

# Pspice Guide

Based on the latest version of the software (DOS/Version 6), this book introduces users to the popular PSpice circuit analysis software program. Each feature of circuit analysis and each feature of the PSpice software is clearly presented and illustrated by an example, putting electronics technicians and professional engineers on the fast-track to increased productivity. An introductory chapter on how to load and configure the PSpice program is also included for those who are new to network analysis or new to using computers.

This book is a unique combination of a basic guide to general analog circuit simulation and a SPICE OPUS software manual, which may be used as a textbook or self-study reference. The book is divided into three parts: mathematical theory of circuit analysis, a crash course on SPICE OPUS, and a complete SPICE OPUS reference guide. All simulations as well as the free simulator software may be directly downloaded from the SPICE OPUS homepage: [www.spiceopus.si](http://www.spiceopus.si). Circuit Simulation with SPICE OPUS is intended for a wide audience of undergraduate and graduate students, researchers, and practitioners in electrical and systems engineering, circuit design, and simulation development.

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This book is aimed at advanced students and practising engineers. It provides step by step instructions in the use of MicroSim PSpice, industry-standard software that simulates power-electronics circuits. Computer-aided simulation is recognised as the most efficient method of power electronics circuit performance analysis, and is widely used in the industrial marketplace. This book presents a clear and concise guide to one of the most popular software packages. The theory is backed up by drills and exercises throughout, building up practical experience in MicroSim PSpice. The book is intended for use alongside a PC, and a free evaluation version of MicroSim PSpice will be supplied on application to Microsim Corporation. Alternatively, the author's site on the Internet can be accessed at the Internet and the software can be downloaded along with free circuit files, library files and zipped solutions to exercises.

"The emerging fuel cell (FC) technology is growing rapidly in its applications from small-scale portable electronics to large-scale power generation. This book gives students, engineers, and scientists a solid understanding of the FC dynamic modeling and controller design to adapt FCs to particular applications in distributed power generation." "The book begins with a fascinating introduction to the subject, including a brief history of the U.S. electric utility formation and restructuring. Next, it provides coverage of power deregulation and distributed

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generation (DG), DG types, fuel cell DGs, and the hydrogen economy. Modeling and Control of Fuel Cells is an excellent reference book for students and professionals in electrical, chemical, and mechanical engineering and scientists working in the FC area."--BOOK JACKET.

This book explains and demonstrates with an exhaustive set of design examples, how common types of radio frequency(RF) amplifiers (classes A, B, AB, C, D, E, F, G and H) can be designed, and then have their performance characteristics evaluated and optimized with SPICE. The author demonstrates the transient analysis features of SPICE, along with industry-standard load- and source-pull techniques to simulate the steady-state, long-term time-domain behavior of any test RF amplifier.

Electronic Circuits covers all important aspects and applications of modern analog and digital circuit design. The basics, such as analog and digital circuits, on operational amplifiers, combinatorial and sequential logic and memories, are treated in Part I, while Part II deals with applications. Each chapter offers solutions that enable the reader to understand ready-made circuits or to proceed quickly from an idea to a working circuit, and always illustrated by an example. Analog applications cover such topics as analog computing circuits. The digital sections deal with AD and DA conversion, digital computing circuits,

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microprocessors and digital filters. This editions contains the basic electronics for mobile communications. The accompanying CD-ROM contains PSPICE software, an analog-circuit-simulation package, plus simulation examples and model libraries related to the book topics.

### Analog Circuit Design

The International conference on Personal Wireless Communications (PWC 2007) was the twelfth conference of its series aimed at stimulating technical exchange between researchers, practitioners and students interested in mobile computing and wireless networks. The program covered a variety of research topics that are of current interest, including Ad-Hoc Networks, WiMAX, Heterogeneous Networks, Wireless Networking, QoS and Security, Sensor Networks, Multicast and Signal processing.

