

Access Free Switchmode
Power Supply Handbook

Switchmode Power Supply Handbook

**Using this book as a guide,
Pressman promises, even a
novice can immediately**

Access Free Switchmode Power Supply Handbook

design a complete switching power supply circuit. No other book has such complete instruction in one volume. Using a tutorial, how-to approach, Pressman covers every aspect of this

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new technology, including circuit and transformer design, using higher switching frequencies, new topologies, and integrated PWM chips. For this latest edition, Pressman has added

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in-depth discussion of power factor correction, high-frequency ballasts for fluorescent lamps, and low-input voltage power supplies for laptop computers.

Switchmode Power Supply

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**Handbook 3/EMcGraw Hill
Professional**

**The latest techniques for
designing state-of-the-art
power supplies, including
resonant (LLC) converters
Extensively revised**

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**throughout, Switching
Power Supply Design &
Optimization, Second
Edition, explains how to
design reliable, high-
performance switching
power supplies for today's**

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**cutting-edge electronics.
The book covers modern
topologies and converters
and features new
information on designing or
selecting bandgap
references, transformer**

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design using detailed new design charts for proximity effects, Buck efficiency loss teardown diagrams, active reset techniques, topology morphology, and a meticulous AC-DC front-end

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design procedure. This updated resource contains design charts and numerical examples for comprehensive feedback loop design, including TL431, plus the world's first top-down

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simplified design methodology for wide-input resonant (LLC) converters. A step-by-step comparative design procedure for Forward and Flyback converters is also included

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**in this practical guide. The
new edition covers: Voltage
references DC-DC
converters: topologies to
configurations
Contemporary converters,
composites, and related**

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**techniques Discontinuous
conduction mode
Comprehensive front-end
design in AC-DC power
conversion Topologies for
AC-DC applications Tapped-
inductor (autotransformer-**

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**based) converters Selecting
inductors for DC-DC
converters Flyback and
Forward converter
transformer design Forward
and Flyback converters: step-
by-step design and**

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**comparison PCBs and
thermal management
Closing the loop: feedback
and stability, including
TL431 Practical EMI filter
design Reset techniques in
Flyback and Forward**

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**converters Reliability,
testing, and safety issues
Unraveling and optimizing
Buck converter efficiency
Introduction to soft-
switching and detailed LLC
converter design**

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**methodology with PSpice
simulations Practical
circuits, design ideas, and
component FAQs**

**This book describes the
fundamentals and principles
of energy harvesting and**

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provides the necessary theory and background to develop energy harvesting power supplies. It explains the overall system design and gives quantitative assumptions on

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environmental energy. It explains different system blocks for an energy harvesting power supply and the trade-offs. The text covers in detail different energy transducer

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technologies such as piezoelectric, electrodynamic, and thermoelectric generators and solar cells from the material to the component level and explains the

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**appropriate power
management circuits
required in these systems.
Furthermore, it describes
and compares storage
elements such as secondary
batteries and**

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supercapacitors to select the most appropriate one for the application. Besides power supplies that use ambient energy, the book presents systems that use electromagnetic fields in the

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**radio frequency range.
Finally, it discusses different
application fields and
presents examples of self-
powered electronic systems
to illustrate the content of
the preceding chapters.**

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**SPICE Simulations and
Practical Designs
Practical Design of Power
Supplies
A Hands-on Guide
Design and Construction
Fundamentals of Power**

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**Supply Design
Handbook of Power
Management Circuits
Grounding design and
installation is critical for the
safety and performance of any
electrical or electronic system.**

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Blending theory and practice, this is the first book to provide a thorough approach to grounding from circuit to system. It covers: grounding for safety aspects in facilities, lightning, and NEMP;

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grounding in printed circuit board, cable shields, and enclosure grounding; and applications in fixed and mobile facilities on land, at sea, and in air. It's an indispensable resource for

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**electrical and electronic
engineers concerned with the
design of electronic circuits
and systems.**

**Offering sound working
knowledge of the latest in
topologies and step-by-step**

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approaches to component decisions; this handbook gives power supply designers solutions-oriented design guidance; free of complicated mathematical derivations and theory. --

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Whether you are a student, a newly-minted engineer entering the field of power electronics, a salesperson needing to understand a customer's needs, or a seasoned power supply

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designer desiring to track down a forgotten equation, this book will be a significant aid. Beginning with the basic definition of a power supply, we will traverse through voltage regulation techniques

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and the components necessary for their implementation, and then move on to the myriad of circuit topologies and control algorithms prevalent in modern-day design solutions. Separate chapters on feedback-

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loop compensation and magnetic design principles will build on this foundation, along with in-depth descriptions for dealing with regulations for electromagnetic compatibility, human safety, and energy

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efficiency issues. Additional chapters will describe the value proposition for digital control and the practical aspects power supply construction.

