1. Record Nr. UNINA9910139625303321

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Titolo	Transients of Modern Power Electronics [[electronic resource]]
Pubbl/distr/stampa	Hoboken, : Wiley, 2011
ISBN	1-283-17777-3 9786613177773 1-119-97171-3 1-119-97172-1
Descrizione fisica	1 online resource (296 p.)
Classificazione	TEC031000
Altri autori (Persone)	MiChris
Disciplina	338.5 621.381/044 621.381044
Soggetti	Electric current converters -- Design and construction Power electronics Transients (Electricity) Power electronics - Design and construction Electric current converters
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di contenuto	Transients of Modern Power Electronics; Contents; About the Authors; Preface; 1 Power electronic devices, circuits, topology, and control; 1.1 Power electronics; 1.2 The evolution of power device technology; 1.3 Power electronic circuit topology; 1.3.1 Switching; 1.3.2 Basic switching cell; 1.3.3 Circuit topology of power electronics; 1.4 Pulse-width modulation control; 1.5 Typical power electronic converters and their applications; 1.6 Transient processes in power electronics and book organization; References; 2 Macroscopic and microscopic factors in power electronic systems 2.1 Introduction 2.2 Microelectronics vs. power electronics; 2.2.1 Understanding semiconductor physics; 2.2.2 Evaluation of semiconductors; 2.3 State of the art of research in short-timescale transients; 2.3.1 Pulse definition; 2.3.2 Pulsed energy and pulsed power; 2.4 Typical influential factors and transient processes; 2.4.1

Sommario/riassunto

In high power, high voltage electronics systems, a strategy to manage short timescale energy imbalances is fundamental to the system reliability. Without a theoretical framework, harmful local convergence of energy can affect the dynamic process of transformation, transmission, and storage which create an unreliable system. With an original approach that encourages understanding of both macroscopic and microscopic factors, the authors offer a solution. They demonstrate the essential theory and methodology for the design, modeling and prototyping of modern power electronics converters to crea