

## Power Supply Repair Guide By Jestine Yong

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.

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" 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 unique, readable style: personal and direct; no mystification--- just the plain truth,

easily and logically explained, with plenty of pictures, graphs and plots. This comprehensive guide provides full coverage of cutting-edge technologies--from DVD drives, cable, and DSL modems to Ultra360 SCSI devices, AGP accelerators, USB, IEEE 1284, and Infrared ports. This essential volume also contains a valuable CD-ROM with over 120 diagnostic and maintenance utilities. The author also provides real-world examples and condition-specific troubleshooting advice that will have you fixing common and little-known PC problems in no time.

If you are ready to start a business in consumer electronics repair or are simply interesting in the inner working of the television than this Easy to Read book is right for you. This book uses modern televisions troubleshooting; however, all circuits and components of consumer electronics are very similar. This book describes very specifically the functions and purposes of various types of circuitry, electronic components, their functions and the malfunctions of televisions when they are faulty. The book includes everything that you will need to know for beginning television, computers and other electronic repair. This book contains actual symptom, troubleshooting, diagnosis and repair procedures for all television problems. All essential knowledge, skills and procedures are in an articulated fashion, so that, no time will be wasted discerning the jest of each section. All sections are in the table of contents and in bold face for quick reference or study guide. This book contains the most probable television malfunctions discussed with troubleshooting and repair descriptions for the very beginner or for any one interested in the inner working of the television.

#### Power Supply Troubleshooting and Repair Prompt Publications

Most computer users think that fiddling with the insides of their PC is taboo. They fear that by removing the screws that hold the case on, they're crossing into forbidden territory. And even for those who know they can open the box and fix or upgrade their PC, analysis paralysis often stops them in their tracks: Which upgrades offer the best bang for the buck? How do you pinpoint the faulty component that's making your system freeze? What about compatibility issues? Get ready to get unstuck and get your PC running fast and running right. *Repairing and Upgrading Your PC* delivers start-to-finish instructions, simple enough for even the most inexperienced PC owner, for troubleshooting, repairing, and upgrading your computer. Written by hardware experts Robert Bruce Thompson and Barbara Fritchman Thompson, this book covers it all: how to troubleshoot a troublesome PC, how to identify which components make sense for an upgrade, and how to tear it all down and put it back together. This book shows how to repair and upgrade all of your PC's essential components: Motherboard, CPU, and Memory. Choose the optimal match of these core components to keep your PC running at top speed Hard Drive, Optical Drive, and Removable Storage Give your computer what it needs for long-term and short-term storage Audio and Video. Enhance your computing experience with the right sound and graphics devices for your needs Input Devices. Pick the best keyboard and mouse to keep your hands happy and healthy Networking. Set up secure wireless networking to keep the bits flowing between your computers and the outside world Cases and Power Supplies. Keep everything running cool and reliably With its straightforward language, clear instructions, and extensive illustrations, this book makes it a breeze for PC owners of any skill level to work on their computer.

Provides information on using a PC, covering such topics as hardware, networking, burning

CDs and DVDs, using the Internet, and upgrading and replacing parts.

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.

Not an engineer, but need to know the basics of battery backup power? UPS Handbook breaks down the complex world of Uninterruptible Power Supply systems into simple-to-understand language. If you need to know the basics of UPS systems but not the expertise of how to repair them, this book is for you. ?What is an Uninterruptible Power Supply system? ?How do they work??Which is right for you? ?What is a UPS topology? ?What maintenance is needed??What is the most preventable failure??Batteries: what are they, and why are they important??What are the advantages of modularity? The author answers these questions and more in UPS Handbook, a Layman's Guide to UPS Systems. Learn from others in case studies highlighting the problems they experienced and how to prevent them from happening to you. After finishing this helpful resource, you will not only have the knowledge to make informed decisions about your backup power system, but you will speak the language of electricians, engineers, and technicians.

Covers set-up, maintenance, tuners, acoustic adjustments, nut replacement, fret dressing, refretting, guitar electronics, finish application and repair, and useful tools.

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.

In this best-selling manual for electronics technicians, students, and advanced hobbyists, you will find complete up-to-date information on diagnosing and repairing today's popular impact, thermal, inkjet, and electrophotographic printers. With the help of new flowcharts and technical illustrations throughout, you will learn to troubleshoot and solve 150 specific printer problems, while gaining the experience to resolve many other malfunctions on your own. Complete coverage of printing under Windows and Windows 95 is included, as well as a coupon for a companion disk filled with essential troubleshooting tools.

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

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 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

This book can save you the money and hassle of projection TV repair by showing you how to fix it yourself. The perfect tool to help every professional technician, enthusiastic hobbyist, or do-it-yourselfer to accomplish this goal. Includes a case study for the

Mitsubishi VS-458RS.

Offers extensive guidance for troubleshooting and repairing a wide variety of electronic devices on diverse platforms, including PCs, smartphones, tablets, networks, cameras, home theaters, and e-readers.

This newly up-to-date edition of the best-selling DIY reference *Small Engines and Outdoor Power Equipment* offers them same great comprehensive and illustrated instruction but with new and improved content for today's motorized equipment.

Provides you with specific maintenance and repair techniques that will save time.

Includes details on how to use test equipment, troubleshooting tips, guidelines, and methods, and a chapter on flat-panel displays.

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 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

A Fully Revised Guide to Electronics Troubleshooting and Repair Repair all kinds of electrical products, from modern digital gadgets to analog antiques, with help from this updated book. *How to Diagnose and Fix Everything Electronic, Second Edition*, offers expert insights, case studies, and step-by-step instruction from a lifelong electronics guru. Discover how to assemble your workbench, use the latest test equipment, zero in on and replace dead components, and handle reassembly. Instructions for specific devices, including stereos, MP3 players, digital cameras, flat-panel TVs, laptops, headsets, and mobile devices are also included in this do-it-yourself guide. Choose the proper tools and set up your workbench Ensure personal safety and use proper eye and ear protection Understand how electrical components work and why they fail Perform preliminary diagnoses based on symptoms Use test equipment, including digital multimeters, ESR meters, frequency counters, and oscilloscopes Interpret block, schematic, and pictorial diagrams Disassemble products and identify sections Analyze circuits, locate faults, and replace dead parts Re-establish connections and reassemble devices

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  
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