Design Of Transformer And Power Stage Of Push Pull Inverter

Power Transformers
Inductors and Transformers for Power ElectronicsTransformer and Inductor Design Handbook

Transformers and Magnetics Design
High-Frequency Choke Design
Optimum Drive Switching Power Supply: Fundamental Switching Regulators

Push-Pull and Forward Converter Topologies
Half- and Full-Bridge Converter Topologies
Flyback Converter Topologies

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
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 data necessary to design power transformers on a gradient scale from 60 Hz
to develop high-performance designs quickly and easily by employing optimization criteria. This book is a design manual, a how-to-build-it manual, and a survey of some common
Transformer Book
Power and Distribution Transformers
Transformers
Fundamentals of Electrical Design - Module 4 - Understanding Transformers Power Distribution and Utilization
Design Aspects of Power Transformers

Transformer and Inductor Design Handbook, Third Edition
In many university curricula, the power electronics field has evolved beyond the status of comprising one or two special-topics courses. Often there are several courses dealing with the power electronics field, covering the topics of converters, motor drives, and power devices, with possibly additional advanced courses in these areas as well. There may also be more traditional power-area courses in energy conversion, machines, and power systems. In the breadth vs. depth tradeoff, it no longer makes sense for one textbook to cover all of these courses; indeed, each course should ideally employ a dedicated textbook. This text is intended for use in introductory power electronics courses on converters, taught at the senior or first-year graduate level. There is sufficient material for a one-year course or, at a faster pace with some material omitted, for two quarters or one semester. The first class on converters has been called a way of enticing control and electronics students into the power area via the 
back door”. The power electronics field is quite broad, and includes fundamentals in the areas of: Converter circuits and electronics | Control systems | Magnetics | Power applications | Design-oriented analysis This wide variety of areas is one of the things which makes the field so interesting and appealing to newcomers. This breadth also makes teaching the field a challenging undertaking, because one cannot assume that all students enrolled in the class have solid prerequisite knowledge in so many areas.

Transformer Design Principles With Applications
In the newest edition, the reader will learn the basics of transformer design, starting from fundamental principles and ending with advanced model simulations. The electrical, mechanical, and thermal considerations that go into the design of a transformer are discussed with useful design formulas, which are used to design the transformer that will operate without overheating and survive various stressful events, such as a lightning strike or a short circuit event. This new edition includes a section on how to correct the linear impedance boundary method for non-linear materials and a simpler method to calculate temperatures and flows in windings with directed flow cooling, using graph theory. It also includes a chapter on optimization with practical suggestions on achieving the lowest cost design with constraints.

Modern Power Transformer Practice
Although they are some of the main components in the design of power electronic converters, the design of inductors and transformers is often still a trial-and-error process due to a long working-time for these components. Inductors and Transformers for Power Electronics takes the guesswork out of the design and testing of these systems and provides a broad overview of all aspects of design. Inductors and Transformers for Power Electronics uses classical methods and numerical tools such as the finite element method to provide an overview of the basics and technological aspects of design. The authors present a fast approximation method useful in the early design as well as the Fourier analysis and eddy currents, induced thermal design, parasitic effects, and measurements. The text contains suggestions for improving designs in specific cases, models of thermal behavior with various levels of complexity, and several loss and thermal measurement techniques. This book offers a single reference a concise representation of the large body of literature on the subject and supplies tools that designers desperately need to improve the accuracy and performance of their designs by eliminating trial-and-error.

Transformer and Inductor Design Handbook
Power Electronics Design Magnetic Components and Applications is intended primarily for the circuit designer and the power processing systems designer who have found that in order to be more effective they must learn not only to use, but to design their own magnetic components. It will also be useful to the transformer engineer, by showing how to develop high-performance designs quickly and easily by employing optimization criteria. This book is a design manual, a how-to-build-it manual, and a survey of some common

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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

Transformer Engineering

Fundamentals of Power Electronics Currently, the installed capacity of power generation in India is 104,917 MW and by 2012 another 100,000 MW will be added. With this addition, the requirement of power and distribution transformers will grow enormously, as will the emphasis on quality and performance. The design of a transformer is critical to its quality as are men, machines and materials. This book is a hands-on guide covering design, process control of manufacturing technique, installation, erection, commissioning and maintenance of distribution transformers. It also covers failure analysis and remedial measures for increasing the longevity of transformers. Apart from explaining the design aspect of transformers, the book lists the requirements of ISO 9000 in the process of manufacturing technique up to the final stages of product testing, inspection and despatch.

