

High Temperature Resistance Solution for Cuban High Frequency Switching Power Supplies



Article Overview

GaN and SiC power devices, combined with soft-switching topologies and advanced thermal management, provide the most effective high-temperature solution for high-frequency switching power supplies.

Device Selection

Gallium Nitride (GaN) HEMTs are highly suitable for high-frequency power supplies due to their low on-resistance, high switching speed, and superior thermal conductivity, enabling operation at frequencies up to 1-2 MHz with high efficiency and compact form factors . GaN devices are available in normally-off and cascode configurations, with vertical and lateral designs, offering flexibility for high-voltage applications (60-700 V) while maintaining reliability under high-temperature stress . Silicon Carbide (SiC) MOSFETs are another robust option, particularly for LLC resonant converters, as they tolerate higher junction temperatures, exhibit lower switching losses, and maintain efficiency at high frequencies . SiC devices are ideal for applications requiring high power density and thermal resilience, making them suitable for tropical or high-ambient-temperature environments like Cuba.

Switching Topology and Techniques

Soft-switching topologies (e.g., zero-voltage switching (ZVS) or zero-current switchi...

Article Content

Aug 11, 2025

HIGH POWER SWITCHING POWER SUPPLY

The power supply adopts high frequency switching power technology. It is controlled by high performance microcomputer. The power

Apr 30, 2026

Thermal behavior and switching losses of MOSFET in high-frequency ...

By introducing an effective switching resistance derived from thermal measurements, we offer a new perspective for

Oct 13, 2025

Switch power supply cooling fan | power thermal requirements and the ...

This method not only increases the heat dissipation of the fan, but also reduces the heat sink area, so that the power

Mar 07, 2026

Challenges of designing high-frequency, high-input-voltage DC/DC

power integrated circuits (ICs) are aggressively market-ing high-frequency DC/DC converters that they claim reduce board space. A

Jul 08, 2026

High-frequency Switching Power Supplies

High-frequency Switching Power Supplies: Theory and Design George Chryssis McGraw-Hill, 1989 - Technology & Engineering -

Dec 29, 2025

Dynamic on-resistance stability of SiC and GaN power devices during ...

We also evaluated the high-frequency switching stability of GaN power devices for comparison purposes. Overall, the

Jun 18, 2026

High Voltage Power Supplies for Electrostatic Applications

This high voltage source can be a high voltage power supply. Today's high voltage power supplies are solid state, high frequency

Jan 16, 2026

Understanding High Frequency Switching Transformers

Conclusion High frequency switching transformers play a foundational role in the landscape of modern electronic

Dec 19, 2025

Frequency Selection in Switching Power Supply Designs (Part I)

Part I will discuss calculating for the key variables of switching frequency, as well as the challenges with higher frequencies. Part II

Apr 21, 2026

High Frequency Power

Transformer Measurement and Modeling This article points out some of the issues involved in designing, measuring, and modeling

Mar 31, 2026

Introduction to the principle of high-frequency switching high-voltage ...

5. Industry: Such as electroplating, welding, and other applications that require high voltage and current. In short, high-frequency

May 26, 2026

High Frequency High Voltage Power Supplies

However, above these voltage levels, only traditional power supplies based on power line frequencies without any

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High Frequency Power Transformer Design: A Comprehensive Guide

The increasing demand for compact, efficient power conversion solutions in modern electronic applications has

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AN-1973 Benefits and Challenges of High-Frequency Regulators

Texas Instruments' newest high-frequency regulators offer a combination of high switching frequency and ease of use, thereby

Oct 23, 2025

Microsoft Word

Although very well used in switching applications, the Bipolar Power Transistor eventually got replaced by the Field Effect Transistor

Feb 20, 2026

Preventing Conducted and Radiated EMI in Switching Power Supplies

Preventing Conducted and Radiated EMI in Switching Power Supplies As electronics technology advances, concerns mount about

Apr 30, 2026

High-frequency switching power supplies: Theory and design

This paper reports on the simulation and analysis of a high frequency multi-winding four port power transformer using Finite Element

Sep 10, 2025

Issues and advances in high-frequency magnetics for switching power ...

Issues and advances in high-frequency magnetics for switching power supplies

Abstract: Magnetic components have been and will

May 28, 2026

Design Considerations for Thermal Management of Power Supplies

Part of the remedy for this is to use higher switching frequencies and more efficient designs. However, the inescapable

Mar 11, 2026

Design Considerations for Thermal Mgmt of Power Supplies

By trading of power supply capacity against load, by selecting higher-efficiency designs or by moving to advanced products that

Dec 27, 2025

Dynamic on-resistance stability of SiC and GaN power devices during ...

To our knowledge, this is the first study to investigate the high-frequency (100-300 kHz) switching stability of SiC power

Oct 19, 2025

Evolution of Very High Frequency Power Supplies

His research interests are very high frequency (VHF) switch-mode power supplies, bidirectional power conversion and LED drivers.

Mar 26, 2026

Optimizing soft-switching operation of GaN at high frequency

Extensive technical literature suggests that GaN is the ideal power device for high-frequency power conversion. This document

Dec 07, 2025

Design of high frequency transformer for switch mode power supply ...

a power supply is an essential one of all other electronic devices. A switching mode power supply is a light weight power solution for

Dec 22, 2025

Capacitor Selection for High-Frequency Switching Power Supplies

Introduction In the rapidly evolving world of electronics, high-frequency switching power supplies have become the

Oct 28, 2025

High-performance breathable magnetic core for high-frequency power ...

Magnetic materials with low conductivities may reduce loss and temperature rise. However, they increase the

Dec 08, 2025

Analysis on the Thermal Design of High-Frequency board Switching

For high-frequency board switching power supplies, which have high-power heating devices, temperature is the most

Mar 18, 2026

High Voltage Switching Test Systems

Their high cutoff frequencies, low on-state resistance, and very high breakdown voltages can increase power supply power handling

May 02, 2026

Power Semiconductors Built for Industrial Extremes: Temperature and ...

These devices excel in applications requiring frequencies above 20kHz, such as switch-mode power supplies, motor

May 23, 2026

High-voltage direct current

A high-voltage direct current (HVDC) system uses direct current (DC) and high voltages (currently between

Mar 28, 2026

Specifying High Voltage Power Supplies

Introduction In specifying a regulated high voltage power supply for a particular application, it is important to bear in mind that recent

Jun 15, 2026

Switching Power Supply Design for High Voltage and Current

High Power Systems For high voltage/low current, or for low voltage/high current, there are switching regulator ICs

Apr 28, 2026

Part 7: Noise Countermeasures for Switching Power Supplies

Switching power supplies have replaced conventional linear power supplies as the mainstream power source for electronic

Nov 27, 2025

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

Abstract—This paper presents a power supply using an in-creased switching frequency to minimize the size of energy storing

Oct 09, 2025

Design Trade-offs when Selecting a High-Frequency Switching

Advantages and trade-offs of designing a power supply based on high-frequency switching regulators, component

Aug 02, 2025

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