

Inverter high voltage capacitor discharge





Overview

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.

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.

How to safely discharge a high-voltage bus capacitor without external components?

The proposed method utilizes a constant power tracking approach with pulse frequency modulation to safely discharge the high-voltage bus capacitor without external components. When the car is off, the proposed scheme discharges a 1000-V dc bus within 1 s using a single low-side SiC switch to test a worst-case scenario.

How is a capacitor discharged?

The capacitor is then discharged through the flyback discharge using either variant 1 or variant 2. activation. However, certain applications may require a shorter discharge time. Due to the power limitations of the flyback feasible in this scenario. The proposed method exhibits its merits



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

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Active Discharge and Pre-charge of EV High Voltage ...

Apr 20, 2023 · Vehicule stops tm Time DC link Capacitor discharge Inverter current decrease to zero (50A -> 0A)

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