1. Record Nr. UNINA9910139033803321

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Titolo	Power electronics and energy conversion systems [[electronic resource]] . Volume 1 Fundamentals and hard-switching converters / / Adrian Ioinovici
Pubbl/distr/stampa	Chichester, West Sussex ; ; Hoboken, : John Wiley & Sons, 2012
ISBN	1-118-44335-7 1-118-44304-7 1-299-44944-1 1-118-44336-5
Descrizione fisica	1 online resource (869 p.)
Disciplina	621.31/7
Soggetti	Power electronics Electric current converters Electric circuits Switching circuits
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Power Electronics and Energy Conversion Systems; Contents; Preface; 1 Introduction; 1.1 Why Energy Conversion Electronics Circuits?; 1.1.1 Applications in the Information and Telecommunication Industry; 1.1.2 Applications in Renewable Energy Conversion; 1.1.3 Future Energy Conversion - Fuel Cells; 1.1.4 Electric Vehicles; 1.1.5 Applications in Electronic Display Devices; 1.1.6 Audio Amplifiers; 1.1.7 Applications in Portable Electronic Devices; 1.1.8 Applications in High Voltage Physics Experiments and Atomic Accelerators; 1.1.9 Lighting Technology; 1.1.10 Aerospace Applications 1.1.11 Power System Conditioning 1.1.12 Energy Recycling in Manufacturing Industry; 1.1.13 Applications in Space Exploration; 1.1.14 Defense Applications; 1.1.15 Drives and High-Power Industrial Applications; 1.1.16 Classification of Power Electronic Circuits; 1.2 Basic Principles of Operation of a Power Electronics Circuit; 1.3 Basic Components of the Power Circuit: Power Semiconductor Switches and Passive Reactive Elements; 1.3.1 Uncontrollable Switches - Power

Diodes; 1.3.2 Semicontrollable Switches (Thyristors); 1.3.3 Controllable Switches; 1.3.3.1 Bipolar Junction Transistor (BJT)
1.3.3.2 Power Metal Oxide Semiconductor Field-Effect Transistor (MOSFET)1.3.3.3 Insulated Gate Bipolar Transistor (IGBT); 1.3.4 Gallium Nitride (GaN) Switch Technology; 1.3.5 Energy Losses Associated with Power Switches; 1.3.5.1 Switching Losses; 1.3.5.2 Off-State Leakage Power Loss; 1.3.5.3 Conduction Power Loss; 1.3.5.4 Gate Drive Power Loss; 1.3.5.5 Heat Sinks; 1.3.5.6 Outline for Choosing a Transistor; 1.3.6 Passive Reactive Elements; 1.3.6.1 Capacitors; 1.3.6.2 Inductors, Transformers, Coupled Inductors; 1.3.7 Ultracapacitors
1.4 Basic Steady-State Analysis of Duty Cycle Controlled Converters with Constant Switching Frequency 1.4.1 Input-to-Output Voltage Ratio for Basic DC-DC Converters; 1.4.2 Continuous and Discontinuous Conduction Operation Modes; 1.4.3 Design of the Elements of the Basic Converters; 1.4.4 Controller for Duty Cycle Control (PWM); 1.4.5 Conversion Efficiency, Hard-switching and Soft-switching; 1.5 Introduction to Switched-Capacitor (SC) Converters; 1.6 Frequency-Controlled Converters; 1.6.1 Resonant Converters; 1.6.2 Quasi-Resonant Converters (QRC)
1.7 Overview on AC-DC Rectifiers and DC-AC Inverters 1.7.1 Rectifiers; 1.7.2 Inverters; 1.8 Case Studies; 1.8.1 Case Study 1; 1.8.2 Case Study 2; 1.8.3 Case Study 3; 1.9 Highlights of the Chapter; Problems; Bibliography; 2 Modeling DC-DC Converters; 2.1 What is the Purpose of Modeling the Power Stage?; 2.2 Average State-Space Equations, Small-Ripple Approximation (Time-Linearization); 2.3 DC Voltage Gain and AC Small-Signal Open-Loop Transfer Functions Based on Average State-Space Equations for Converters Operating in Continuous Conduction Mode
2.3.1 DC Voltage Gain and AC Open-Loop Line-to-Load Voltage Transfer Function

Sommario/riassunto

Power Electronics and Energy Conversion Systems is a definitive five-volume reference spanning classical theory through practical applications and consolidating the latest advancements in energy conversion technology. Comprehensive yet highly accessible, each volume is organised in a basic-to-sophisticated crescendo, providing a single-source reference for undergraduate and graduate students, researchers and designers.Volume 1 Fundamentals and Hard-switching Converters introduces the key challenges in power electronics from basic components to operation principles and

2. Record Nr. UNINA9910403762103321

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Titolo	Additive Manufacturing Processes / / by Sanjay Kumar
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2020
ISBN	3-030-45089-9
Edizione	[1st ed. 2020.]
Descrizione fisica	1 online resource (212 pages)
Disciplina	621.988
Soggetti	Engineering—Materials Materials science Electronic circuits Materials Engineering Characterization and Evaluation of Materials Circuits and Systems
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction -- Powder-based Process -- Photo-polymer-based process -- Liquid Jetting technique -- Material extrusion process -- Blown Powder technique -- Sheet material based process -- Other additive manufacturing process.
Sommario/riassunto	This book provides a single-source reference to additive manufacturing, accessible to anyone with a basic background in engineering and materials science. Unlike other books on additive manufacturing that include coverages of things such as machine architecture, applications, business and present market conditions, this book focuses on providing comprehensive coverage of currently available additive manufacturing processes. All processes are explained with the help of various, original diagrams, useful for beginners and advanced researchers alike. Provides comprehensive coverages of all current processes available in additive manufacturing; Explains processes with the help of various original diagrams; Explains future process development at the last chapter, providing research outlook; Includes extensive references at the end of each chapter for further reading of original research.