Transformers for Tube Amplifiers: How to Design, Construct & Use Power, Output & Interstage Transformers and Chokes in Audiophile and Guitar Tube Amp Updating and reorganizing the valuable information in the first edition to enhance logical development, Transformer Design Principles: With Applications to Core-Form Power Transformers, Second Edition remains focused on the basic physical concepts behind transformer design and operation. Starting with first principles, this book develops the reader's understanding of the rationale behind design practices by illustrating how basic formulae and modeling procedures are derived and used. Simplifies presentation and emphasizes fundamentals, making it easy to apply presented results to your own designs. The models, formulae, and methods illustrated in this book cover the crucial electrical, mechanical, and thermal aspects that must be satisfied in transformer design. The text also provides detailed mathematical techniques that enable users to implement these models on a computer. The authors take advantage of the increased availability of electromagnetic 2D and 3D finite element programs, using them to make calculations, especially in conjunction with the impedance boundary method for dealing with eddy current losses in high-permeability materials such as tank walls. Includes new or updated material on: Multi terminal transformers Phasors and three-phase connections Impulse generators and air core reactors Methodology for voltage breakdown in oil Zig-zag transformers Winding capacitances Impulse voltage distributions Temperature distributions in the windings and oil Fault type and fault current analyses Although the book's focus is on power transformers, the transformer circuit models presented can be used in electrical circuits, including large power grids. In addition to the standard transformer types, the book explores multi-terminal transformer models, which allow complicated winding interconnections and are often used in phase shifting and rectifying applications. With its versatile coverage of transformers, this book can be used by practicing design and utility engineers, students, and anyone else who requires knowledge of design and operational characteristics.

Transformer and Inductor Design Handbook

Transformer Engineering This book is based on the author's 50+ years experience in the power and distribution transformer industry. The first few chapters of the book provide a step-by-step procedure of transformer design. Engineers without prior knowledge or exposure to design can follow the procedures and calculation methods to acquire reasonable profitability necessary to designing a transformer. Although the transformer is a mature product, engineers working in the industry need to understand its fundamentals and design to engineer it to offer products to meet the changing demands of the power system and the customer. This book can function as a useful guide for practicing engineers to undertake new designs, cost optimization, design automation etc., without the need for external help or consultancy. The book extensively covers the design processes with necessary data and calculations from a wide variety of transformers, including dry-type cast resin transformers, amorphous core transformers, earthing transformers, rectifier transformers, auto transformers, transformers for explosive atmospheres, and solid-state transformers. The other subjects covered include, carbon footprint calculation of transformers, condition monitoring of transformers and design optimization techniques. In addition to being useful for the transformer industry, this book can serve as a reference for power utility engineers, consultants, research scholars, and teaching faculty at universities.

Transformers

Power Magnetic Devices Presents a multi-objective design approach to the many powermagnetic devices in use today Power Magnetic Devices: A Multi-Objective Design Approachaddresses the design of power magnetic devices including inductors, transformers, electromagnets, and rotating electric machinery using a structured design approach based on formal single- and multi-objective optimization. The book opens with a discussion of evolutionary-computing-basedoptimization. Magnetic analysis techniques useful to the design of ferrofluids can be found in the book. Thissubject is then used for inductor design so readers can start the design process. Core loss is nextconsidered; this material is useful support transformer design. A chapter on force and torque produces and feeds into another chapter on electromagnet design. This informal overview by chapters on rotating machinery and the design of apertures and AC machine. Finally, enhancements to the design process include thermal analysis and AC conductor losses due to skin and proximity effects are set forth. Power Magnetic Devices: Focuses on the design process as it relates to power magnetic devices such as inductors, transformers, electromagnets, and rotating machinery. Offers a structured design approach based on single- and multi-objective optimization. Helps experienced designers take advantage of new techniques which can yield superior designs with less engineering time. Provides numerous case studies throughout the book to facilitate readers' comprehension of the design and analysis process Includes Powerpoint-slide-based student and instructor lecture notes and MATLAB-based examples, toolboxes, and design codes. Designed to support the educational needs of students, Power Magnetic Devices: A Multi-Objective Design Approach also serves as a valuable reference tool for practicing engineers and designers. MATLAB examples are available via the book's website.

