

## Switching Power Supply Repair Guide Styleie

Power Supply design is all about detail. And a large part of that detail lies in the practical domain, largely because of the typically small number of microseconds of switching periods involved, and the even smaller tens of nanoseconds of switch transition times --- all these, in effect accentuating various "second-order" effects, that eventually end up playing prime havoc with "normal" expectations of how the circuit should behave. So not unsurprisingly, even after reading several books, most readers still find themselves no closer to the ultimate goal of designing an actual power supply. Sooner or later, all engineers start realizing the hard fact that designing a switching power supply isn't the trivial task it once seemed to be. But even after years of successfully mastering the underlying theory, the ultimate goal of creating a cost-effective, reliable and commercially viable power supply may still remain a distant dream, since success ultimately hinges on experience. That is, in fact, what clearly differentiates a senior and seasoned power supply engineer from the others --- the ability to navigate and surmount a veritable minefield of tricky issues that can only be learned the hard way, by actual hands-on experience on the job. This book presents practical knowledge the author acquired rather painfully, while working "in the trenches"

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for several years in major engineering companies scattered across several continents. This is intended to be the mythical senior engineer's "bag of tricks," finally made available in the form of an easy-to-read book on your shelf. This book will make life for the ambitious power supply engineer much simpler --- besides reducing significantly, the rigorous requirement of having to be a senior engineer's protégé for years on end, just to gain a small measure of real success in this field. \* A practical presentation that answers the important question: why is my switching converter behaving so differently than what I was expecting on the basis of my paper design? And how do I bridge that huge gap? \* For the first time, a systematic and thorough discussion of troubleshooting switching power supplies. \* Coverage of AC/DC and DC/DC power supplies. \* Bench Evaluation of semiconductor ICs used in power conversion --- describing standard and unusual techniques mastered by the author, while testing similar chips at National Semiconductor. \* Detailed coverage of vital topics that haven't been covered by available sources --- grounding systems, the subtleties of component datasheets, and using instruments and probes effectively. \* Systematic investigation (type of failure mechanism, topology, etc.) and solutions for 5 years of reported power supply issues on a prominent, public web forum. This approach will ensure that engineers will not repeat the same mistakes. \* A

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unique, readable style: personal and direct; no mystification--- just the plain truth, easily and logically explained, with plenty of pictures, graphs and plots.

Ready-made SPICE power supply solutions Now you can get solutions to the most difficult problems facing power supply designers: shrinking size and increased thermal constraints. Christophe Basso's SMPS SPICE Cookbook is a complete designer's toolkit with tested, ready-to-run SPICE models on an accompanying CD-ROM. The models come in all three SPICE flavors with demo versions. You can start from scratch, installing the software and simulating the examples in the book without any SPICE experience whatsoever. All the common SMPS topologies are covered: buck, boost, buck-boost, and SEPIC. Each is described in terms of relative strengths and weaknesses and then modeled. Just turn to the CD, pull out the model in the flavor of SPICE you use, plug in your own values – and out comes a design solution. All the models in the book have been carefully simulated and tested. A special website even lets you access new models that will be posted on a continuing basis

Power Supply Cookbook, Second Edition provides an easy-to-follow, step-by-step design framework for a wide variety of power supplies. With this book, anyone with a basic knowledge of electronics can create a very complicated power supply design in less than one day. With the common industry design

approaches presented in each section, this unique book allows the reader to design linear, switching, and quasi-resonant switching power supplies in an organized fashion. Formerly complicated design topics such as magnetics, feedback loop compensation design, and EMI/RFI control are all described in simple language and design steps. This book also details easy-to-modify design examples that provide the reader with a design template useful for creating a variety of power supplies. This newly revised edition is a practical, "start-to-finish" design reference. It is organized to allow both seasoned and inexperienced engineers to quickly find and apply the information they need. Features of the new edition include updated information on the design of the output stages, selecting the controller IC, and other functions associated with power supplies, such as: switching power supply control, synchronization of the power supply to an external source, input low voltage inhibitors, loss of power signals, output voltage shut-down, major current loops, and paralleling filter capacitors. It also offers coverage of waveshaping techniques, major loss reduction techniques, snubbers, and quasi-resonant converters. Guides engineers through a step-by-step design framework for a wide variety of power supplies, many of which can be designed in less than one day Provides easy-to-understand information about often complicated topics, making power supply design a much more accessible

and enjoyable process

This practical guide to switch-mode power supplies is designed to provide technicians with a better understanding of how power supplies operate. It also provides practical, useful procedures to follow when you are troubleshooting switch-mode power supplies. The World's #1 Guide to Power Supply Design Now Updated! Recognized worldwide as the definitive guide to power supply design for over 25 years, Switching Power Supply Design has been updated to cover the latest innovations in technology, materials, and components. This Third Edition presents the basic principles of the most commonly used topologies, providing you with the essential information required to design cutting-edge power supplies. Using a tutorial, how-and-why approach, this expert resource is filled with design examples, equations, and charts. The Third Edition of Switching Power Supply Design features: Designs for many of the most useful switching power supply topologies The core principles required to solve day-to-day design problems A strong focus on the essential basics of transformer and magnetics design New to this edition: a full chapter on choke design and optimum drive conditions for modern fast IGBTs Get Everything You Need to Design a Complete Switching Power Supply: Fundamental Switching Regulators \* Push-Pull and Forward Converter Topologies \* Half- and Full-Bridge Converter Topologies \* Flyback Converter Topologies \* Current-Mode and Current-Fed Topologies \* Miscellaneous Topologies \* Transformer and Magnetics Design \* High-Frequency Choke Design \* Optimum Drive

