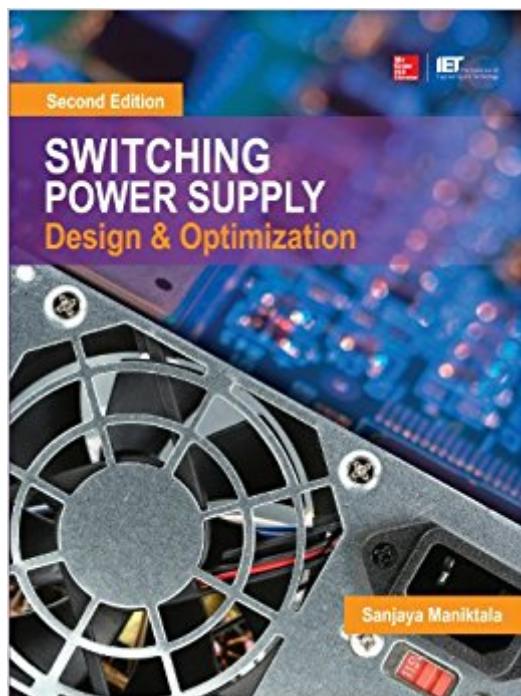


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# Switching Power Supply Design And Optimization, Second Edition



## 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 worldâ™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**

This book spends almost 150 pages detailing each and every concept related to magnetic design for flyback, forward converter. Shows how to calculate inductors for DC-DC converters. The author shows step by step formula to calculate the precise core size, wire guage, air gap etc. He also compares his practically implemented formula with the industry formulae used to calculate precise core size, wire guages etc. I enjoyed reading it. By far the best book on magnetics which takes each and every issue into consideration ( proximity,skin effect, fringing effect etc). Showed a complete table of different magnetic core manufacturers, their dimensions, gap etc. He also showed how to reduce core losses by varying the parameters such as Volume of the core, area of the core, length of the core and their effect on core losses. The textbook also has a very decent section on selection of PFC holdup time capacitor value which is usually a very complex topic and plenty of formulae exist which result in different values. But, this author has given a table which can be used to select the capacitor value, RMS current value right from the table. This is very good. The chapter on reliability/Safety is also very good. This is required for high volume production. I would definitely recommended this textbook to all levels of expertise.

this book explains the concept clearly with plenty of examples, drawings and waveforms. However, it tends to be verbose on certain subjects.

This outstanding book picks up where the other books leave off. Not intended for beginners. The section on magnetics is absolutely fantastic and very different from other books.

This book gives a lot of good perspective on power electronics and always make it easy to connect real world design and theory. Good reference book to keep in the shelves if you're a power engineer

Bought it for my dad so hoping it would be good.

Fantastic!

All OK

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  $0.5 \text{ M}\Omega$ . Some extremely quality-conscious power supply companies have internal rules prohibiting any value greater than  $100 \text{ k}\Omega$ . Contamination on the PCB, or moisture and humidity, can cause a large change in the resistance. So they ask their engineers to put several  $100\text{-k}\Omega$  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. More correctly, we can say that if a 50-W power supply has a single output capacitor of value  $C$  with a certain ripple rating  $IRIPP$ , then a 100-W power supply will require two such identical capacitors each of value  $C$  and ripple rating  $IRIPP\sqrt{2}$  paralleled together. Suffice it to say that I highly recommend this book to any new student, novices and electronic technicians even for electricians. I'm a woodworker by trade but I am also a bit tech savvy and find this book quite the authority on Power Supply and Design.

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