Practical Oscillator Handbook This book is a printed edition of the Special Issue "Power Transformer Diagnostics, Monitoring and Design Features" that was published in Energies

Practical Transformer Design Handbook Written for engineers and students of electrical engineering, the J & P Transformer Book has been in publication since 1925. This 12th edition covers all aspects of designing, installing & maintaining all types of power transformers. Computer-Aided Analysis and Design of Switch-Mode Power Supplies Extensively revised and expanded to present the state-of-the-art in the field of magnetic design, this third edition covers all aspects of designing, installing & maintaining all types of power transformers. Computer-Aided Analysis and Design of Switch-Mode Power Supplies Extensively revised and expanded to present the state-of-the-art in the field of magnetic design, this third edition presents a practical approach to transformer and inductor design and covers extensively essential topics such as the area product, Ap, and core geometry, Kg. The book provides complete information on magnetic materials and core characteristics using step-by-step design examples and presents all the key components for the design of lightweight, high-frequency aerospace transformers or low-frequency commercial transformers. Written by a specialist with more than 47 years of experience in the field, this volume covers magnetic design theory with all of the relevant formulas.

Switched-mode Power Supply Transformer Design Nomograms, Philips' Gloeilampenfabrieken, Electronic Components and Materials Division Based on the fundamentals of electromagnetics, this clear and concise textbook explains basic and applied principles of transformer and inductor design for power electronic applications. It details both the theory and practice of inductors and transformers employed to filter currents, store electromagnetic energy, provide physical isolation between circuits, and perform stepping up and down of DC and AC voltages. The authors present a broad range of applications from modern power conversion systems. They provide thorough design guidelines based on a robust methodology for inductor and transformer design. They offer real design examples, informed by proven and working field examples. Key features include: emphasis on high frequency design, including optimisation of the winding layout and treatment of non-sinusoidal waveforms a chapter on planar magnetic with analytical models and descriptions of the processing technologies analysis of the role of variable inductors, and their applications for power factor correction and solar power unique coverage on the measurements of inductance and transformer capacitance, as well as tests for core losses at high frequency worked examples in MATLAB, end-of-chapter problems, and an accompanying website containing solutions, a full set of instructors' presentations, and copies of all the figures. Covering the basics of the magnetic components of power electronic converters, this book is a comprehensive reference for students and professional engineers dealing with specialised inductor and transformer design. It is especially useful for senior undergraduate and graduate students in electrical engineering and electrical systems, and engineers working with power supplies and energy conversion systems who want to update their knowledge on a field that has progressed considerably in recent years.

Magnetic Components for Power Electronics Energy Production Systems Engineering presents IEEE, Electrical Apparatus Service Association (EASA), and International Electrotechnical Commission (IEC) standards for modern electric utility electric generation stations. Includes fundamental composition reaction equations.

Where To Download Design Of Transformer And Power Stage Of Push Pull Inverter
Power Transformer Design Practices Take any book of transformer design and you will see an abstract design, no book offers a complete solution for the aspiring designers so that they can gain insight into the practical formulas of transformer design. So this was the incentive that gave us the passion to dig deep into the design of power transformers. That was the very reason why we were designing power transformers. What is the most important part of a transformer? What is the core? What is the winding? How do we select the winding? How do we select the core diameter? How we select the type of winding? How do we calculate the losses? All these questions were in our mind when we started this project. This thesis will help any designer aspiring to take an insight to the design world.

Design of Transformers: Preface I have had many 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 Chapters. There are now twenty-six Chapters. The new Chapters are auto-transformer design, common-mode inductor design, series saturable reactor design, self-saturating magnetic amplifier 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 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 from the user's viewpoint in mind. The material in this book is organized so that the design engineer or student or technician, starting through the end of the book, will have a comprehensive knowledge of the physical, structural, electromagnetic and operating aspects of transformer and inductor design. The more experienced engineers and system engineers will find this book a useful tool when designing or evaluating 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 commercial transformers. It is, therefore, a design manual.

Energy Production Systems Engineering Oscillators have traditionally been described in books for specialist needs and as such have suffered from being inaccessible to the practitioner. This book takes a practical approach and provides much-needed insights into the design of oscillators, the servicing of systems heavily dependent upon them and the tailoring of practical oscillators to specific demands. To this end maths and formulae are kept to a minimum and only used where appropriate to an understanding of the theory. Once grasped, the theory of the general oscillator is easily put into practical use in the designing of oscillators. The final two chapters present a collection of oscillators from which the practising engineer or the hobbyist can obtain useful guidance for many kinds of projects. Irving Gottlieb is a leading author of many books for practising engineers, technicians and students of electronic and electrical engineering. First Newnes title by this best-selling author Clarity and crispness in an often obscure field.

