

# High power inverter design





## Overview

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What is a traction inverter?

This reference design is an 800V, 300kW silicon carbide (SiC) based traction inverter developed by Texas Instruments and Wolfspeed®. This design provides a foundation to create a high-performance, high-efficiency traction inverter to help get to market faster. The traction inverter system is a core sub-system of an electric vehicle.

What is a power inverter?

All trademarks are the property of their respective owners. Power inverter is a device that converts electrical power from DC form to AC form using electronic circuits. Its typical application is to convert battery voltage into conventional household AC voltage allowing you to use electronic devices when an AC power is not available.

How traction inverter technology improves system efficiency?

This solution demonstrates how the traction inverter system technology from TI and Wolfspeed improves system efficiency by reducing the overshoot in available voltages with a high-performance isolated gate driver and real-time variable gate drive strength driving the Wolfspeed SiC power module.

Which EV traction inverter is best?

For EV traction inverter, more efficiency and right performance are key. While IGBT is ideal for cost-optimized drive-train, SiC demonstrates higher efficiency under WLTP partial load scenario. Infineon offers the best scalability in market between IGBT and SiC, allowing customers to freely choose the technology for their needs,



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### Design of High Power Density Inverters for Traction ...

Mar 12, 2025 · The aim of this master thesis is to design the high power density inverter for traction application. Hence, this work focuses on exploring different technologies to enhance high ...

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### 800VA Pure Sine Wave Inverter's Reference Design

Apr 1, 2023 · The pure Sine Wave inverter has various applications because of its key advantages such as operation with very low harmonic distortion and clean power like utility-supplied ...

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### Key Design Considerations for Improved Efficiency and ...

Jun 26, 2023 · High Voltage Seminar Key design considerations for improved efficiency and power density in 800-V SiC traction inverter designs

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### high-power inverter based hybrid switch SiC+IGBT ...

Mar 19, 2024 · Hybrid switch configuration considered is 1:4 ratio (1 SiC + 3 IGBTs) Efficiency gain of full SiC Inverter and hybrid switch inverters vs IGBT inverter is from low load to medium ...

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### EV Traction Inverter Control Reference Design ...

4 days ago · Electric Vehicle 800V Silicon Carbide (SiC) traction inverter reference design to accelerate, de-risk and simplify ASIL D customer design.

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### TIDM-02014 reference design , TI

TIDM-02014 is a 800-V, 300kW SiC-based traction inverter system reference design developed by Texas Instruments and Wolfspeed provides a foundation for OEMs and design engineers to ...

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### Infineon high voltage Inverter Application Presentation

May 25, 2025 · Advantage of Infineon Discrete IGBT (TO247-PLUS) Infineon's industry-leading discrete IGBTs are compatible with Empower's latest generation inverter in terms of ...

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### EV Traction Inverter Control Reference Design Gen 3

4 days ago · Electric Vehicle 800V Silicon Carbide (SiC) traction inverter reference design to accelerate, de-risk and simplify ASIL D customer design.

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### Design and Implementation of 3 kW All-SiC Current Source Inverter ...

Jan 27, 2025 · In this paper, the optimal design and implementation of a silicon-carbide (SiC) power semiconductor-based current source inverter (CSI) with a power rating of 3 kW focusing ...

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### Design and Implementation of 3 kW All-SiC ...

Jan 27, 2025 · In this paper, the optimal design and implementation of a silicon-carbide (SiC)



power semiconductor-based current source inverter ...

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Automotive, High-Power, High-Performance SiC Traction ...

May 5, 2025 · Automotive, High-Power, High-Performance SiC Traction Inverter Reference Design Description This reference design is an 800V, 300kW silicon carbide (SiC) based ...

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A Design of High-Power Inverter Circuit Including GaN Power ...

Sep 11, 2020 · GaN power conversion circuits need to avoid overheating. This paper describes the design of inverter circuits including GaN power devices, focusing on dual cooling systems. ...

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