

Title: High power bidirectional inverter

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What is a 25 kW bi-directional T-type inverter?

The 25 kW bi-directional T-type inverter demonstrates the performance of Wolfspeed's 650 V and 1200 V silicon carbide (SiC) MOSFETs within high power systems such as solar inverters, uninterruptible power supplies (UPS), EV fast chargers, HVDC applications, high power PSU for AI/datacenters and energy storage systems.

What is a bidirectional inverter?

Unlike conventional inverters that only convert DC (direct current) to AC (alternating current), bidirectional inverters can also convert AC back to DC, allowing energy to be stored or fed back into the grid. This functionality is essential for applications like renewable energy systems, microgrids, and battery backup solutions.

Should you use a bidirectional inverter in a solar energy system?

Using a bidirectional inverter in a solar energy system offers several advantages: Bidirectional inverters allow for efficient two-way power conversion between AC and DC, enabling the system to charge batteries from both solar panels and the grid, and to supply power from batteries during outages.

Why do inverter power stages need bidirectional power transfer?

Another requirement that is becoming more prevalent for inverter power stages is the need for bidirectional power transfer. This is important in storage ready inverters where there can be a need for the power from the grid to be stored in local power storage like a battery.

What is a reference design for ANPC inverter power stage?

This reference design provides a design template for implementing a three-level, three-phase, gallium nitride (GaN) based ANPC inverter power stage. The use of fast switching power devices makes it possible to switch at a higher frequency of 100 kHz, reducing the size of magnetics for the filter and increasing the power density of the power stage.

What is a three-phase inverter reference design?

This reference design is built in a modular construction to allow easy replacement of power switching devices to allow easy comparison between them. The following boards combine to form this three-phase inverter reference design: A motherboard, comprising of the LCL filter, sensing electronics, bias power, switching relays and cooling fans.

High power bidirectional inverter

Bidirectional resonant full bridge CLLC with synchronous rectification. Driven by STGAP SiC gate drivers with galvanic Isolation. Thanks to a Modular system architecture in ...

In the past decade, solar installations have experienced substantial expansion, primarily driven by their myriad benefits, such as economical operation, scalability, flexible ...

The bidirectional inverter connected to the grid is a crucial component of DC distribution systems, however its operation can have an ...

This article introduces a novel HERIC active-clamped converter with bidirectional power flow and full reactive power capabilities that can achieve five-level output voltage.

Specifications: DC/AC and AC/DC bidirectional Single Phase ANPC High Power Density >6 kW/L High Efficiency Design >99% Peak Efficiency in both inverter and PFC mode ...

This reference design implements a four-channel 1.6-kW single-phase bidirectional micro inverter based on GaN. The reference design supports four identical channels with up to ...

The power conversion system or bidirectional power converter is the interface between the energy storage units and the grids or load consumers. The system not only ...

Wolfspeed's time-saving Reference Designs for Silicon Carbide (SiC) devices in power systems - Inverters, power converters, chargers and ...

AbstrAct High-power bidirectional AC/DC power supplies are widely used as uninterruptible power supplies (UPS), energy storage systems (ESS) and onboard chargers ...

Complexity: Designing and integrating bi-directional inverters require sophisticated knowledge of power electronics, control systems, and electrical ...

Integrated AC/DC bidirectional conversion with equal power for charging and discharging, eliminating the need for bulky external chargers. ...

Scope and purpose This document introduces a 11kW high-efficiency high-density bidirectional three-/single-phase AC-DC power converter, i.e., REF_11KW_PFC_SIC_QD ...

This reference design provides an overview on how to implement a bidirectional three-level, three-phase, SiC-based active front end (AFE) inverter and power factor correction ...

A bidirectional inverter is a type of power electronic device that can convert DC electricity generated by solar panels or other renewable sources into AC electricity for use in homes or ...



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The power transmission of bidirectional converters is proportional to the number of switches, and the high productivity and high power density of ...

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