"Preface I have had many

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**requests to update my book
Transformer and Inductor
Design Handbook, because of
the way power electronics has
changed in the past few years.
I have been requested to add
and expand on the present**

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**Chapters. There are now
twenty-six Chapters. The new
Chapters are autotransformer
design, common-mode
inductor design, series
saturable reactor design, self-
saturating magnetic amplifier**

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and designing inductors for a given resistance, all with step-by-step design examples. This book offers a practical approach with design examples for design engineers and system engineers in the

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electronics industry, as well as the aerospace industry. While there are other books available on electronic transformers, none of them seem to have been written with the user's viewpoint in mind. The

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material in this book is organized so that the design engineer, student engineer or technician, starting at the beginning of the book and continuing through the end, will gain a comprehensive

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knowledge of the state of the art in transformer and inductor design. The more experienced engineers and system engineers will find this book a useful tool when designing or evaluating

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transformers and inductors. Transformers are to be found in virtually all electronic circuits. This book can easily be used to design lightweight, high-frequency aerospace transformers or low-frequency

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**commercial transformers. It is,
therefore, a design manual"--**

Power Electronics Design

Digital Control of High-

Frequency Switched-Mode

Power Converters

Handbook of Power Quality

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Power Supply Handbook

**Power Electronics Design
Handbook**

**Switching Power Supply
Design, 3rd Ed.**

**Low-Power Components and
Applications**

As we increasingly use electronic

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devices to direct our daily lives, so grows our dependence on reliable energy sources to power them. Because modern electronic systems demand steady, efficient, reliable DC voltage sources—often at a sub-1V level—commercial AC lines,

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batteries, and other common resources no longer suffice. New technologies also require intricate techniques to protect against natural and manmade disasters. Still, despite its importance, practical information on this critical subject remains

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hard to find. Using simple, accessible language to balance coverage of theoretical and practical aspects, DC Power Supplies, Power Management and Surge Protection details the essentials of power electronics circuits applicable to low-power

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systems, including modern portable devices. A summary of underlying principles and essential design points, it compares academic research and industry publications and reviews DC power supply fundamentals, including linear and low-dropout

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*regulators. Content also addresses common switching regulator topologies, exploring resonant conversion approaches. Coverage includes other important topics such as: Control aspects and control theory
Digital control and control ICs*

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*used in switching regulators
Power management and energy
efficiency Overall power
conversion stage and basic
protection strategies for higher
reliability Battery management
and comparison of battery
chemistries and charge/discharge*

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management Surge and transient protection of circuits designed with modern semiconductors based on submicron dimension transistors This specialized design resource explores applicable fundamental elements of power sources, with numerous

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cited references and discussion of commercial components and manufacturers. Regardless of their previous experience level, this information will greatly aid designers, researchers, and academics who, study, design, and produce the viable new

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*power sources needed to propel
our modern electronic world.*

*CRC Press Authors Speak Nihal
Kularatna introduces his book.*

Watch the video

*As each area of technology with a
potential for significantly
impacting any major segment of*

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the electronics industry evolves, it often is accompanied by the development of a succession of new circuits. Each new circuit indeed appears different, employing different components in differing configurations, and claims an assortment of distinct

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features of "improved performance. " Without a considerable investment of laboratory time to construct, evaluate, and compare each candidate circuit, it usually is difficult to realistically appraise the relative merits of one

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approach over another. It often is even more difficult to identify the underlying principles which point up basic similarities and differences. Such is the situation in the new and rapidly expanding area known as electronic power processing or switching mode

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power supplies. The area of switching power supplies has been spurred by the need for power sources of higher performance, smaller volume, and lighter weight in order to achieve compatibility with the shrinking size of all forms of

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communication and data handling systems, and particularly with the portable battery-operated equipment in everything from home appliances and handtools to mobile communication equipment. Static dc-to-dc converters and dc-to-ac

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inverters provide a natural interface with the new direct energy sources such as solar cells, fuel cells, thermoelectric generators, and the like, and form the central ingredient in most uninterruptable power sources.

