication and control. The book is based on the 2018 ApplePies Conference, held in Pisa, Italy in September 2018, which brought together researchers and stakeholders to consider the most significant current trends in the field of applied electronics and to debate visions for the future. Areas addressed by the conference included information communication technology; biotechnology and biomedical imaging; space; secure, clean and efficient energy; the environment; and smart, green and integrated transport. As electronics technology continues to develop apace, constantly meeting previously unthinkable targets, further attention needs to be directed toward the electronics applications and the development of systems that facilitate human activities. This book, written by industrial and academic professionals, represents a valuable contribution in this endeavor.

Provides step-by-step instructions on basic hacking techniques and reverse engineering skills along with information on Xbox security, hardware, and software.

Complete PCB Design Using OrCad Capture and Layout provides instruction on how to use the OrCAD design suite to design and manufacture printed circuit boards. The book is written for both students and practicing engineers who need a quick tutorial on how to use the software and who need in-depth knowledge of the capabilities and limitations of the software package. There are two goals the book aims to reach: The primary goal is to show the reader how to design a PCB using OrCAD Capture and OrCAD Layout. Capture is used to build the schematic diagram of the circuit, and Layout is used to design the circuit board so that it can be manufactured. The secondary goal is to show the reader how to add PSpice simulation capabilities to the design, and how to develop custom schematic parts, footprints and PSpice models. Often times separate designs are produced for documentation, simulation and board fabrication. This book shows how to perform all three functions from the same schematic design. This approach saves time and money and ensures continuity between the design and the manufactured product. Information is presented in the exact order a circuit and PCB are designed Straightforward, realistic examples present the how and why the designs work, providing a comprehensive toolset for understanding the OrCAD software Introduction to the IPC, JEDEC, and IEEE standards relating to PCB design Full-color interior and extensive illustrations allow readers to learn features of the product in the most realistic manner possible

Embedded Systems design becomes more complex as increasingly sophisticated functionality is added to designs. In addition to considerations of cost, performance, and time-to-market, various system integration issues become challenging, given the inherently heterogeneous nature of embedded systems. Platform Based Design introduces a rigorous design methodology to address the various challenges posed by complex, heterogeneous, embedded systems.

Explore the latest power electronics principles, practices, and applications This electrical engineering guide offers comprehensive coverage of design, modeling, simulation, and control for power electronics. The book describes real-world applications for the technology and features case studies worked out in both MATLAB and Simulink. Presented in an accessible style, Power Electronics Step-by-Step: Design, Modeling, Simulation, and Control focuses on the latest technologies, such as DC-based systems, and emphasizes the averaging technique for both simulation and modeling. You will get photos, diagrams, flowcharts, graphs, equations, and tables that illustrate each topic. Circuit components Non-isolated DC/DC conversion Power analysis DC to single-phase AC conversion Single-phase AC to DC conversion Galvanic isolated DC/DC conversion Power conversion for three-phase AC Bidirectional power conversion Averaging model for simulation Dynamic modeling of DC/DC converters Regulation of voltage and current

This domain derives from such diverse disciplines as electronics, mechanical engineering, fluid dynamics, thermodynamics, chemistry, physics, metallurgy and optics. The author, with nearly four decades of experience in R&D, technology development, and education and training, provides a practical and hand-on approach to the subject, by covering the latest technological developments and covering all the vital aspects of PCB, i.e. design, fabrication, assembly, testing, including reliability and quality. With this coverage, the book will be useful to designers, manufacturers, and students of electrical and electronic engineering.

As silicon reaches its theoretical performance limits for power electronics, industry is shifting toward wide-bandgap materials like Gallium Nitride (GaN), whose properties provide clear benefits in power converters for consumer and industrial electronics. In over 150 pages covering the technology, its applications, markets and future potential, this book delves into GaN technology and its importance for power electronics professionals engaged with its implementation in power devices. The properties of GaN, such as low leakage current, significantly reduced power losses, higher power density and the ability to tolerate higher operating temperatures, all from a device smaller than its silicon-only equivalent, provide design advantages allowing previously unimaginable application performance. As an alternative to silicon, GaN can provide clear benefits in power converters for consumer and industrial electronics; chargers for wireless devices, including 5G; driver circuits for motor control; and power switches in automotive and space applications. The book also explores why GaN-based devices hold the key to addressing the energy efficiency agenda, a key strategic initiative in increasingly power-reliant industries such as data centers, electric vehicles, and renewable energy systems. Highly efficient residential and commercial energy storage systems using GaN technology will enable distribution, local storage, and on-demand access to renewable energy. Continued progress in the battery market will lead to declining battery costs and the development of smaller batteries that pair with GaN technology-based converters and inverters. Thermal management is critical in power electronics, and high efficiency in higher-power systems is always a focus. With GaN, a 50% reduction in losses can be achieved, reducing the costs and area required to manage heat. The book delves into GaN's electrical characteristics and how these can be exploited in power devices. There are also chapters that cross into the key applications for GaN devices for several markets such as space, automotive, audio, motor control and data centers. Each chapter provides a comprehensive overview of the subject matter for anyone who wants to stay on the leading edge of power electronics.

The world's leading guide to printed circuits—completely updated to include the latest tools, technology, and techniques The de facto industry-standard for over 30 years, this practical guide equips you with definitive coverage of every facet of printed circuit assemblies—from design methods to fabrication processes. Now thoroughly revised and updated, this book offers cutting-edge coverage of printed circuit engineering, fabrication, construction, soldering, testing, and repair. Printed Circuits Handbook, Seventh Edition features all new, critical guidance on how to create, manage, and measure performance throughout the global supply chain. Written by a team of international experts from both industry and academia, this comprehensive volume offers new information on geographical specialization as well as the latest phase of the EUs Directive on the Restriction of Hazardous Substances (ROHS II). Fully overhauled to cover the latest scientific and technical developments Brand-new coverage of printed circuit supply chain technology and geographical specialization Complete explanations of new EU safety directives for halogen-free base materials

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Today, most, if not all microelectronic circuit design is performed with the aid of a computer-aided circuit analysis program. SPICE has become the industry standard software for computer-aided circuit analysis for microelectronic circuits. This text is ideal as a companion to Sedra and Smith's Microelectronic Circuits, Third Edition, but is also a very effective stand-alone tutorial text on computer-aided circuit analysis using SPICE.