A bestseller in its first edition, The Circuits and Filters Handbook has been thoroughly updated to provide the most current, most comprehensive information available in both the classical and emerging fields of circuits and filters, both analog and digital. This edition contains 29 new chapters, with significant additions in the areas of computer-

This is a practical approach to control techniques. The author covers background material on analog controllers, digital controllers, and filters. Commonly used controllers are presented. Extended use of PSpice (a popular circuit simulation program) is used in problem solving. The book is also documented with 50 computer programs that circuit designers can use. Explains integration of control systems with a personal computer\*\*Compares numerous control algorithms in digital and analog form\*\*Details the use of SPICE in problem solving\*\*Presents

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modeling concepts for linear and nonlinear systems\*\*Examines commonly used controllers This book caters to a course on Circuits and Networks with coverage of both Analysis and Synthesis. Lucid language, fundamental discussions and illustrative examples are some of the excellent features of this text. There are numerous solved examples employing the step wise problem solving approach which helps in easy grasping of the concepts by the students. The numericals employ both AC and DC methods of analysis. Multiple Choice Questions and Practice problems have been provided in plenty and are of graded challenge levels, helping the students to prepare for competitive examinations. PSpice problems have been incorporated to help in simulation.

A guide to the use of PSpice in common electrical and electronic problems. This revised edition features two-port network analysis, loop gain analysis, and expanded coverage of group and time delay, noise analysis and macros. Software supplements are available for the IBM PC, IBM PS/2 and Mac 2.

Less expensive, lighter, and smaller than its electromechanical counterparts, power electronics lie at the very heart of controlling and converting electric energy, which in turn lies at the heart of making that energy useful. From household appliances to space-faring vehicles, the applications of power electronics are virtually limitless. Until now, however, the same could not be said for access to up-to-date reference books devoted to power electronics. Written by engineers for engineers, The Power Electronics Handbook covers the full range of relevant topics, from basic principles to cutting-edge applications. Compiled from contributions by an international panel of experts and full of illustrations, this is not a theoretical tome, but a practical and enlightening presentation of the usefulness and variety of technologies that

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encompass the field. For modern and emerging applications, power electronic devices and systems must be small, efficient, lightweight, controllable, reliable, and economical. The Power Electronics Handbook is your key to understanding those devices, incorporating them into controllable circuits, and implementing those systems into applications from virtually every area of electrical engineering.

This Handbook presents all aspects of memristor networks in an easy to read and tutorial style. Including many colour illustrations, it covers the foundations of memristor theory and applications, the technology of memristive devices, revised models of the Hodgkin-Huxley Equations and ion channels, neuromorphic architectures, and analyses of the dynamic behaviour of memristive networks. It also shows how to realise computing devices, non-von Neumann architectures and provides future building blocks for deep learning hardware. With contributions from leaders in computer science, mathematics, electronics, physics, material science and engineering, the book offers an indispensable source of information and an inspiring reference text for future generations of computer scientists, mathematicians, physicists, material scientists and engineers working in this dynamic field.

This guide to the PSpice circuit simulator provides a tutorial approach to using PSpice through graduated examples. This edition includes enhanced pedagogical features, and coverage of the newest capabilities of this program. It explains: the use of Monte Carlo methods in PSpice for statistically computing estimates of how circuits will behave with variations in component values and derivation and use of two-port parameters, including s-parameters. It also

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includes an expanded section on group and time delay, and on noise analysis, as well as fuller descriptions and examples for using parameters, functions and values defined by formulas to generalize circuit blocks and specify component values.

Power electronics can be a difficult course for students to understand and for professors to teach. Simplifying the process for both, SPICE for Power Electronics and Electric Power, Third Edition illustrates methods of integrating industry standard SPICE software for design verification and as a theoretical laboratory bench. Helpful PSpice Software and Program Files Available for Download Based on the author Muhammad H. Rashid's considerable experience merging design content and SPICE into a power electronics course, this vastly improved and updated edition focuses on helping readers integrate the SPICE simulator with a minimum amount of time and effort. Giving users a better understanding of the operation of a power electronics circuit, the author explores the transient behavior of current and voltage waveforms for each and every circuit element at every stage. The book also includes examples of all types of power converters, as well as circuits with linear and nonlinear inductors. New in this edition: Student learning outcomes (SLOs) listed at the start of each chapter Changes to run on OrCAD version 9.2 Added VPRINT1 and IPRINT1 commands

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and examples Notes that identify important concepts Examples illustrating EVALUE, GVALUE, ETABLE, GTABLE, ELAPLACE, GLAPLACE, EFREQ, and GFREQ Mathematical relations for expected outcomes, where appropriate The Fourier series of the output voltages for rectifiers and inverters PSpice simulations of DC link inverters and AC voltage controllers with PWM control This book demonstrates techniques of executing power conversions and ensuring the quality of the output waveforms rather than the accurate modeling of power semiconductor devices. This approach benefits students, enabling them to compare classroom results obtained with simple switch models of devices. In addition, a new chapter covers multi-level converters. Assuming no prior knowledge of SPICE or PSpice simulation, the text provides detailed step-by-step instructions on how to draw a schematic of a circuit, execute simulations, and view or plot the output results. It also includes suggestions for laboratory experiments and design problems that can be used for student homework assignments.

