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Nota di contenuto	Pulse-Width Modulated DC--DC Power Converters; Contents; About the Author; Preface; Nomenclature; 1 Introduction; 1.1 Classification of Power Supplies; 1.2 Basic Functions of Voltage Regulators; 1.3 Power Relationships in DC-DC Converters; 1.4 DC Transfer Functions of DC-DC Converters; 1.5 Static Characteristics of DC Voltage Regulators; 1.6 Dynamic Characteristics of DC Voltage Regulators; 1.7 Linear Voltage Regulators; 1.7.1 Series Voltage Regulator; 1.7.2 Shunt Voltage Regulator; 1.8 Topologies of PWM DC-DC Converters; 1.9 Relationships Among Current, Voltage, Energy, and Power 1.10 Summary References; Review Questions; Problems; 2 Buck PWM DC-DC Converter; 2.1 Introduction; 2.2 DC Analysis of PWM Buck Converter for CCM; 2.2.1 Circuit Description; 2.2.2 Assumptions; 2.2.3 Time Interval: $0 < t < DT$; 2.2.4 Time Interval: $DT < t < T$; 2.2.5 Device Stresses for CCM; 2.2.6 DC Voltage Transfer Function for CCM; 2.2.7 Boundary Between CCM and DCM; 2.2.8 Capacitors; 2.2.9 Ripple Voltage in Buck Converter for CCM; 2.2.10 Switching Losses with Linear MOSFET Output Capacitance; 2.2.11 Switching Losses with Nonlinear

MOSFET Output Capacitance

2.2.12 Power Losses and Efficiency of Buck Converter for CCM 2.2.13

DC Voltage Transfer Function of Lossy Converter for CCM; 2.2.14

MOSFET Gate-Drive Power; 2.2.15 Gate Driver; 2.2.16 Design of Buck

Converter for CCM; 2.3 DC Analysis of PWM Buck Converter for DCM;

2.3.1 Time Interval: $0 < t < DT$; 2.3.2 Time Interval: $DT < t < (D + D1)T$;

2.3.3 Time Interval: $(D + D1)T < t < T$; 2.3.4 Device Stresses for DCM;

2.3.5 DC Voltage Transfer Function for DCM; 2.3.6 Maximum

Inductance for DCM; 2.3.7 Power Losses and Efficiency of Buck

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2.7 Quadratic Buck Converter; 2.8 Tapped-Inductor Buck Converters;

2.8.1 Tapped-Inductor Common-Diode Buck Converter; 2.8.2 Tapped-

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CCM; 3.2.8 Power Losses and Efficiency of Boost Converter for CCM;

3.2.9 DC Voltage Transfer Function of Lossy Boost Converter for CCM;

3.2.10 Design of Boost Converter for CCM; 3.3 DC Analysis of PWM

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Device Stresses for DCM

3.3.5 DC Voltage Transfer Function for DCM

Sommario/riassunto

PWM DC-DC power converter technology underpins many energy conversion systems including renewable energy circuits, active power factor correctors, battery chargers, portable devices and LED drivers. Following the success of Pulse-Width Modulated DC-DC Power Converters this second edition has been thoroughly revised and expanded to cover the latest challenges and advances in the field. Key features of 2nd edition: Four new chapters, detailing the latest advances in power conversion, focus on: small-signal model and dynamic characteristics of the buck converter in continuous conduction