Switching Power Supply Design, 3rd Ed. The book presents basic theories of transformer operation, design principles and methods used in power transformer designing work, and includes limitation criteria, effective utilization of material, and calculation examples to enhance readers' techniques of transformer design and testing. It includes: Core and winding commonly used, and their performances Insulation structures and materials, methods for improvements on dielectric strengths on partial discharge, breakdown, and electrical creepage Losses and impedance calculations, major influential factors, and methods to minimize load loss Cooling design and the method to obtain effective cooling Short-circuit forces calculations, the ways to reduce the short-circuit forces, and measures to raise withstand abilities No-load and load-sound levels, the influential factors and trends In-depth discussions and transformer special features, its stabilizing winding function, and its adequate size Tests and diagnostics The ways to optimize design are also discussed throughout the book as a goal to achieve best performances on economic design. The book contains great reference material for engineers, students, teachers, researchers and anyone in the field associated with power transformer design, manufacture, testing, application and service maintenance. It also provides a high level of detail to help future research and development maintain electrical power as a reliable and economical energy resource.

High-Frequency Magnetic Components The only practical transformer design & construction manual in English language, 40+ designs (winding diagrams) of power, output & interface transformers, filtering, grid & anode chokes. Covers physical fundamentals of magnetic circuits & transformers and makes design easy by using simple rules-of-thumb formulas to keep calculations to a minimum.

Transformers and Inductors for Power Electronics This book serves as an invaluable reference to Power Electronics Design, covering the application of high-power semiconductor technology to large motor drives, power supplies, power conversion equipment, electric utility auxiliaries and numerous other applications. Design engineers, design drafters and technicians in the power electronics industry, as well as students studying power 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 power electronics design process in the context of primary electronic components and the many associated components required for a system. The seeming complexity of power electronics design is made transparent with Keith Sueker's simple, direct language and a minimum reliance on mathematics. Readers will come away with a wealth of practical design information that has hundreds of explanatory diagrams to support it, having also seen many examples of potential pitfalls in the design process. * A down-to-earth approach, free of complex jargon and esoteric information. * Over 200 illustrations to clarify discussion points. * Examples of costly design goofs will provide invaluable cautionary advice.

Magnetic Components Due to a huge concentration of electromagnetic fields and eddy currents, large power equipment and systems are prone to crushing forces, overheating, and overload. Luckily, power failures due to disturbances like these can be predicted and/or prevented. Based on the success of internationally acclaimed computer programs, such as the authors' own NRMN-3D, Engineering Electromagnetics: Electric Machine, Transformer, and Power Equipment Design explains how to implement industry-proven modeling and design techniques to solve complex electromagnetic phenomena. Considering recent progress in magnetic and superconductive materials as well as modern methods of numerical methods, this text joins this new wave of theory and practice, this comprehensive book examines aspects of transformer engineering, from design to diagnosis. It thoroughly explains electromagnetic fields and the finite element method to help you solve practical problems related to transformers. Coverage includes important design challenges, such as eddy and stray loss evaluation and control, transient response, short-circuit withstand and strength, insulation design. The authors also go for pointers further for researchers. Students and engineers starting their careers will appreciate the sample design of a typical power transformer. Presenting in-depth explanations, modern computational techniques, and proven techniques, this is a valuable reference for anyone working in the transformer industry, as well as for students and researchers. It offers guidance in optimizing and enhancing transformer design, manufacturing, and condition monitoring to meet the challenges of a highly competitive market.

Practical Transformer Design With its approach to design, Transformer and Inductor Design Handbook, Fourth Edition distinguishes itself from other books by presenting information and guidance that is shaped primarily by the user's needs and point of view. Expanded and revised to address recent industry developments, the fourth edition of this classic reference is re-organized and improved, again serving as a constant aid for anyone seeking to apply the state of the art in transformer and inductor design. Carefully
considering key factors such as overall system weight, power conversion efficiency, and cost, the author introduces his own new equation for the power handling ability of the core, intended to give engineers faster and tighter design control. The book begins by providing the basic fundamentals of magnetics, followed by an explanation of design using the Kg or Ap techniques. It also covers subjects such as laminations, tape cores, powder cores and ferrites, and iron alloys. In addition, new topics include: Autotransformer design Common-mode inductor design Series saturable reactor design Self-saturating magnetic amplifier Designing inductors for a given resistance With the goal of making inductors that are lighter and smaller but still meet requirements, this book helps users avoid many antiquated rules of thumb, to achieve a better, more economical design. Presenting transformer design examples with step-by-step directions and numerous tables and graphics for comparison, it remains a trusted guide for the engineers, technicians, and other professionals who design and evaluate transformers and inductors. It also serves as an ideal primer for students, illustrating the field for them from the ground up.

