

Low-loss high-frequency switching power supplies for industrial Ethernet



Overview

SiC (Silicon Carbide) and GaN (Gallium Nitride) devices offer higher breakdown voltage, lower losses, and faster switching, enabling MHz-level operation and 30–50% lower losses. Integrated driver circuits (IPMs) simplify design and improve reliability.

Advanced Topologies The AC-DC converter is an interleaved bridgeless totem pole (ILTP) stage featuring two phases that provide power factor correction (PFC) and limits total harmonic distortion (THD). A low-pass filter using non-dissipative passive components such as inductors. A switching power supply (often abbreviated SMPS for switched-mode power supply) is an electronic power converter known for efficiently transforming AC power into stable DC voltage through rapid switching techniques. Soft-switching technologies, which reduce switching losses and electromagnetic interference, are at the core of this transformation. At. This article will explore the basic points to design a general power supply across a frequency axis that has been sorted from low to high frequencies. Humans are able to hear frequencies between 20Hz and 20kHz.



Article Content

Modeling and Simulation of High-frequency Switching Power Supplies

Introduction High-frequency switching power supplies have become integral to modern electronic systems due to their ability to efficiently convert electrical energy with minimal losses. These power

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

Frequency Selection in Switching Power Supply Designs

This article builds on switching frequency concepts to analyze switching power supply designs for three different frequency ranges, sorted from low to high.

Capacitor Selection for High-Frequency Switching Power Supplies

Application-Specific Considerations When selecting capacitors for specific applications within high-frequency switching power supplies, it is important to consider factors such as: - Load

Switched Mode Power Supplies

Switched-mode power supplies (SMPS) are defined as power supplies that utilize semiconductor switching technology to convert input voltage to the desired output voltage, offering advantages such

High-Frequency Switching Power Supplies for Compact Designs

Introduction Switching power supplies have revolutionized the electronic industry by providing efficient and compact power solutions. In recent years, with the increasing demand for

Switching Power Supply: A Complete Technical Guide to Efficiency ...

Switching power supplies (SMPS) have become a cornerstone of modern electronics, powering everything from consumer devices to industrial machinery. Unlike switching power supply

High-Frequency Switching is Heating Up | Peak Blog

While challenges remain in areas like EMI management and thermal design, the benefits of high-frequency switching PFC are compelling. As enabling

PowerPlus High Frequency Power Supply | NWL

NWL is the leading manufacturer of high frequency switch mode technology power supplies for use in high power industrial applications.

Switched Mode Power Supply: A High Efficient Low Noise Forward ...

This paper proposes a low noise high-frequency forward converter SMPS. The primary target in the power electronics industries is to design power supplies with high efficiency, low cost, and with

Modeling and Simulation of High-frequency Switching Power Supplies

The growing demand for smaller, lighter, and more efficient electronic devices has spurred significant research into the modeling and simulation of high-frequency switching power supplies.

What Is a Switching Power Supply (SMPS)? | Tektronix

Tektronix offers a comprehensive portfolio of high-quality, reliable switching power supplies tailored for your demanding applications. Advanced EMI

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

High and Very High Frequency Power Supplies for Industrial

The papers in this special section focuses on high and very high frequency power supplies for industry applications. In recent years, high frequency has become a developing trend for power

A Review of High Frequency Power Converters and Related Technologies

Development of power electronic converters tend to achieve high efficiency and at the same time high power density in many industrial applications. In recent years, with emerging third

Mixed-signal and digital signal processing ICs | Analog

Superior beamforming, RF and microwave, data conversion, precision linear, and power systems for LEO, GEO, and beyond. RF, digitizer, and signal processing

High-frequency power supply

Find your high-frequency power supply easily amongst the 52 products from the leading brands (Kikusui, Voita, Wisman, ...) on DirectIndustry, the industry

Soft-Switching Technology in Industrial High-Frequency Power

Industrial high-frequency power supplies are evolving rapidly, driven by the need for higher efficiency, reliability, and intelligent energy management. Soft-switching technologies, which

High and Very High Frequency Power Supplies for Industrial Applications ...

With the maturity of these devices, it provides a broad space for development of high and very high frequency power supplies. Nevertheless, topologies, driving methods, control strategies and many

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

This paper presents a design for a 9 W class E resonant power converter in an 0.18 μ m CMOS process. The converter is driven by a self oscillating gate drive, which is presented in an in-depth

High and Very High Frequency Power Supplies for Industrial Applications

Though the emergence of the third-generation semiconductor devices with low conduction resistance and low parasitic capacitance can reduce system loss to some extent, they have higher...

Special Section on: High & Very High Frequency Power Supplies for ...

Recently, with the continuous development of industrial electronics technologies, small-size and high-power-density designs became a development trend. Thus, high and very high frequency power

What Is a Switching Power Supply (SMPS)? | Tektronix

Discover what a switching power supply (SMPS) is and how it efficiently converts AC to DC using high-frequency switching. Learn its

Switch Mode Power Supply (SMPS) Topologies

There are several topologies commonly used to implement SMPS. This application note, which is the first of a two-part series, explains the basics of different SMPS topologies. Applications

3.3 kW high-frequency and high-density PSU for server and

The two high-frequency SiC legs operate at 65 kHz switching frequency in the interleaving mode, phase shifted by 180°, whereas the two SR legs rectify the AC current according to the detected line voltage.

Contact Us

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