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Practical Design of Power Supplies "In a rare and very welcome departure from the power industry's standard technical treatise, Ron Lenk's book . . . offers a clear, pragmatic view of the practical real-world aspects governing power supply

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design Engineers at all levels . . . can expect to gain an enlightened perspective normally gained only after years of design experience." --Frank Wahl, Managing Editor, PCIM Magazine "This is a real hands-on reference in which Ron has done

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an outstanding job of combining just enough theory for understanding, together with several lifetimes' worth of experience. I am confident that it is destined to become dog-eared and worn on the top of every power supply designer's desk."

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*--Bob Mammano, Vice President
Advanced Technology, Unitrode
Practical Design of Power
Supplies details key techniques
and offers advice to engineers
and technicians who want to
design and build power supplies
that work the first time they are*

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turned on. Leading authority Ron Lenk presents current, experiment-based information that can save hours of research and design time. Containing many handy "Practice Notes" and real-world examples, Practical Design of Power Supplies is an

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*excellent how-to reference to keep by your side throughout the design, lab, and production phases. The topics covered will be immediately useful in everyday circuits and systems work: * Common terms and instrumentation * How to design*

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*successful magnetics * How to
compensate the feedback loop to
obtain stable operation *
Practical EMI * Topology
selection * Worst-case analysis
Practical Design of Power
Supplies will be especially useful
to designers who need to*

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understand and implement the concepts behind loop compensation and magnetics design.

This comprehensive reference/text explains the development and principles of operation, modelling, and

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analysis of switch-mode power supplies (SMPS)-highlighting conversion efficiency, size, and steady state/transient regulation characteristics.;Covering the practical design techniques of SMPS,this book - reveals how to develop specific models of

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circuits and components for simulation and design purposes; explains both the computer simulation of the switching behaviours of dc-to-dc converters and the modelling of linear and nonlinear circuit components; deals with the modelling and

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simulation of the low-frequency behaviours of converters (including current-controlled converters and converters with multiple outputs) and regulators; describes computer-aided design (CAD) techniques as applied to converters and regulators;

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introduces the principles and design of quasi-resonant and resonant converters; provides details on SPICE, a circuit simulator package used to calculate electrical circuit behaviour.;Containing over 1000 helpful drawings, equations, and

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tables, this is a valuable reference for circuit design, electrical, and electronics engineers, and serves as an excellent text for upper-level undergraduate and graduate students in these disciplines. Integrated Power Electronic

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*Converters and Digital Control
Theory and Design*

A Circuit to System Handbook

*Power Management and Surge
Protection for Power Electronic
Systems*

*Handbook of Transformer Design
and Applications*

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Troubleshooting Switching Power Converters

Switched mode power supplies are now established as an industry standard method of providing power to many types of electronic equipment. This book provides thorough, up-to-date coverage of all aspects of

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switched mode power supply technology. Covers the full range of topics associated with the successful design and production of a switched mode power supply. -- Provides a sound, rigorous treatment of the theory, as well as practical applications, to allow the reader to

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achieve a suitable design and functionally satisfactory switched mode power supply. -- Considerably expanded since the first edition. The second edition includes coverage of electromagnetic compatibility, the main statutory regulations associated with switched mode power supply

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production, and validated simulation programs.

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

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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

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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

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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

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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

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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

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Factor Correction * High-Frequency
Power Sources for Fluorescent
Lamps, and Low-Input-Voltage
Regulators for Laptop Computers and
Portable Equipment

This second edition updates what has
become a standard reference on the
subject, and now includes a selection

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of highly useful computer solutions to many transformer circuit problems. Every chapter reflects the latest technology advances--and the section on inverter transformers is expanded to better address the increasingly important subject of power supplies. Less expensive, lighter, and smaller

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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

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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

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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 encompass the field. For modern and emerging

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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

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systems into applications from virtually every area of electrical engineering.