Transformer Design Principles This book will present some aspects of the design of large power transformers. It has been written at an introductory level, which should suit first or second year students, who are studying power engineering. It will also supplement the training of young graduates who intend to specialize in transformer engineering. The content has been restricted in order to keep the costs down and students who wish to extend their knowledge can refer to other more complete and detailed transformer books of which there are many. I have made use of sketches and illustrations in order to give some visualization of the design parameters. I have also inserted some photographs showing large transformers, to give an indication of the size of these units. The transformers shown were manufactured in Peebles Power Transformers in Edinburgh, which unfortunately was destroyed by a major fire in 1999. I would like to thank the management for their permission to use these photographs, and the staff and workforce who built these excellent units.

Switching Power Supply Design This book is the collective effort of eminent experts from Bharat Heavy Electricals Limited (BHEL), a leading transformer manufacturer in India. An editorial committee perused the complete material, to integrate it into a homogenous book and to ensure complete continuity between the chapters. A list of authors and members of the editorial committee is included in the book.

Spotlight on Modern Transformer Design Transformer Design Principles presents the theory of transformer operation and the methods and techniques of designing them. It emphasizes the physical principles and mathematical tools for simulating transformer behavior, including modern computer techniques. The scope of the book includes types of construction, circuit analysis, mechanical aspect

Transformer Engineering

The J & P Transformer Book Spotlight on Modern Transformer Design introduces a novel approach to transformer design using artificial intelligence (AI) techniques in combination with finite element method (FEM). Today, AI is widely used for modeling nonlinear and large-scale systems, especially when explicit mathematical models are difficult to obtain or completely lacking. Moreover, AI is computationally efficient in solving hard optimization problems. Many numerical examples throughout the book illustrate the application of the techniques discussed to a variety of real-life transformer design problems, including: Problems relating to the prediction of no-load losses; Winding material selection; Transformer design optimisation; and transformer selection. Spotlight on Modern Transformer Design is a valuable learning tool for advanced undergraduate and graduate students, as well as researchers and power engineering professionals working in electric utilities and industries, public authorities, and design offices.

Power and Distribution Transformers This reference illustrates the interaction and operation of transformer and system components and spans more than two decades of technological advancement to provide an updated perspective on the increasing demands and requirements of the modern transformer industry. Guiding engineers through everyday design challenges and difficulties such as stray loss estimation and control, prediction of winding hot spots, and calculation of various stress levels and performance figures, the book propagates the use of advanced computational tools for the optimization and quality enhancement of power system transformers and encompasses every key aspect of transformer function, design, and engineering. Transformers Complete with equations, illustrations, and tables, this book covers the basic theory of electric power transformers, its application to transformer designs, and their application in utility and industrial power systems. The author presents the principles of the two-winding transformer and its connection to polyphase systems, the origins of transformer losses, autotransformers, and three-winding transformers and compares different types of transformer coil and coil construction. He describes the effects of short circuits on transformers, the design and maintenance of ancillary equipment, and preventative and predictive maintenance practices for extending transformer life.

Fundamentals of Electrical Design - Module 4 - Understanding Transformers Power Distribution and Utilization Transformer Engineering: Design, Technology, and Diagnostics, Second Edition helps you design better transformers, apply advanced numerical field computations more effectively, and tackle operational and maintenance issues. Building on the bestselling Transformer Engineering: Design and Practice, this greatly expanded second edition also emphasizes diagnostic aspects and transformer-system interactions. What's New in This Edition Three new chapters on electromagnetic fields in transformers, transformer-system interactions and modeling, and monitoring and diagnostics An extensively revised chapter on recent trends in transformer technology An extensively updated chapter on short-circuit strength, including failure mechanisms and safety factors A step-by-step procedure for designing a transformer Updates throughout, reflecting advances in the field A blend of theory and practice, this comprehensive book examines aspects of transformer engineering, from design to diagnostics. It thoroughly explains electromagnetic fields and the finite element method to help you solve practical problems related to transformers. Coverage includes important design challenges, such as eddy and stray loss evaluation and control, transient response, short-circuit withstand and strength, and insulation design. The authors also give pointers for further research. Students and engineers starting their careers will appreciate the sample design of a typical power transformer. Presenting in-depth explanations, modern computational techniques, and emerging trends, this is a valuable reference for those working in the transformer industry, as well as for students and researchers. It offers guidance in optimizing and enhancing transformer design, manufacturing, and condition monitoring to meet the challenges of a highly competitive market.

Design Aspects of Power Transformers Using this book as a guide, Pressman promises, even a novice can immediately 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 new technology, including circuit and transformer design, using higher switching frequencies, new topologies, and integrated PWM chips. For this latest edition, Pressman has added in-depth discussion of power factor correction, high-frequency ballasts for fluorescent lamps, and low-input voltage power supplies for laptop computers.

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