Advanced Techniques in Computing Sciences and Software Engineering includes a set of rigorously reviewed world-class manuscripts addressing and detailing state-of-the-art research projects in the areas of Computer Science, Software Engineering, Computer Engineering, and Systems Engineering and

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Sciences. Advanced Techniques in Computing Sciences and Software Engineering includes selected papers from the conference proceedings of the International Conference on Systems, Computing Sciences and Software Engineering (SCSS 2008) which was part of the International Joint Conferences on Computer, Information and Systems Sciences and Engineering (CISSE 2008). The demand is exploding for complete, integrated systems that sense, process, manipulate, and control complex entities such as sound, images, text, motion, and environmental conditions. These systems, from hand-held devices to automotive sub-systems to aerospace vehicles, employ electronics to manage and adapt to a world that is, predominantly, neither digital nor electronic. To respond to this design challenge, the industry has developed and standardized VHDL-AMS, a unified design language for modeling digital, analog, mixed-signal, and mixed-technology systems. VHDL-AMS extends VHDL to bring the successful HDL modeling methodology of digital electronic systems design to these new design disciplines. Gregory Peterson and Darrell Teegarden join best-selling author Peter Ashenden in teaching designers how to use VHDL-AMS to model these complex systems. This comprehensive tutorial and reference provides detailed descriptions of both the syntax and semantics of the language and of successful modeling techniques. It assumes no previous knowledge of

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VHDL, but instead teaches VHDL and VHDL-AMS in an integrated fashion, just as it would be used by designers of these complex, integrated systems. Explores the design of an electric-powered, unmanned aerial vehicle system (UAV) in five separate case studies to illustrate mixed-signal, mixed-technology, power systems, communication systems, and full system modeling.

When I attended college we studied vacuum tubes in our junior year. At that time an average radio had 7 vacuum tubes and better ones even seven. Then transistors appeared in 1960s. A good radio was judged to be one with more than ten transistors. Later good radios had 15–20 transistors and after that everyone stopped counting transistors. Today modern processors running personal computers have over 10 million transistors and more millions will be added every year. The difference between 20 and 20M is in complexity, methodology and business models. Designs with 20 transistors are easily generated by design engineers without any tools, whilst designs with 20M transistors can not be done by humans in reasonable time without the help of Prof. Dr. Gajski demonstrates the Y-chart automation. This difference in complexity introduced a paradigm shift which required sophisticated methods and tools, and introduced design automation into design practice. By the decomposition of the design process into many tasks and abstraction levels the methodology of designing chips or systems has also

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evolved. Similarly, the business model has changed from vertical integration, in which one company did all the tasks from product specification to manufacturing, to globally distributed, client server production in which most of the design and manufacturing tasks are outsourced.

"This book uses a top-down approach to introduce readers to the SPICE simulator. It begins by describing techniques for simulating circuits, then presents the various SPICE and OrCAD commands and their applications to electrical and electronic circuits. Lavishly illustrated, this new edition includes even more hands-on exercises, suggestions, sample problems, and circuit models of actual devices. It is an ideal supplement for courses in electric or electronic circuitry and is also a solid professional reference."--BOOK JACKET.  
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Used collectively, PSPICE and MATLAB are unsurpassed for circuit modeling and data analysis. PSPICE can perform DC, AC, transient, Fourier, temperature, and Monte Carlo analysis of electronic circuits with device models and subsystem subcircuits. MATLAB can then carry out calculations of device parameters, curve fitting, numerical integration, nume

Engineers and scientists frequently find themselves having to get involved in electronic circuit design even though this may not be their specialty. This book is specifically designed for these