Switching Power Supply Design

Simplified Design of Switching Power Supplies

Grounds for Grounding

Modern DC-to-DC Switchmode Power

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Converter Circuits

Switchmode Power Supply Handbook,
Second Edition

This book serves as an
invaluable reference to
Power Electronics
Design, covering the

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application of high-
power semiconductor
technology to large
motor drives, power
supplies, power
conversion equipment,
electric utility

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auxiliaries and numerous other applications.

Design engineers, design drafters and technicians in the power electronics industry, as well as students studying power

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electronics in various contexts, will benefit from Keith Sueker's decades of experience in the industry. With this experience, the author has put the overall

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power electronics design process in the context of primary electronic components and the many associated components required for a system. The seeming complexity

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of power electronics design is made transparent with Keith Sueker's simple, direct language and a minimum reliance on mathematics. Readers will come away

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with a wealth of
practical design
information that has
hundreds of explanatory
diagrams to support it,
having also seen many
examples of potential

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pitfalls in the design process. * A down-to-earth approach, free of complex jargon and esoteric information. * Over 200 illustrations to clarify discussion

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points. * Examples of costly design goofs will provide invaluable cautionary advice.

Take the "black magic" out of switching power supplies with Practical

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Switching Power Supply Design! This is a comprehensive "hands-on" guide to the theory behind, and design of, PWM and resonant switching supplies.

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You'll find information on switching supply operation and selecting an appropriate topology for your application.

There's extensive coverage of buck, boost,

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flyback, push-pull, half
bridge, and full bridge
regulator circuits.

Special attention is
given to semiconductors
used in switching
supplies. RFI/EMI

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reduction, grounding, testing, and safety standards are also detailed. Numerous design examples and equations are given and discussed. Even if your

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primary expertise is in logic or microprocessor engineering, you'll be able to design a power supply that's right for your application with this essential guide and

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reference! Gives special attention to resonant switching power supplies, a state-of-the-art trend in switching power supply design Approaches switching

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power supplies in an organized way beginning with the advantages of switching supplies and thier basic operating principles Explores various configurations

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of pulse width modulated (PWM) switching supplies and gives readers ideas for the direction of their designs Especially useful for practicing design engineers whose

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primary specialty is not
in analog or power
engineering fields
Power Supplies for LED
Driving, Second Edition
explores the wide use of
light-emitting diodes

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due to their efficient use of power. The applications for power LEDs include traffic lights, street lamps, automotive lighting, architectural lights,

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theatre lighting,
household light
replacements, signage
lighting (replacing neon
strip lights and
fluorescent tubes), LCD
display backlighting,

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and many more. Powering (driving) these LED's is not always simple.

Linear driving is inefficient and generates far too much heat. With a switching

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supply, the main issues are EMI, efficiency, and of course cost. This book covers the design trade-offs involved in LED driving applications, from low-

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power, to UB-LEDs and beyond. Provides a practical, hands-on approach to power supply design for LED drivers
Contains detailed examples of what works

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throughout the design
process Presents
commentary on how the
calculated component
value compares with the
actual value used,
including a description

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of why the choice was
made

The intent of this
handbook is to aid in
the adoption of GaN power
transistors by examining
power solutions for data

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centers and telecommunication systems through hardware examples. This handbook examines the benefits of enhancement mode gallium nitride FETs (eGaN®)

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FETs) in power conversion applications with an inputvoltage range centered around 48 VDC with load voltage as low as 1 VDC.

Power Supply Cookbook

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Optimal Design of
Switching Power Supply
Switchmode Power Supply
Designer's Handbook
Power Electronics
Handbook
Switch-Mode Power

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Supplies, Second Edition
Switchmode Power Supply
Handbook 3/E

"The definitive guide to
switchmode power supply
design--fully updated
covering the latest

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developments and techniques, Switchmode Power Supply Handbook, third edition is a thorough revision of the industry-leading resource for power supply designers. New design methods required for powering small, high-

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performance electronic devices are presented. Based on the authors' decades of experience, the book is filled with real-world solutions and many nomograms, and features simplified theory and

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mathematical analysis. This comprehensive volume explains common requirements for direct operation from the AC line supply and discusses design, theory, and practice. Engineering requirements of switchmode

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systems and recommendations for active power factor correction are included.

