

## SolarInnovate Energy Solutions

# 5kw bidirectional energy storage power supply



## Overview

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Can a 'isolated bidirectional DC-DC power supply' be used for high-power conversion?

This article introduces a reference design for an "isolated bidirectional DC-DC power supply" that can be used as the basis for high-power conversion applications, including EV charging stations and inverters in solar power generators.

What is a msp430f5132 bidirectional power supply?

The versatile bidirectional power supply is an integration of two systems: a DC-DC synchronous buck converter for charging a lead acid battery and a DC-DC synchronous boost converter for driving a CC-CV DC load from the lead acid battery. Control of the system is managed through an onboard MSP430F5132 microcontroller.

How do I use a DC power supply?

The DC power supply must be capable of supplying up to Connect the panel terminal of the board to the DC source, making sure to maintain the correct polarity. Connect the battery terminal of the board through an ON/OFF switch to maintain the correct polarity. Connect the electronic, resistive, or LED load to the load terminals.

What are the main specifications of DAB bidirectional DC-DC conversion?

The main specifications are as follows. This reference circuit's high conversion efficiency is achieved through the combined benefits of the DAB bidirectional DC-DC conversion method, and using SiC MOSFETs as the switching elements. A key figure of merit here is the higher switching frequency of SiC MOSFETs in comparison with IGBTs.

How does a bidirectional power stage work?

The bidirectional power stage operates at a 100-kHz switching frequency

when working as a synchronous buck and operates at a 350-kHz switching frequency when working as a synchronous boost.

What is a bidirectional power directing switch?

**Bidirectional Power Directing Switches** The purpose of the two switches is to channel the flow of power from the panel or to the load depending on the state of the system. When the system is in the battery charging state, MOSFET Q3A is turned on and MOSFET Q3B is turned off. Power flow occurs from the panel to the battery.

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