



## Switching Power Supplies A - Z, Second Edition

By Sanjaya Maniktala

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### Switching Power Supplies A - Z, Second Edition By Sanjaya Maniktala

This book is the most comprehensive study available of the theoretical and practical aspects of controlling and measuring Electromagnetic Interference in switching power supplies, including input filter instability considerations.

The new edition is thoroughly revised with six completely new chapters, while the existing EMI chapters are expanded to include many more step-by-step numerical examples and key derivations and EMI mitigation techniques. New topics cover the length and breadth of modern switching power conversion techniques, lucidly explained in simple but thorough terms, now with uniquely detailed "wall-reference charts" providing easy access to even complex topics.

- Step-by-step and iterative approach for calculating high-frequency losses in forward converter transformers, including Proximity losses based on Dowell's equations
- Thorough, yet uniquely simple design flow-chart for building DC-DC converters and their magnetic components under typical wide-input supply conditions
- Step-by-step, solved examples for stabilizing control loops of all three major topologies, using either transconductance or conventional operational amplifiers, and either current-mode or voltage-mode control

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### Editorial Review

#### From the Back Cover

Quickly grasp everything you need to know to design power supply electronics solutions with this easy-to-understand Guide

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The new edition is thoroughly revised with eight completely new chapters, while the existing EMI chapters are expanded to include many more step-by-step numerical examples and key derivations and EMI mitigation techniques. New topics cover the length and breadth of modern switching power conversion techniques, lucidly explained in simple but thorough terms, now with uniquely detailed "wall-reference charts" providing easy access to even complex topics.

#### Features

- Step-by-step and iterative approach for calculating high-frequency losses in forward converter transformers, including Proximity losses based on Dowell's equations.
- Thorough, yet uniquely simple design flow-chart for building DC-DC converters and their magnetic components under typical wide-input supply conditions
- Step-by-step, solved examples for stabilizing control loops of all three major topologies, using either transconductance or conventional operational amplifiers, and either current-mode or voltage-mode control.

#### New topics in this edition:

- Advanced Magnetics with Optimal Core Selection Strategies for Flyback converters, and Proximity Effect Analysis for Forward Converters
- Concepts in MTBF and Stress Derating including Life Estimates for Electrolytic Capacitors
- RMS Current Calculations and derivations for Semiconductors, Inductors and Capacitors
- New Topologies covered in detail include Synchronous Buck and Boost topologies, Cuk, Sepic, Zeta, all 4-Switch Buck-Boost variations, Half-Bridge, Full-Bridge, Active Forward Clamp, Topology Morphology and Hysteretic controllers including COT.
- Modern Techniques such as DCR Sensing, RCD Clamp Design, Voltage (Droop) Positioning, Active and Passive Load Sharing, Interleaving and Coupled Inductors are thoroughly explained.
- AC-DC Front-end --- with and without Boost Power Factor Correction. Includes detailed Holdup Time Charts, PFC-PWM anti-synchronization principle and interleaved Boost PFC.
- Thermal Management and Safety aspects
- Step by Step Design of Differential and Common-Mode EMI Filters

Sanjaya Maniktala has written two other successful books on Switching Power Conversion: Switching Power Supply Design & Optimization (McGraw Hill, 2005, ISBN 9780071434836) and Troubleshooting Switching Power Converters: A Hands-on Guide (Newnes, 2007, ISBN 9780750684217)

Industry experts have remarked on his ability to communicate difficult concepts in a simple, yet technically thorough manner.

### Users Review

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**Lisa Gonzales:**

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