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Conditions for Bipolar Power Transistors, MOSFETs, Power Transistors, and IGBTs \* Drive Circuits for Magnetic Amplifiers \* Postregulators \* Turn-on, Turn-off Switching Losses and Low Loss Snubbers \* Feedback-Loop Stabilization \* Resonant Converter Waveforms \* Power Factor and Power Factor Correction \* High-Frequency Power Sources for Fluorescent Lamps, and Low-Input-Voltage Regulators for Laptop Computers and Portable Equipment

Repairing and troubleshooting a television is very simple and economical with help from the information contained in this book. This is the most complete and up-to-date television repair book available with tips on how to troubleshoot the newest circuits in today's TVs.

Having trouble keeping up with the latest standards for external power supplies such as the California Energy Commission's (CEC) requirements for efficiency and no-load power consumption; or the implications of the 3rd Edition 60601 on Medical Safety? Ever wondered why seemingly similar power supplies have significantly different performance and reliability characteristics? The answers to these and many more questions can be found in this Essential Guide to Power Supplies. Whether you're new to designing-in a power supply or DC-DC converter or an 'old hand', this book offers an invaluable resource and all the information you'll need in one easy reference guide.

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The second edition has been updated with all the key developments of the past three years, and includes new and expanded sections on digital video interfaces, DSP, DVD, video servers, automation systems, HDTV, 8-VSB modulation and the ATSC system. Richard Brice has worked as a senior design engineer in several of Europe's top broadcast equipment companies and has his own music production company. \* A uniquely concise and readable guide to the technology of digital television \* New edition includes more information on HDTV (high definition) and ATSC (Advanced Television Systems Committee) - the body that drew up the standards for Digital Television in the U.S. \* Written by an engineer for engineers, technicians and technical staff

Take the "black magic" out of switching power supplies with Practical Switching Power Supply Design! This is a comprehensive "hands-on" guide to the theory behind, and design of, PWM and resonant switching supplies. You'll find information on switching supply operation and selecting an appropriate topology for your application. There's extensive coverage of buck, boost, flyback, push-pull, half bridge, and full bridge regulator circuits. Special attention is given to semiconductors used in switching supplies. RFI/EMI reduction, grounding, testing, and safety standards are also detailed. Numerous design examples and equations are given and discussed. Even if your primary expertise is in logic or

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microprocessor engineering, you'll be able to design a power supply that's right for your application with this essential guide and reference! Gives special attention to resonant switching power supplies, a state-of-the-art trend in switching power supply design Approaches switching power supplies in an organized way beginning with the advantages of switching supplies and thier basic operating principles Explores various configurations of pulse width modulated (PWM) switching supplies and gives readers ideas for the direction of their designs Especially useful for practicing design engineers whose primary specialty is not in analog or power engineering fields

The labor costs of even a minor VCR repair are very high, and warranties typically only cover the first 90 days of ownership. The first four chapters of this practical guide allow do-it-yourselfers to take charge of maintaining and repairing their own VCRs for optimum performance. Basic VCR and recording principles are explained so you can gain a better understanding of how your machine operates. Advanced troubleshooting techniques covered in the later chapters allow technicians and advanced hobbyists to make more complex repairs and adjustments. Basic troubleshooting guidelines and flow charts aid in diagnosis, including chassis and mechanical failures. VCR Troubleshooting & Repair, focuses on preventative maintenance. Basic electronics principles are presented



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as they relate to VCR performance. THE AUTHORS Gregory R. Capelo is the owner of a VCR and VTR repair facility in El Cajon, California. He has serviced broadcast, consumer, and industrial video equipment for more than 14 years. He has taught numerous technical courses to private, government, and industrial technicians on the theory and maintenance of video and television equipment. Currently a trainer for Panasonic, he has been an expert witness in VCR patent infringement cases. Robert C. Brenner is an engineer and lecturer with extensive experience in microcomputers and system repair. He has written several successful books, including earlier editions of VCR Troubleshooting and Repair. Revised with technical input from major VCR manufacturers Step-by-step details to maximize performance How to avoid breakdowns Power Supply Troubleshooting and Repair Prompt Publications Shows how to locate and solve problems with computers, keyboards, disk drives, power supplies, monitors, and printers, and discusses safety and preventive maintenance

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