

# What is an industrial-grade bidirectional switch



## Overview

Each device features two separate gates with substrate terminal and independent isolated control, allowing for a common-drain configuration that utilizes the same drift region to block voltages and current in both directions. The CoolGaN™ BDS 650 V G5 comprises true normally-off monolithic GaN bidirectional switches with four modes of operation. For well over a century, engineers and scientists have been developing more advanced semiconductor power switches aimed at improving the functioning of all kinds of devices. What is a Bidirectional Power Switch?

bidirectional power switch (BPS) is an active switch which can support bidirectional current flow when it is in the ON condition and bidirectional voltage blocking when it is turned OFF. Figure 1 shows an ideal representation of BPS with 'A' or 'B' as. Gallium nitride (GaN), with its superior semiconductor properties, is enabling the revolution with a true renaissance in power electronics fueled by the advent of the fastest and smallest power switches ever made. These switches enable the efficient control of energy flow in both directions, ensuring reliable and safe operation in. In 2024, we generated about 30,000 TWh of electricity globally, and we used it in a broad spectrum of applications—residential, commercial, industrial, and transportation.

## Article Content

Distinguishing Industrial Switches from Regular Switches: An In

Industrial switches are designed with full consideration of the complexity and rigor of industrial environments. They need to withstand extreme temperatures, humidity, vibration, shock,

Bidirectional Switch: Everything You Need to Know

Bidirectional switches are used in various industrial applications, such as motor drives, uninterruptible power supplies (UPS), and power distribution systems.

Design and Implementation of a Modular Bidirectional

The bidirectional switch (Bi-Sw) is a power device widely used by power conversion systems. This paper presents a novel modular design of a Bi

Revolutionize Power Design with GaN Bidirectional Switches

Learn how GaN bidirectional switches enable compact, efficient single stage power conversion for solar, AI, EV, and industrial systems.

GaN Bidirectional Switches: The Revolution is Here

At their core, power transistors switch on and off at high frequency and contribute to a significant portion of power losses. Innovation in device technology

The difference between industrial-grade switches and

Industrial-grade switches and enterprise-class switches exhibit notable differences in design philosophy, structural design and durability, data transmission

Bidirectional Switch: Everything You Need to Know

What is a Bidirectional Switch? A bidirectional switch is an electronic component that allows current to flow in either direction when turned on. Unlike a

GaN Bidirectional Switches: The Revolution is Here

Being monolithically integrated, GaN bidirectional switches share a single drift region and have no back-to-back drain contacts, resulting in a significant figure of merit advantage. They fit in

How to pick the right Industrial Ethernet Switch for

Industrial Ethernet switches are comprised of managed and unmanaged switches with Gigabit, PoE, and various industry certifications. Featured industrial-grade

SiC and GaN usage in bidirectional power applications

This article will explore the challenges and the technical solutions that allow silicon carbide (SiC) and gallium nitride (GaN) power switches to implement

Could Bidirectional Switches Become an Industry

Bidirectional switches offer advantages over conventional power switches and could become standard in the industry.

Bidirectional Switch: Everything You Need to Know

Industrial Automation: In industrial automation, bidirectional switches are used to control various processes and equipment. They can be used to

Bidirectional Switch: Everything You Need to Know

Introduction to Bidirectional Switches A bidirectional switch, also known as a bilateral switch or a two-way switch, is an electronic component that

Cisco Industrial Ethernet 1000 Series Switches

Keep your industrial operations running smoothly with secure, compact, Power over Ethernet (PoE)-enabled, and easy-to-manage Industrial Ethernet 1000 Series

Industrial Ethernet Switches: Benefits, Applications

Discover what industrial grade Ethernet switches are, their unique features, real-world applications, key differences from regular switches, and

Bidirectional Switch: Everything You Need to Know

A bidirectional power switch (BPS) is an active switch with bidirectional current flow capabilities when it operates. Otherwise, if it turns off, the device, called a four

Bidirectional Switch - Homemade Circuit Projects

Bidirectional Switch Construction A bidirectional switch is constructed by connecting MOSFETs or IGBTs back to back in series as shown in the

The difference between industrial-grade switches and enterprise-grade ...

Industrial-grade switches and enterprise-class switches exhibit notable differences in design philosophy, structural design and durability, data transmission performance and redundancy, anti-interference

11 best EV chargers with solar integration (2026)

Compare the best solar-integrated EV chargers of 2026. This guide explores industrial energy architectures, from Automatic Phase Switching to grid-forming

Bidirectional Switch: Everything You Need to Know

Key Features of Bidirectional Switches Current Flow: Bidirectional switches allow current to flow in both directions when the switch is closed.

## GaN Bidirectional Switches: The Revolution is Here

In 2024, we generated about 30,000 TWh of electricity globally , and we used it in a broad spectrum of applications—residential, commercial,

MAX232 Interface: Datasheet, Features, Pinout, and

Audience Relevance: Used "DB9 Male/Female Connector" for clarity, a common term in US engineering contexts, and highlighted industrial-grade models

Could Bidirectional Switches Become an Industry Standard?

PDF file

Achieve Bidirectional Control and Protection Through Back-to-Back ...

In this section, test waveforms of an eFuse bidirectional power switch for several use cases are presented. The circuit is configured for current limit of 600 mA in both the power path directions and

GaN bidirectional switches | Infineon Technologies

Each device features two separate gates with substrate terminal and independent isolated control, allowing for a common-drain configuration that utilizes the same

## Contact Us

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