This practical guide provides you with a working knowledge of the latest topologies along with step-by-step approaches to

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component decisions to achieve reliable and cost-effective power supply designs. Switchmode Power Supply Handbook, third edition covers: Functional requirements of direct off-line switchmode power

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supplies; Power components selection and transformer designs for converter circuits; Transformer, choke, and thermal design; Input filters, RFI control, snubber circuits, and auxiliary systems; Active

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power factor correction
system design; Worked
examples of would
components; Examples of
fully resonant and quasi-
resonant systems; A resonant
inverter fluorescent
ballast; An example of high-

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power phase shift modulated system; A new MOSFET resonant inverter drive scheme; A single-control, wide-range wave oscillator"--

Loop control is an essential area of electronics

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engineering that today's professionals need to master. Rather than delving into extensive theory, this practical book focuses on what you really need to know for compensating or stabilizing a given control

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system. You can turn instantly to practical sections with numerous design examples and ready-made formulas to help you with your projects in the field. You also find coverage of the

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underpinnings and principles of control loops so you can gain a more complete understanding of the material. This authoritative volume explains how to conduct analysis of control systems and provides

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extensive details on practical compensators. It helps you measure your system, showing how to verify if a prototype is stable and features enough design margin. Moreover, you learn how to secure high-

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volume production by bench-verified safety margins.

Due to the complexity of power systems combined with other factors such as increasing susceptibility of equipment, power quality (PQ) is apt to waver. With

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electricity in growing demand, low PQ is on the rise and becoming notoriously difficult to remedy. It is an issue that confronts professionals on a daily basis, but few have the required knowledge to

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diagnose and solve these problems. Handbook of Power Quality examines of the full panorama of PQ disturbances, with background theory and guidelines on measurement procedures and problem solving. It uses the

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perspectives of both power suppliers and electricity users, with contributions from experts in all aspects of PQ supplying a vital balance of scientific and practical information on the following: frequency

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variations; the characteristics of voltage, including dips, fluctuations and flicker; the continuity and reliability of electricity supply, its structure, appliances and equipment; the relationship

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of PQ with power systems, distributed generation, and the electricity market; the monitoring and cost of poor PQ; rational use of energy. An accompanying website hosts case studies for each chapter, demonstrating PQ

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practice; how problems are identified, analysed and resolved. The website also includes extensive appendices listing the current standards, mathematical formulas, and principles of electrical

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circuits that are critical for the optimization of solutions. This comprehensive handbook explains PQ methodology with a hands-on approach that makes it essential for all practising power systems

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engineers and researchers. It simultaneously acts as a reference for electrical engineers and technical managers who meet with power quality issues and would like to further their knowledge in this area.

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* Describes the operation of
each circuit in detail *

Examines a wide selection of
external components that
modify the IC package
characteristics * Provides
hands-on, essential
information for designing a

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switching power supply
Simplified Design of
Switching Power Supplies is
an all-inclusive, one-stop
guide to switching power-
supply design. Step-by-step
instructions and diagrams
render this book essential

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for the student and the experimenter, as well as the design professional.

Simplified Design of Switching Power Supplies concentrates on the use of IC regulators. All popular forms of switching supplies,

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including DC-DC converters, inverters, buck, boost, buck-boost, pulse frequency modulation, pulse width modulation, current-mode control and pulse skipping, are described in detail. The design examples may be put

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to immediate use or may be modified to meet a specific design goal. As an instructional text for those unfamiliar with switching supplies, or as a reference for those in need of a refresher, this unique book

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is essential for those involved in switching power-supply design.