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situations, and has two major advantages for the inexperienced designer: it assumes little prior knowledge of electronics and it takes a modular approach, so you can find just what you need without working through a whole chapter. The first three parts of the book start by refreshing the basic mathematics and physics needed to understand circuit design. Part four discusses individual components (resistors, capacitors etc.), while the final and largest section describes commonly encountered circuit elements such as differentiators, oscillators, filters and couplers. A major bonus and learning aid is the inclusion of a CD-ROM with the student edition of the PSpice simulation software, together with models of most of the circuits described in the book. 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 This book presents a collection of “lessons” on various topics commonly encountered in electronic circuit design, including some basic circuits and some complex electronic circuits,

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which it uses as vehicles to explain the basic circuits they are composed of. The circuits considered include a linear amplifier, oscillators, counters, a digital clock, power supplies, a heartbeat detector, a sound equalizer, an audio power amplifier and a radio. The theoretical analysis has been deliberately kept to a minimum, in order to dedicate more time to a “learning by doing” approach, which, after a brief review of the theory, readers are encouraged to use directly with a simulator tool to examine the operation of circuits in a “virtual laboratory.” Though the book is not a theory textbook, readers should be familiar with the basic principles of electronic design, and with spice-like simulation tools. To help with the latter aspect, one chapter is dedicated to the basic functions and commands of the OrCad P-spice simulator used for the experiments described in the book.

PSpice Simulation of Power Electronics Circuits An Introductory Guide Springer

The superb organization of The Electronics Handbook means that it is not only a comprehensive and fascinating reference, but also a pleasure to use. Some of these organizational features include:

Over the years, the fundamentals of VLSI technology have evolved to include a wide range of topics and a broad range of practices. To encompass such a vast amount of knowledge, The VLSI Handbook focuses on the key concepts, models, and equations that enable the electrical engineer to analyze, design, and predict the behavior of very large-scale integrated circuits. It provides the most up-to-date information on IC technology you can find. Using frequent examples, the Handbook stresses the fundamental theory behind professional applications. Focusing not only on the traditional design methods, it contains all relevant sources of information and tools to assist you in performing your job. This includes software, databases,

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standards, seminars, conferences and more. The VLSI Handbook answers all your needs in one comprehensive volume at a level that will enlighten and refresh the knowledge of experienced engineers and educate the novice. This one-source reference keeps you current on new techniques and procedures and serves as a review for standard practice. It will be your first choice when looking for a solution.

Held every three years, The International Symposia on the Science and Technology of Light Sources (LS) provide a unique forum for the international community of engineers, scientists, research organizations, and academia from the lighting industry. In Light Sources 2004, leaders in their respective fields discuss the latest findings and exciting developments in light source research. Contributors provide valuable analyses and discussions on topics such as incandescent and halogen sources, fluorescent discharge sources, lamp-related electronic gear, high intensity discharge sources, diagnostics, solid state sources, modeling, dielectric barrier sources, excimer devices, and nonlighting applications.

New to this edition: Updated to using OrCAD Release 17.2 and its new features; Coverage of PSPICE extra features: PSpice Designer, PSpice Designer Plus, Modelling Application, PSpice Part Search Symbol Viewer, PSpice Report, Associate PSpice model, New delay functions for Behavioural Simulation Models, New Models, Support for negative values in hysteresis voltage and threshold voltage; A new chapter on PSpice Advanced Analysis Analog Design and Simulation Using OrCAD Capture and PSpice, Second Edition provides step-by-step instructions on how to use the Cadence/OrCAD family of Electronic Design Automation software for analog design and simulation. The book explains how to enter schematics in Capture, set up project types, project libraries and prepare circuits for PSpice simulation. There

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are chapters on the different analysis types for DC Bias point, DC sweep, AC frequency sweep, Parametric analysis, Temperature analysis, Performance Analysis, Noise analysis, Sensitivity and Monte Carlo simulation. Subsequent chapters explain how the Stimulus Editor is used to define custom analog and digital signals, how the Model Editor is used to view and create new PSpice models and Capture parts and how the Magnetic Parts Editor is used to design transformers and inductors. Other chapters include Analog Behavioral models, Test Benches as well as how to create hierarchical designs. The book includes the latest features in the OrCAD 17.2 release and there are exercises with step by step instructions at the end of each chapter that enables the reader to progress based upon their experience and knowledge gained from previous chapters. In addition, there are new chapters on the PSpice Advanced Analysis suite of tools: Sensitivity Analysis, Optimizer, Monte Carlo, and Smoke Analysis. The chapters show how circuit performance can effectively be maximised and optimised for variations in component tolerances, temperature effects, manufacturing yields and component stress. Provides both a comprehensive user guide and a detailed overview of simulation using OrCAD Capture and PSpice Includes worked and ready to try sample designs and a wide range of to-do exercises Covers Capture and PSpice together

