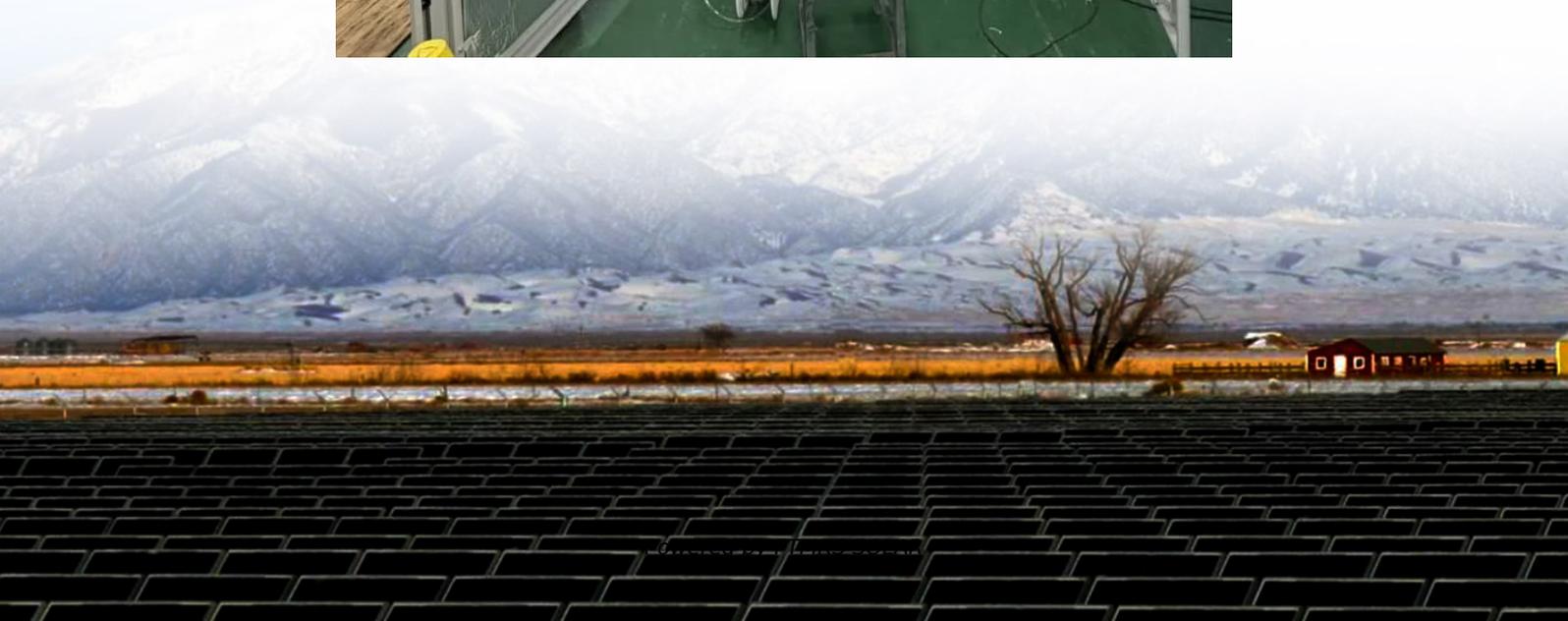


# **Inverter module DC reverse discharge**





## Overview

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Do EV traction inverters need a DC link active discharge?

Every EV traction inverter requires a DC link active discharge as a safety-critical function. The discharge circuit is required to discharge the energy in the DC link capacitor under the following conditions and requirements: Power transistor on, off control using the TPSI3050-Q1.

Why do EV inverters need to be discharged?

Abstract: when an Electrical Vehicle (EV) encounters an accident or the vehicle is taken to a service station, the DC-link capacitor in the inverter must be discharged to ensure safety of both the passengers and the operator.

How do EV traction inverters work?

To control the voltage so that the voltage does not exceed 50 V (touch safe), the auxiliary power supply has to turn on and power up safety-relevant circuits that can discharge the DC link caps (active discharge) or actively short circuit the motor. Every EV traction inverter requires a DC link active discharge as a safety-critical function.

What is a DC-link capacitor in a traction inverter?

Figure 1. Simplified Block Diagram of a Traction Inverter The DC-Link capacitor is a part of every traction inverter and is positioned in parallel with the high-voltage battery and the power stage (see Figure 1). The DC-Link capacitor has several functions, such as to help smooth voltage ripples, filtering unwanted harmonics and reducing noise.



## Inverter module DC reverse discharge

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A DC-Link Hybrid Active Discharge Scheme ...

Oct 28, 2024 · A DC-Link Hybrid Active Discharge Scheme for Traction Inverters October 2024 Conference: ECCCE Europe 2024 At: Darmstadt, ...

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An Active Discharge Scheme for DC-Bus Capacitors in EV ...

Jul 18, 2025 · During the emergency situations, key-OFFs, or maintenance, discharging the inverter dc-bus capacitor voltage within seconds is imperative due to safety concerns (inverter ...

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How to Reduce the Power Resistor for DC-Link ...

Aug 16, 2024 · The DC-Link capacitor is a part of every traction inverter and is positioned in parallel with the high-voltage battery and the power stage (see Figure 1). The DC-Link ...

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Design Considerations for a Bidirectional DC/DC Converter

Aug 8, 2025 · For example, a DC battery backup system used in a data center server needs to implement a fast charge-to-discharge transition to implement a seamless power delivery; ...

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Novel five-level inverter based on DC power-capacitor ...

In this paper, a novel five-level inverter based on DC power-capacitor series charge-discharge switching strategy is proposed. By analysing its topology and circuit simulation, the following ...

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Design Priorities in EV Traction Inverter With Optimum ...

Apr 1, 2023 · An MCU with fast control loop enables the use of high-speed, lighter motor, and powertrain integration such as an inverter integrated with DC-DC converters. Efficiency - ...

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Enabling Smarter DC Link Discharge in EV Traction Inverters

May 25, 2025 · Enabling Smarter DC Link Discharge in EV Traction Inverters By using an integrated gate driver for DC link discharging, you can shrink BOM costs, save PCB space, ...

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A DC-Link Hybrid Active Discharge Scheme for Traction Inverters

Oct 28, 2024 · A DC-Link Hybrid Active Discharge Scheme for Traction Inverters October 2024 Conference: ECCCE Europe 2024 At: Darmstadt, Germany Authors:

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Reverse Power Protection Technology for Energy Storage Inverters...

1. Concept and Necessity of Reverse Power Protection Reverse power protection refers to measures taken in energy storage or renewable energy generation systems to prevent ...

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A DC-Link Hybrid Active Discharge Scheme for Traction Inverters

Sep 6, 2024 · when an Electrical Vehicle (EV) encounters an accident or the vehicle is taken to a service station, the DC-link capacitor in the inverter must be discharged to ensure safety of ...

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