

High-power portable DC-DC power supply design

What is a portable DC power supply?

Such a system requires portable DC power supplies providing voltages up to 50 kV but with the feed from low-voltage batteries. Taking into account these requirements, a portable DC power supply has been developed on the basis of silicon carbide (SiC) power device technology.

What is a high voltage DC power supply?

The design scheme of high-voltage DC power supply is experimentally verified, and the results show that the single-module output voltage is 50 kV, and the output power is about 800W, which can meet the high-power input requirements by stacking multiple modules.

Does a power supply need a DC-DC converter?

For products designed to work from mains power, the power supply must convert from AC mains to a DC output voltage - using an AC-DC power supply. Within some applications, more than one DC voltage might exist, so further power conversion is required - using a DC-DC power converter.

What is a low voltage DC power supply?

Electronics-based products and applications generally operate on low voltage DC supplies. For products designed to work from mains power, the power supply must convert from AC mains to a DC output voltage using an AC-DC power supply.

What is the difference between a portable DC supply and a generator?

The portable DC supply offers a very high voltage gain: input voltage is 24 V, while the generator requires supply voltages up to 50 kV. Thus, the system contains two stages designed on the basis of SiC power devices operating with frequencies up to 100 kHz.

What is a portable DC generator?

This generator is developed to be a part of an electromagnetic cannonproviding very high voltage and current pulses aiming at the destruction of electronics equipment in a specific area. The portable DC supply offers a very high voltage gain: input voltage is 24 V, while the generator requires supply voltages up to 50 kV.

Abstract-- This paper presents a high power density LLC converter for Electric Vehicles (EVs) on-board low voltage DC-DC converter. The design specification imposes critical challenges on ...

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This paper presents the design of a portable, multiple-output, adjustable DC power supply based on



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synchronous Buck and Buck-Boost converter topologies. Powered by a Li-ion battery pack ...

In portable electronics and automobile electronic devices, DC power supply design using buck-boost converters is preferred due to the large output voltage variations of the ...

Portable product design requires that power supply circuits use as little space as possible on the PC board, so highly integrated DC-DC converter devices are generally preferred.

Build a DIY digitally controlled variable DC power supply (1.25V to 15.19V) with LM317 and 4029 counter. Perfect for precise voltage control in ...

Aiming at the energy supply needs of pulse-driven sources in mobile working environments, this paper designs a compact portable high-voltage DC power supply based on ...

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Portable power conversion applications present unique and challenging design considerations. Innovative, small electronics require solutions with small footprints. In order to maintain battery ...

Such a system requires portable DC power supplies providing voltages up to 50 kV but with the feed from low-voltage batteries. Taking into ...

The paper describes major issues related to the design of a portable SiC-based DC supply developed for evaluation of a high-voltage Marx generator. This generator is developed ...

An in-depth guide to power supply design. Explore the build or buy decision, the different topologies, design requirements and power supply standards.

The following sections, present the fundamentals and design considerations of various portable DC-DC conversion topologies including Buck, Boost, non-inverting Buck-Boost, Flyback and ...

Abstract: This letter presents recent design challenges of modern power delivery architectures and circuit techniques for them. Recent computational loads impose significant ...

Description This reference design includes multiple approaches for generation of isolated power supplies for different protection relay modules. Isolated supply for analog input, binary input, ...

High voltage DC power supplies with reduced ripple and noise for wide range of applications needs, powered by emulation software and ideal for industrial validation.



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