

Why should you use GaN systems power semiconductors?

Using GaN Systems' power semiconductors results in systems that are 1/3 RD the size and weight, reduce power loss by 50% and system BOM cost reduced. GPhilos is a power conversion company specializing in the renewable energy sector. The company produces power conversion devices connected with renewable energy with unique technology.

Why do we use GaN transistors?

The use of GaN transistors results in higher power density, efficiency, and switching frequency, leading to smaller and lighter PCBs. This simplifies the design of SMPS (switched-mode power supplies) and improves their overall performance, meeting today's demands for enhanced performance and energy-saving requirements.

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How to convert DC to AC power using inverters?

The conversion from DC to AC power is achieved using Inverters. Using GaN transistors in renewable energy inverters improves power density, minimizes heat dissipation, and reduces the size of passive components. GaN power conversion ensures stable, high-quality power supply to and from the grid at very high efficiencies and low loss.

What are energy storage systems?

Energy Storage Systems enable renewable energy by adding an extra degree of freedom, energy independence, and grid resiliency. These systems require efficient bidirectional operation at high power charging and low power discharging.

What is a gallium nitrate (GaN) FET?

Such hybrid string inverters combine PV panel power point tracking with an inverter stage and bidirectional capabilities to include a battery stage, thus increasing the need for higher power density and efficiencies. This is where Gallium Nitrate (GaN) FETs can bring multiple benefits into the picture.

As 5G deployment expands, GaN devices enable higher efficiency, reduced power loss, and compact design for base stations and wireless infrastructure. In the renewable ...

Sungrow 1+X Modular Inverter 2.0 is compatible with both DC- and AC-coupled solar-plus-storage solutions, further increasing renewable energy utilization.

Effective use of battery power is achieved with GaN inverters, resulting in longer driving distances between charges. 400-V three-phase GaN inverter. In GaN-powered 400-V battery traction inverters, increased efficiency ...

GPhilos leveraged GaN Systems" semiconductors to create a fuel cell inverter with world-class power conversion and life of 50,000+ hours. ... Energy Storage Systems enable renewable energy by adding an extra degree of freedom, ...

Advances in battery technology and the excellent torque-to-weight ratio, durability, and minimal maintenance needs of DC motors have revolutionized personal mobility. While the initial focus has been on e-bikes ...

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

Switching frequency and efficiency are central to energy storage solutions. Two areas where the 650 V cascode GaN FETs from Nexperia excel. By harnessing the efficiency, reliability, and performance advantages of GaN ...

For all solutions, GaN offers higher power density, excellent thermal performance for easier cooling or to increase power, excellent reliability and proven lifetime [1, 2]. An ...

Consumer end-user chargers/adapters, residential micro-inverters, and battery energy storage systems. Figure 1: An illustration of the range of applications for SiC and GaN, along with their expected Compounded Annual ...

Using GaN transistors in renewable energy inverters improves power density, minimizes heat dissipation, and reduces the size of passive components. GaN power ...

Added new solution 600W GaN-based Solar Power Optimizer with Wired and Wireless Communication (TIDA-010949 on F280013x) Reference Design; Updated solution 10kW GaN ...

Finally, SiC and GaN technologies enable the bidirectional flow of energy, allowing charge and discharge of the batteries. Solar string inverters have reduced their weight and size over time thanks to more efficient transistors. In ...

Scientists from France's CEA-Ines developed a 400 W micro-inverter with a power density of 1.1 kW/L and an efficiency of 97%. The device utilizes GaN 600V diodes and power transistors developed by ...

node voltage slew rate for the GaN-based inverter limited to 5V/ns, and an ambient temperature of 55°C. You can see that the GaN solution helps reduce power losses by at least ...

innovation and reducing energy consumption - a positive contribution to decarbonization. A GaN-optimized inverter design can also benefit from reduced ...

Within a decade's time, Growatt quickly grows to become a global leading distributed energy solution provider. Today, Growatt is already the global No.1 residential inverter supplier and also the largest user-side energy storage ...

WBG materials have large energy separation between their. 9/12/2020 EDN - GaN enables efficient, cost-effective 800V EV traction inverters ... Adopting a T-type hybrid ...

These total energy solutions each boast a modular and scalable Q.SAVE battery and a high-performance Q.VOLT inverter. Hanwha Qcells' Q.HOME+ ESS HYB-G1 energy storage solution is also scalable, with a ...

Solar energy is at the forefront of designing a more sustainable world. With our industry-leading digital power conversion, current and voltage sensing products and ...

10-kW, GaN-based single-phase string inverter with battery energy storage system reference design  
Description This reference design provides an overview into the ...

The "Gonzo" 125-kW/261-kWh C& I BESS All-in-One solution offers a turnkey energy storage system that integrates inverters, batteries and advanced management systems ...

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But in many other cases, an integrated solution (e.g., driver + GaN HEMTs; half-bridge + driver) can shrink design volume, offer increased power levels and reduce component count (smaller BOM). Let us take as an example ...

However, integrating energy storage systems with existing micro inverters poses a challenge due to the absence of bidirectional converters in these devices. This reference ...

o Easy to use complete power solution o Does not need separate GaN gate-driver or bootstrap switch o Easy layout, less dependence on board parasitics o In-built protection ...

GPhilos leveraged GaN Systems' semiconductors to create a fuel cell inverter with world-class power conversion and life of 50,000+ hours

By changing from Si FETs to GaN FETs the company achieved an increase of output current to 14 Amps with a power rating of 500 watts - while keeping the same board size.

The levelized cost of energy (LCOE) for residential solar is expected to decline further in 2024, making it an increasingly affordable solution. The demand for higher-power PV panels and ...

o Introduction of GaN and C2000 real-time MCUs which enable efficient power conversion and fast control o Example of TI GaN and C2000 real-time MCUs in wide variety of ...

Sungrow, the global leading inverter and energy storage system provider, unveiled its groundbreaking 1+X 2.0 Modular Inverter for utility-scale applications during the Global ...

Jan 22, 2024 // hofer powertrain and VisIC Technologies Ltd. join forces to bring the most efficient GaN-based, high-frequency inverters for 800V applications to the automotive world. With the focus on realizing smaller, lower ...

Web: <https://www.eastcoastpower.co.za>

