
MCU Voltage Inverter

What is a high-voltage inverter?

This reference design is a high-voltage inverter solution implemented for hybrid electric vehicle and electric vehicle traction control systems. It includes efficient system integration, protections, redundancies, enhanced safety and power flexibility to safely and efficiently drive the IGBT or SiC power modules.

What is a LC output filter in a high-frequency inverter?

This reference design uses devices from the C2000 microcontroller (MCU) family to implement control of a voltage source inverter. An LC output filter is used to filter the switching component in this high-frequency inverter.

What is a voltage source inverter?

Voltage source inverters (VSIs) are commonly used in uninterruptible power supplies (UPS) to generate a regulated AC voltage at the output. Control design of such inverter is challenging because of the unknown nature of load that can be connected to the output of the inverter.

How does a C2000 MCU control the output voltage?

To regulate the output voltage of the inverter, current and voltages must be sensed. The fast and precise on-chip analog-to-digital converters (ADCs) on the C2000 MCU are excellent to sense these signals. Sigma delta-based sensing can provide easy isolation and superior sensing of these signals.

As a diagnostic feature, the gate threshold voltage monitor feeds back the measured threshold voltage to the MCU to judge the health of the power transistor, as described in ...

For the MCU, the shift to an 800-V traction inverter creates three challenges: Lower latency real-time control performance demands. Increased functional safety requirements. The ...

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Do you know all this about inverters? MCU Application - Inverter Principle What is an inverter? An inverter converts DC power (battery, storage bottle) into AC power (generally 220V, 50Hz sine ...

Its primary role involves converting the battery's direct current into alternating current via a Voltage Source Inverter (VSI), achieved through the application of pulse width ...

The most important system-level blocks of a powertrain system in an electric vehicle (EV) are the electric motor itself, the traction inverter drive, the DC/DC converter, the ...

Weight and power density - The wide band-gap switch and powertrain integration are the key technologies enabling high-power density inverter design. The inverter power ...

Key features of the MCLV-48V-300W Inverter Board are as follows: o Three-phase motor control power stage o Motor phase current feedback to implement Field Oriented Control ...

This document demonstrate how the AM263x MCU can fit into the architecture of a traction inverter reference design with its hardware and software framework. Then the software ...

It mainly contains three sub-modules, on board charger (OBC), traction inverter, and high voltage (HV) to low voltage (LV) DC-DC converter. The current trend in the industry ...

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