Practical Computer Analysis of Switch Mode Power Supplies CRC Press, 2018 9781420030945 2018 272 pages Johnny C. Bennett

Large Signal Models When a switch mode power converter is modeled, an electrical circuit equiv- alent model of the duty ratio controller must be created when the converter operates in the continuous mode. From Middlebrook and Cuk,1 an ideal (AC and DC) transformer equivalent model is conceived and shown in Figure 3.1.Â DK_1137.book Page 38 Wednesday, June 15, 2005 11:49 AM. 38 Practical Computer Analysis of Switch Mode Power Supplies. L L d. + + . . C dâ€™ C R vg = vg R. When designing switch-mode power supplies (SMPSs), engineers need much more than simple "recipes" for analysis. Such plug-and-go instructions are not at all helpful for simulating larger and more complex circuits and systems.Â The book begins with SMPS fundamentals and the basics of circuit averaging models, reviewing most basic topologies and explaining all of their various modes of operation and control. The author then discusses the general analysis requirements of power supplies and how to develop the general types of SMPS models, demonstrating the use of SPICE for analysis. Offering more than merely a "cookbook," Practical Computer Analysis of Switch Mode Power Supplies provides a thorough understanding of the essential requirements for analyzing SMPS performance characteristics. It demonstrates the power of the circuit averaging technique when used with powerful computer circuit simulation programs. The book begins with SMPS fundamentals and the basics of circuit averaging models, reviewing most basic topologies and explaining all of their various modes of operation and control. The author then discusses the general analysis requirements of power suppl... Offering more than merely a "cookbook," Practical Computer Analysis of Switch Mode Power Supplies provides a thorough understanding of the essential requirements for analyzing SMPS performance characteristics. It demonstrates the power of the circuit averaging technique when used with powerful computer circuit simulation programs. The book begins with SMPS fundamentals and the basics of circuit averaging models, reviewing most basic topologies and explaining all of their various modes of operation and control. The author then discusses the general analysis requirements of power suppl... Practical switching power supply designI Marty Brown. p. cm. ISBN 0-12-137030-5 (alk. paper).Â Switching power supplies are used in situations where a high supply efficiency is necessary and the dissipation of heat presents a problem, such as battery-powered and handheld applications where bat-tery life and internal and external temperatures are important. Off-line supplies are also typically switchers because of their efficiency in gen-erating all the voltages needed within the product, especially in very-high-power applications, up to many kilowatts.Â Forward-mode switching regulators have as their functional components four elements: a power switch fur creating the PWM waveform, a rec-tifier (or catch diode), a series inductor, and a capacitor (see Fig.