

ContainerPower Energy Solutions

Outdoor power supply transformation solution design



Overview

Why is switch-mode power-supply design so mysterious?

Switch-mode power-supply design can be a mysterious thing because there is a great variety of topologies and controller types from which to choose. This application brief series describes how to pick the most fitting power supply topology for an application and the knowledge needed to get there.

What makes a good power-supply design?

In general, for every power-supply design, trade-offs are made between performance, form factor, and cost. Know which of these factors has the highest priority, because these factors directly impact the quality of the design.

Who is the author of switchmode power supply design?

Mr. Pressman was the author of the first two editions of Switching Power Supply Design. Keith Billings is a Chartered Electronic Engineer and author of the Switchmode Power Supply Handbook, published by McGraw-Hill.

Are linear power supplies good for digital storage systems?

Typically, linear regulators could achieve output power densities of 0.2 to 0.3 W/in³, and this was not good enough for the ever smaller modern electronic systems. Further, linear power supplies could not provide the extended hold-up time required for the controlled shutdown of digital storage systems.

How do switching supplies work?

Typically these new switching supplies used a transistor switch to generate a square-waveform from a non-regulated DC input voltage. This square wave, with adjustable duty cycle, was applied to a low pass output power filter so as to provide a regulated DC output.

Why do linear regulators still have a place in modern power supply

applications?

This lower RFI noise can be a major advantage in some applications, and for this reason, linear regulators still have a place in modern power supply applications even though the efficiency is quite low. Also since the power losses are mainly due to the DC current and the voltage across Q1, the loss and the overall efficiency are easily calculated.

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