

Integrated Switching Power Supply Design



Overview

Abstract—This paper presents a power supply using an increased switching frequency to minimize the size of energy storing components, thereby addressing the demands for increased power densities in power supplies. 100 MHz and higher switching frequencies have been used. Power levels and power density requirements continue to increase for many types of end equipment such as personal computers, servers, network and telecom systems. Today's embedded processors such as CPUs, ASICs and network processing units (NPUs) require lower voltages, better regulation and higher. Designing an off-line switching power supply involves many aspects of electrical engineering: analog and digital circuits, bipolar and MOS power device characteristics, magnetics, thermal considerations, safety requirements, control loop stability, etc. This presents an enormous challenge involving. Microchip offers a comprehensive set of Intelligent Power Supply solutions enabling designers to meet these challenges. Factors governing the choice of a discontinuous flyback topology are discussed. The design uses a pulsed-width modulation (PWM) control scheme implemented with a Unitrode UC3840 IC. This chip's voltage-feed-forward feature is used to achieve improved output. In our previous articles, we explored the fundamentals of power conversion in *An Insight into Power Topologies and Design Considerations* and *Non-Isolated Switching Power Supplies — Topologies & Use Cases*, where we discussed the core concepts behind switching power supplies.

Article Content

Nov 13, 2025

SWITCHING POWER SUPPLY DESIGN REVIEW

In order to minimize risks associated with the customer's applications, adequate design and operating safeguards must be provided by the customer to minimize inherent or procedural hazards.

Jun 04, 2026

7 Critical Steps In Switching Power Supply Design

The design of switching power supplies requires significant attention to detail, from component placement and thermal analysis to careful testing for a wide range of operating conditions.

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Improving Power Supply Design Using Semi-Automation—Five Steps

While total automation of power supply design is yet to be achieved, a comprehensive range of semi-automated tools are available today. This article details the use of semi-automated design tools

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Switch Mode Power Supply Circuit Design Tutorial

I. What is the Switch Mode Power Supply A switch-mode power supply usually consists of a controller and an output part. Some controllers integrate

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7 Critical Steps In Switching Power Supply Design

There are multiple considerations when designing the switching power supply circuit, though, and price shouldn't be the only driver for the component selection. A complete understanding of all these

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Intelligent Power Supply Design Solutions

Power Conversion using switch mode power supply design is typically more efficient than linear regulation. These reference designs provide examples of switching converters with built in

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Integrated Very High Frequency Switch Mode Power Supplies: Design ...

From 2004 until 2009 he has been working with Harman/Becker Automotive Systems GmbH in Germany and USA, designing switch-mode audio power amplifiers and power supplies for automotive

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AN-140: Basic Concepts of Linear Regulator and

Depending on the specific application, a designer can choose either a linear regulator (LR) or a switching mode power supply (SMPS) solution. To make the

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INTEGRATED POWER DEVICES SIMPLIFY AN EMBEDDED DC

The paper also details how treating integrated devices as power supply modules instead of co-packaged components significantly improves the system performance and long-term reliability, and reduces the

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Mixed-signal and digital signal processing ICs | Analog Devices

Hier sollte eine Beschreibung angezeigt werden, diese Seite lässt dies jedoch nicht zu.

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Switched-Mode Power Supply PCB Design Guidelines

Create and simulate your design and follow these switched-mode power supply PCB layout guidelines.

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17 Best Design Steps for Switch-Mode Power Supply

Follow 17 key steps for designing switch-mode power supplies that deliver stable voltage, high efficiency, and compact design.

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Switching Power Supply PCB Layout Considerations -

Have you ever started a switching power supply layout, only to realize that it is impossible to match the datasheet's suggested layout? Have you

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Fully Integrated Switched-Capacitor Power Converters

When designing fully integrated switched-capacitor (SC) converters, optimizing efficiency is one of the most important procedures to ensure the maximum power density under peak efficiency.

Feb 15, 2026

Power Integrations

Because of the significantly reduced number of design variables and built-in loop stability, it is possible to develop a simple step-by-step design method that is easy to follow and quickly leads to

Dec 31, 2025

Integrated Very-High-Frequency Switch Mode Power Supplies: Design ...

This paper presents a power supply using an increased switching frequency to minimize the size of energy storing components, thereby addressing the demands for increased power

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Switch Mode Power Supply (SMPS) Topologies

INTRODUCTION The industry drive toward smaller, lighter and more efficient electronics has led to the development of the Switch Mode Power Supply (SMPS). There are several topologies

Sep 16, 2025

Switching Power Supply PCB Layout Considerations

PCB design considerations for the usage of high speed switching power supplies.

Feb 04, 2026

SMPS Design: Switching Power Supply Circuits and Schematics

Your guide to switching mode power supply (SMPS) design. A tutorial and a collection of resources: schematics, theory of operation, topologies, application notes.

Jan 30, 2026

CMOS Integrated Switching Power Converters: A

In particular, this book enables readers to conceive, synthesize, design and implement integrated circuits with high-density high-efficiency on-chip switching

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End-to-End Supply Chain Management Solutions | Blue

Blue Yonder's AI-powered, end-to-end platform can help you transform your supply chain, delight customers, scale profitably, and run flawlessly.

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Comprehensive Design and Operation of Switching Power Supplies

Central to the switching power supply is the power conversion circuit, which adeptly changes electrical energy to precise voltage and current levels. Techniques such as pulse-width modulation (PWM)

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Understanding Isolated Power Topologies: Design

Isolated switching power supplies play a vital role in modern electronics, offering both safety and design flexibility across a wide range of

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Integrated Very High Frequency Switch Mode Power

This paper presents a power supply using an increased switching frequency to minimize the size of energy storing components, thereby addressing

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Art and Science of Switching Power Supply Design

The HP 9878A I/O expander used switching power supply ICs that are still available today, but practitioners of the art now have a lot more resources

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Switch Mode Power Supply Basics | Analog Devices

Switch mode power supplies are an attractive means to convert between DC voltage levels, resulting in their wide spread use. Review Maxim's guide to switch mode power supply basics.

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Intelligent Power Supply Design Solutions

Highly integrated products feature peripheral support for up to four independent Switch Mode Power Supplies, with built-in LED dimming engine functionality. Specialized timers can be employed to

Aug 26, 2025

Switching IC Simplifies AC/DC Supply Design | DigiKey

Use a feature-rich switching IC to simplify meeting the performance objectives and regulatory mandates of a low-power AC/DC converter.

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Design tips for linear and switched-mode power supplies

Compared to their linear predecessors, switched-mode power supplies are not only much smaller and lighter, but they are more efficient and can handle far higher input-voltage ranges.

Contact Us

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