This text offers a comprehensive introduction to a wide, relevant array of topics in analog electronics. It is intended for students pursuing courses in electrical, electronics, computer, and related engineering disciplines. Beginning with a review of linear circuit theory and basic electronic devices, the text moves on to present a detailed, practical understanding of many analog integrated circuits. The most commonly used analog IC to build practical circuits is the operational amplifier or op-amp. Its characteristics, basic configurations and applications in the

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linear and nonlinear circuits are explained. Modern electronic systems employ signal generators, analog filters, voltage regulators, power amplifiers, high frequency amplifiers and data converters. Commencing with the theory, the design of these building blocks is thoroughly covered using integrated circuits. The development of microelectronics technology has led to a parallel growth in the field of Micro-electromechanical Systems (MEMS) and Nano-electromechanical Systems (NEMS). The IC sensors for different energy forms with their applications in MEMS components are introduced in the concluding chapter. Several computer-based simulations of electronic circuits using PSPICE are presented in each chapter. These examples together with an introduction to PSPICE in an Appendix provide a thorough coverage of this simulation tool that fully integrates with the material of each chapter. The end-of-chapter problems allow students to test their comprehension of key concepts. The answers to these problems are also given.

A technicians and technologist's guide to using PSpice circuit.

After nearly a decade of success owing to its thorough coverage, abundance of problems and examples, and practical use of simulation and design, Power-Switching Converters enters its second edition with new and updated material, entirely new design case studies, and expanded figures, equations, and homework problems. This textbook is ideal for senior undergraduate or graduate courses in power electronic converters, requiring only systems analysis and basic electronics courses. The only text of such detail to also include the use of PSpice and step-by-step designs and simulations, Power-Switching Converters, Second Edition covers basic topologies, basic control techniques, and closed-loop control and stability. It also includes two new chapters on interleaved converters and switched capacitor converters,

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and the authors have added discrete-time modeling to the dynamic analysis of switching converters. The final two chapters are dedicated to simulation and complete design examples, respectively. PSpice examples and MATLAB scripts are available for download from the CRC Web site. These are useful for the simulation of students' designs. Class slides are also available on the Internet. Instructors will appreciate the breadth and depth of the material, more than enough to adapt into a customized syllabus. Students will similarly benefit from the more than 440 figures and over 1000 equations, ample homework problems, and case studies presented in this book.

Significantly expanded and updated with extensive revisions, new material, and a new chapter on emerging applications of switching converters, *Power-Switching Converters, Third Edition* offers the same trusted, accessible, and comprehensive information as its bestselling predecessors. Similar to the two previous editions, this book can be used for an introductory as well as a more advanced course. Chapters begin with an introduction to switching converters and basic switching converter topologies. Entry level chapters continue with a discussion of resonant converters, isolated switching converters, and the control schemes of switching converters. Skipping to chapters 10 and 11, the subject matter involves an examination of interleaved converters and switched capacitor converters to round out and complete the overview of switching converter topologies. More detailed chapters include the continuous time-modeling and discrete-time modeling of switching converters as well as analog control and digital control. Advanced material covers tools for the simulation of switching converters (including both PSpice and Matlab simulations) and the basic concepts necessary to understand various actual and emerging applications for switching converters, such as power

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factor correction, LED drivers, low-noise converters, and switching converters topologies for solar and fuel cells. The final chapter contains several complete design examples, including experimental designs that may be used as technical references or for class laboratory projects. Supplementary information is available at [crcpress.com](http://crcpress.com) including slides, PSpice examples (designed to run on the OrCAD 9.2 student version and PSIM software) and MATLAB scripts. Continuing the august tradition of its predecessors, Power-Switching Converters, Third Edition provides introductory and advanced information on all aspects of power switching converters to give students the solid foundation and applicable knowledge required to advance in this growing field.

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