Switching Power Supplies A to Z

Power Sources and Supplies:
World Class Designs
A Tutorial Guide

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The Power Electronics
Handbook

A Practitioner's Guide

Technology from the

Unitrode/Texas Instruments

Power Supply Design Seminars

Power Supply Cookbook,

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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

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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

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unique book allows the reader to design linear, switching, and quasi-resonant switching power supplies in an organized fashion. Formerly complicated design

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topics such as
magnetics, feedback loop
compensation design, and
EMI/RFI control are all
described in simple
language and design
steps. This book also

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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

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a practical, "start-to-finish" design reference. It is organized to allow both seasoned and inexperienced engineers to quickly find and

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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

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functions associated with power supplies, such as: switching power supply control, synchronization of the power supply to an external source, input

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low voltage inhibitors, loss of power signals, output voltage shut-down, major current loops, and paralleling filter capacitors. It also offers coverage of

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waveshaping techniques,
major loss reduction
techniques, snubbers,
and quasi-resonant
converters. Guides
engineers through a step-
by-step design framework

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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

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topics, making power supply design a much more accessible and enjoyable process

Newnes has worked with Marty Brown, a leader in the field of power

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design to select the very best design-specific material from the Newnes portfolio. Marty selected material for its timelessness, its relevance to current

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power supply design needs, and its real-world approach to design issues. Special attention is given to switching power supplies and their design issues,

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including component selection, minimization of EMI, toroid selection, and breadboarding of designs. Emphasis is also placed on design

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strategies for power supplies, including case histories and design examples. This is a book that belongs on the workbench of every power supply designer! *Marty

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Brown, author and power supply design consultant, has personally selected all content for its relevance and usefulness
*Covers best design

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practices for switching
power supplies and power
converters *Emphasis is
on pragmatic solutions
to commonly encountered
design problems and
tasks

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Power electronics, which is a rapidly growing area in terms of research and applications, uses modern electronics technology to convert

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electric power from one form to another, such as ac-dc, dc-dc, dc-ac, and ac-ac with a variable output magnitude and frequency. Power electronics has many

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applications in our every day life such as air-conditioners, electric cars, sub-way trains, motor drives, renewable energy sources and power supplies for

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computers. This book covers all aspects of switching devices, converter circuit topologies, control techniques, analytical methods and some

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examples of their
applications. * 25% new
content * Reorganized
and revised into 8
sections comprising 43
chapters * Coverage of
numerous applications,

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including
uninterruptable power
supplies and automotive
electrical systems * New
content in power
generation and
distribution, including

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solar power, fuel cells,
wind turbines, and
flexible transmission
Because of the demand
for higher efficiencies,
smaller output ripple,
and smaller converter

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size for modern power electronic systems, integrated power electronic converters could soon replace conventional switched-mode power supplies.

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Synthesized integrated converters and related digital control techniques address problems related to cost, space, flexibility, energy

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efficiency, and voltage regulation—the key factors in digital power management and implementation. Meeting the needs of professionals working in

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power electronics, as well as advanced engineering students, Integrated Power Electronic Converters and Digital Control explores the many

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benefits associated with integrated converters. This informative text details boost type, buck type, and buck-boost type integrated topologies, as well as

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other integrated structures. It discusses concepts behind their operation as well specific applications. Topics discussed include: Isolated DC-DC

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converters such as
flyback, forward, push-
pull, full-bridge, and
half-bridge Power factor
correction and its
application Definition
of the integrated

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switched-mode power
supplies Steady-state
analysis of the boost
integrated flyback
rectifier energy storage
converter Dynamic
analysis of the buck

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integrated forward
converter Digital
control based on the use
of digital signal
processors (DSPs) With
innovations in digital
control becoming ever

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more pervasive, system designers continue to introduce products that integrate digital power management and control integrated circuit solutions, both hybrid

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and pure digital. This detailed assessment of the latest advances in the field will help anyone working in power electronics and related industries stay ahead of

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the curve.

The Voltage Regulator
Handbook

Handbook of Switchmode
Power Supplies

DC Power Supplies

Switched Mode Power

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Supplies

Power Supplies for LED
Driving

Computer-Aided Analysis
and Design of Switch-
Mode Power Supplies

Power Supply design is all about detail. And

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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"

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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

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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

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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

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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

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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

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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

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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

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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.

Chapter 1: The Principles of Switching
Power Conversion Chapter 2: DC-DC

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Converter Design and Magnetics Chapter 3:
Off-line Converter Design and Magnetics
Chapter 4: The Topology FAQ Chapter 5:
Optimal Core Selection Chapter 6:
Component Ratings, Stresses, Reliability and
Life Chapter 7: Optimal Power Components
Selection Chapter 8: Conduction and
Switching Losses Chapter 9: Discovering

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New Topologies Chapter 10: Printed Circuit
Board Layout Chapter 11: Thermal
Management Chapter 12: Feedback Loop
Analysis and Stability Chapter 13:
Paralleling, Interleaving and Sharing
Chapter 14: The Front-End of AC-DC
Power Supplies Chapter 15: DM and CM
Noise in Switching Power Supplies Chapter

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16: Fixing EMI across the Board Chapter 17:
Input Capacitor and Stability Chapter 18:
The Math behind the Electromagnetic
Puzzle Chapter 19: Solved Examples
Appendix A.

