

1. Record Nr.	UNINA9910459072303321
Titolo	Power electronics handbook [[electronic resource]] : devices, circuits, and applications / / edited by Muhammad H. Rashid
Pubbl/distr/stampa	Amsterdam ; ; Boston, : Elsevier/BH, c2011
ISBN	1-282-95503-9 9786612955037 0-12-382037-5
Edizione	[3rd ed.]
Descrizione fisica	1 online resource (1409 p.)
Altri autori (Persone)	RashidM. H
Disciplina	621.31/7
Soggetti	Power electronics Electronics Electronic books.
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	Front Cover; Power Electronics Handbook; Copyright; Dedication; Table of Contents; Preface for Third Edition; Chapter 1. Introduction; 1.1. Power Electronics Defined; 1.2. Key Characteristics; 1.3. Trends in Power Supplies; 1.4. Conversion Examples; 1.5. Tools for Analysis and Design; 1.6. Sample Applications; 1.7. Summary; References; Section I: Power Electronics Devices; Chapter 2. The Power Diode; 2.1. Diode as a Switch; 2.2. Properties of PN Junction; 2.3. Common Diode Types; 2.4. Typical Diode Ratings; 2.5. Snubber Circuits for Diode; 2.6. Series and Parallel Connection of Power Diodes 2.7. Typical Applications of Diodes 2.8. Standard Datasheet for Diode Selection; References; Chapter 3. Power Bipolar Transistors; 3.1. Introduction; 3.2. Basic Structure and Operation; 3.3. Static Characteristics; 3.4. Dynamic Switching Characteristics; 3.5. Transistor Base Drive Applications; 3.6. SPICE Simulation of Bipolar Junction Transistors; 3.7. BJT Applications; Further Reading; Chapter 4. The Power MOSFET; 4.1. Introduction; 4.2. Switching in Power Electronic Circuits; 4.3. General Switching Characteristics; 4.4. The Power MOSFET; 4.5. Future Trends in Power Devices; References Chapter 5. Insulated Gate Bipolar Transistor 5.1. Introduction; 5.2.

Basic Structure and Operation; 5.3. Static Characteristics; 5.4. Dynamic Switching Characteristics; 5.5. IGBT Performance Parameters; 5.6. Gate Drive Requirements; 5.7. Circuit Models; 5.8. Applications; Further Reading; Chapter 6. Thyristors; 6.1. Introduction; 6.2. Basic Structure and Operation; 6.3. Static Characteristics; 6.4. Dynamic Switching Characteristics; 6.5. Thyristor Parameters; 6.6. Types of Thyristors; 6.7. Gate Drive Requirements; 6.8. PSpice Model; 6.9. Applications; Further Reading
Chapter 7. Gate Turn-off Thyristors 7.1. Introduction; 7.2. Basic Structure and Operation; 7.3. GTO Thyristor Models; 7.4. Static Characteristics; 7.5. Switching Phases; 7.6. SPICE GTO Model; 7.7. Applications; References; Chapter 8. MOS Controlled Thyristors (MCTs); 8.1. Introduction; 8.2. Equivalent Circuit and Switching Characteristics; 8.3. Comparison of MCT and Other Power Devices; 8.4. Gate Drive for MCTs; 8.5. Protection of MCTs; 8.6. Simulation Model of an MCT; 8.7. Generation-1 and Generation-2 MCTs; 8.8. N-channel MCT; 8.9. Base Resistance-controlled Thyristor
8.10. MOS Turn-off Thyristor 8.11. Applications of PMCT; 8.12. Conclusions; 8.13. Appendix; References; Chapter 9. Static Induction Devices; 9.1. Introduction; 9.2. Theory of Static Induction Devices; 9.3. Characteristics of Static Induction Transistor; 9.4. Bipolar Mode Operation of SI devices (BSIT); 9.5. CMT Conductivity Modulation Transistor; 9.6. Static Induction Diode; 9.7. Lateral Punch-Through Transistor; 9.8. Static Induction Transistor Logic; 9.9. BJT Saturation Protected by SIT; 9.10. Static Induction MOS Transistor; 9.11. Space Charge Limiting Load (SCLL)
9.12. Power MOS Transistors

Sommario/riassunto

Power electronics, which is a rapidly growing area in terms of research and applications, uses modern electronics technology to convert 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. It has many applications in our every day life such as air-conditioners, electric cars, sub-way trains, motor drives, renewable energy sources and power supplies for computers. This book covers all aspects of switching devices, converter circuit topologies, control techniques, analytical methods and some examples of their applicati
