



# Switching Power Supplies A - Z

*By Sanjaya Maniktala*

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## Switching Power Supplies A - Z By Sanjaya Maniktala

The design of Switching Power Supplies has become one of the most crucial aspects of power electronics, particularly in the explosive market for portable devices. Unfortunately, this seemingly simple mechanism is actually one of the most complex and under-estimated processes in Power Electronics. Switching power conversion involves several engineering disciplines: Semiconductor Physics, Thermal Management, Control Loop theory, Magnetics etc, and all these come into play eventually, in ways hard for non-experts to grasp.

This book grows out of decades of the author's experience designing commercial power supplies. Although his formal education was in physics, he learned the hard way what it took to succeed in designing power supplies for companies like Siemens and National Semiconductor. His passion for power supplies and his empathy for the practicing or aspiring power conversion engineer is evident on every page.

- \* 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.
- \* 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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### **Review**

"I am a jump-up-and-cheer! fan of [Sanjaya's] work. He is one of those few engineers who can give you the intensive math-based theory of power supply design and component selection, practical tips and techniques based on years of hands on experience... and entertaining anecdotes and personal observations -- all in the same readable, well-illustrated package." - Stephan Ohr, Planet Analog

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