

Book Review for

Switch-Mode Power Supplies (Spice Simulations and Practical Designs)

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I am very pleased to read the book: Switch-Mode Power Supplies by Christopher Basso. This book covers the operation, analysis, computer simulation and practical design issues for commonly used switching power converters, for both non-isolated and isolated converter topologies.

The book is suitable for both entrance level and experienced power supply designers. It covers materials and knowledge from very basic operation to advanced design methodologies for switching power supplies. In the book, the simulation is used as a tool to analyze the steady state and dynamic performance of switching power converters.

The biggest advantage of the book is the practical design. The reader can learn all aspects of designing a switching mode power supply. The book discusses the steady state operation of power topologies and the voltage and current stresses, which is very important for selection of suitable power devices. More importantly, the book explores in very detail the small signal dynamic models of switching converters under commonly used control methods, such as voltage mode control, current mode control. In addition, the book provides several practical start-up circuits for switching power supplies under different operating conditions, which is often ignored by most books and designers. Similarly, the book provides several methods for over current protection.

Another advantage of the book is that it provides methodologies to design a compensation network in order to achieve a desired closed loop dynamic performance. These methods are step by step and practical. For example, the book provided a procedure to design the feedback compensation network based on several design methods, such as K factor method, Pole-Zero placement method.

In addition, the book spends quite some pages discussing the analysis and design of inductors and transformers, as well as the characteristics of capacitors used in switching power supplies, which are generally a weakness for a lot of power supply designers.

Besides the commonly used, general purpose Spice software, the book also introduces two other software packages, PSIM and SIMPLIS, which are specifically designed for simulation of switching power supplies.

The CD ROM coming with the book provides a lot of simulation examples and design files so that the reader can use the methods introduced in the book directly to significantly expedite his / her design.

In summary, the book is the most practical and useful book in switching power supply field I am aware of. It is a must have for vast majorities of people who will analyze and design the switching power supplies. The book is also a good reference for marketing and business development personnel to understand the high level technical challenges facing power supply industry.