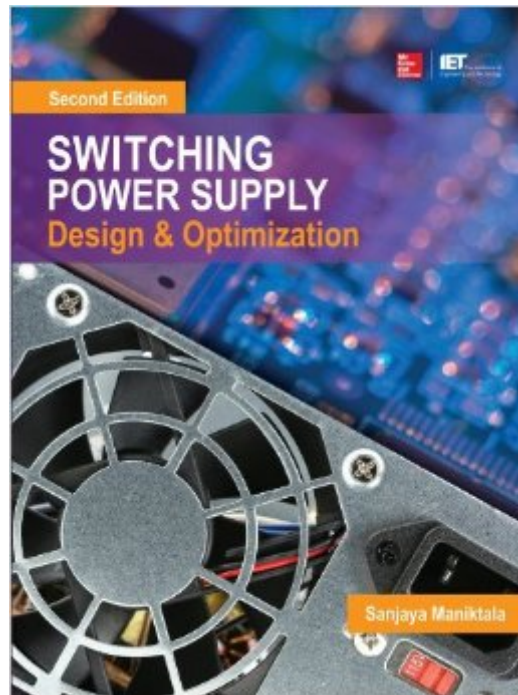


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# Switching Power Supply Design And Optimization, Second Edition



## Synopsis

The latest techniques for designing state-of-the-art power supplies, including resonant (LLC) converters. Extensively revised throughout, *Switching Power Supply Design & Optimization, Second Edition*, explains how to design reliable, high-performance switching power supplies for today's cutting-edge electronics. The book covers modern topologies and converters and features new information on designing or selecting bandgap references, transformer design using detailed new design charts for proximity effects, Buck efficiency loss teardown diagrams, active reset techniques, topology morphology, and a meticulous AC-DC front-end design procedure. This updated resource contains design charts and numerical examples for comprehensive feedback loop design, including TL431, plus the world's first top-down simplified design methodology for wide-input resonant (LLC) converters. A step-by-step comparative design procedure for Forward and Flyback converters is also included in this practical guide. The new edition covers:

- Voltage references
- DC-DC converters: topologies to configurations
- Contemporary converters, composites, and related techniques
- Discontinuous conduction mode
- Comprehensive front-end design in AC-DC power conversion
- Topologies for AC-DC applications
- Tapped-inductor (autotransformer-based) converters
- Selecting inductors for DC-DC converters
- Flyback and Forward converter transformer design
- Forward and Flyback converters: step-by-step design and comparison
- PCBs and thermal management
- Closing the loop: feedback and stability, including TL431
- Practical EMI filter design
- Reset techniques in Flyback and Forward converters
- Reliability, testing, and safety issues
- Unraveling and optimizing Buck converter efficiency
- Introduction to soft-switching and detailed LLC converter design methodology with PSpice simulations
- Practical circuits, design ideas, and component FAQs

## Book Information

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## Customer Reviews

I've read this book at least two times in its entirety and also read it several times for references in places I've marked out for my personal use. When troubleshooting my PC or anyone's PC I first check the power supply to see if the current is flowing and to see if the fan is working, here is where this book comes in very handy for me. I referenced several info from the book and did my troubleshooting exactly as the author described and it has helped me to isolate certain resistors, capacitors etc which I thought was working good when in fact it was faulty. In one of his NOTE he mentions this on "resistors"; NOTE: Can we always use two resistors per divider? A commercial AC-DC power supply systems designer may need to think twice before using any single resistor larger than about 0.5 M $\Omega$ . Some extremely quality-conscious power supply companies have internal rules prohibiting any value greater than 100 k $\Omega$ . Contamination on the PCB, or moisture and humidity, can cause a large change in the resistance. So they ask their engineers to put several 100-k $\Omega$  resistors in series rather than use a single resistor. On another topic the author was relating to Capacitors and this is what it says; 1. In terms of ability to handle stresses, a 100-W power supply will require an output capacitor roughly twice the value, in terms of capacitance and size, of a 50-W power supply (for the same input and output voltages). Here we assume that if we are using only one output capacitor, its ripple (RMS) current rating is almost proportional to its capacitance. That is not strictly true, however.

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