Unarguably the leading hands-on guide in
this rapidly expanding area of electronics,
Keith Billings' new revision of his

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Switchmode Power Supply Handbook brings state-of-the-art techniques and developments to engineers at all levels. Offering sound working knowledge of the latest in topologies and clear, step-by-step approaches to component decisions, this Handbook gives power supply designers practical, solutions-oriented design

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guidance free of unnecessarily complicated mathematical derivations and theory. This thoroughly updated Handbook features many new fully worked examples, as well as numerous nomograms--everything you need to design today's smaller, faster, and cooler systems. Turn to just about any page, and you'll find cutting-edge design expertise

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on electronic ballast, power factor correction, new thermal management techniques, transformers, chokes, input filters, EMI control, converters, snubber circuits, auxiliary systems, and much more. The most comprehensive book on power supply design available anywhere, Switchmode Power Supply Handbook is the

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have relevance for contemporary applications including mobile phone chargers, laptops and PCs • Based on the authors' successful "Switching Power Optimized Design 2nd Edition" (in Chinese) • Highly illustrated with design examples of real world applications
Devices, Circuits and Applications

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Designing Control Loops for Linear and
Switching Power Supplies

Handbook of Energy Harvesting Power
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Supplement to GaN Transistors for Efficient
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Power Electronics Design Handbook covers the basics of power electronics theory and components while emphasizing modern low-power components and applications. Coverage includes power semiconductors,

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and power ICs. One of the unique
features of the Power Electronics
Design Handbook is the
integration of component and
system theory with practical**

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applications, particularly energy-saving low-power applications. Many chapters also include a section that looks forward to future developments in that area. References for further information or more in-depth

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technical reading are also included. Nihal Kularatna is a principal research engineer with the Arthur C. Clarke Foundation in Sri Lanka. He is also the author of Modern Electronic Test and Measuring Instruments,

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**and the QR flyback OTA-based
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discontinuous/continuous
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model of a QR flyback converter
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Electronic content—design
templates and examples
available online Switch-Mode
Power Supplies: SPICE
Simulations and Practical
Designs, Second Edition, covers:**

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Small-signal modeling *
Feedback and control loops *
**Basic blocks and generic
switched models *** **Nonisolated
converters *** **Off-line converters ***
Flyback converters * **Forward
converters *** **Power factor**

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correction

This comprehensive book focuses on DC–DC switching power supply circuits, which are receiving attention as a key technology in green IT, especially in the automotive and

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consumer electronics industries. It covers buck converters, isolated converters, PFC converters, their modeling and analysis, several control methods, passive components, and their several recent

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applications (on-chip power supplies, DC–DC and AC–DC converter applications, single-inductor multi-output DC–DC converters, energy harvest applications, wireless power delivery, charge pump circuits,

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and power amplifiers). The contents are well balanced as the authors are from both academia and industry and include pioneers and inventors of hysteretic PWM control. The definitive guide to

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switchmode power supply design--fully updated Covering the latest developments and techniques, Switchmode Power Supply Handbook, third edition is a thorough revision of the industry-leading resource for

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solutions and many nomograms, and features simplified theory and mathematical analysis. This comprehensive volume explains common requirements for direct operation from the AC line supply and discusses design,

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theory, and practice. Engineering requirements of switchmode systems and recommendations for active power factor correction are included. This practical guide provides you with a working knowledge of the latest

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topologies along with step-by-step approaches to component decisions to achieve reliable and cost-effective power supply designs. Switchmode Power Supply Handbook, third edition covers: Functional requirements

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**of direct off-line switchmode
power supplies Power
components selection and
transformer designs for
converter circuits Transformer,
choke, and thermal design Input
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Active power factor correction
system design Worked examples
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of fully resonant and quasi-
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