High-frequency optocoupler module

Overview

High Speed Optocouplers – MouserHigh Speed Optocouplers are available at Mouser Electronics. Mouser offers inventory, pricing, & datasheets for High Speed.

Key Takeaways

High-frequency optocoupler modules provide fast, galvanically-isolated signal transfer, ideal for high-speed digital and industrial applications.

Overview

A high-frequency optocoupler module is an electronic device that transfers electrical signals between two isolated circuits using light, allowing both AC and DC signals to pass without direct electrical connection. These modules typically consist of an IR-LED emitter and a photodetector (phototransistor, photodiode, or logic gate output) enclosed in a compact package. The optical coupling ensures galvanic isolation, protecting sensitive electronics from voltage spikes, ground loops, and hazardous voltages.

Key Features

High Switching Speed: Designed for fast signal transmission, often supporting logic-level communication at 3. 3V or 5V.

Current-

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Transfer Ratio (CTR): The ratio of phototransistor output current to LED input current, critical for determining signal amplification and efficiency. Noise Immunity: Advanced designs, such as coplanar or Optoplanar® packaging, provide high common-mode transient immunity and power supply rejection, making them suitable for noisy industrial environments. Voltage Isolation: Many high-frequency optocouplers can withstand isolation voltages up to several kilovolts, ensuring safety in industrial and power applications.

ApplicationsHigh-frequency optocoupler modules are widely used in: Industrial Automation: Isolated communication between PLCs, sensors, and actuators. Power Electronics: Switching power supplies, motor drives, and inverter circuits. Signal Isolation: Protecting microcontrollers and logic circuits from high-voltage transients.

Communication Systems: High-speed data transfer between isolated subsystems without introducing ground loops.

Design Considerations

When selecting or designing with high-frequency optocouplers: Switching Frequency: Ensure the optocoupler supports the required data rate; parasitic capacitance can limit high-speed performance. Temperature and Bias Effects: CTR and switching characteristics can vary with temperature and LED bias current. Package Type: Coplanar or side-by-side designs improve speed and isolation while maintaining a compact form factor.

Integration with Modules: Many industrial modules combine optocouplers with relay or terminal block systems for easy installation and maintenance.

Manufacturers and Resources

Leading suppliers of high-speed optocouplers include Vishay, onsemi, and distributors like Mouser Electronics, offering datasheets and modules optimized for high-speed, high-isolation applications. High-frequency optocoupler modules are essential for applications requiring fast, reliable, and electrically isolated signal transfer, particularly in industrial automation, power electronics, and communication systems.

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Article Content

High Speed Optocouplers – Mouser

High Speed Optocouplers are available at Mouser Electronics. Mouser offers inventory, pricing, & datasheets for High Speed Optocouplers.

High Speed | Optocouplers/Isolators | Vishay

High Speed, Optocouplers/Isolators manufactured by Vishay, a global leader for semiconductors and passive electronic components.

High Performance Optocouplers

High-speed logic gate optocouplers that support isolated communications between systems without conducting ground loops or hazardous voltages. Explore our semiconductor product portfolio,

Hochgeschwindigkeits-Optokoppler – Mouser Deutschland

High Speed Optocouplers detect, emit, transmit, isolate, or respond to optical and physical signals in electronic systems. They support functions such as indication, sensing, illumination, optical

High Speed Logic Gate Optocouplers

onsemi''s 3.3V/5V high-speed logic gate optocouplers support isolated communications between systems without conducting ground loops or hazardous voltages. Each high speed optocoupler

Relay Modules and Optocoupler Modules | WAGO

From relay sockets to pluggable relay and optocoupler modules – WAGO delivers versatile, high-performance solutions for every application. They''re perfectly suited for industrial automation,

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In order to design a functionally robust and reliable application with optocouplers, it is essential to understand not only the device''s main parameters and parasitic elements, but also their tolerances

High-speed opto-coupler

A high-speed optocoupler is a nonlinear optocoupler, which is suitable for the transmission of switching signals instead of analog signals. High-speed optocoupler products are widely used in A/D or D/A

Optocouplers, Optoisolators | Isolators | DigiKey

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Optocouplers are ideal when electrical isolation is required between control and power stages. For example, in industrial environments where PLCs or microcontrollers interface with high-voltage

High-speed opto-coupler

High-speed opto-coupler The structure of a high-speed optocoupler is a photodiode + amplifier drive circuit. Photodiodes have a nanosecond response speed, while phototriodes have a microsecond

Optocouplers/Isolators | Vishay

Optocouplers/Isolators As safety products, optocouplers are designed to protect sensitive control circuitry or people from high voltages. They galvanically isolate the low- and high-voltage sides of a

Optocoupler module (859-759) | WAGO SG

Optocoupler module; Nominal input voltage: 24 VDC; Output voltage range: 20 28.8 VDC; Limiting continuous current: 0.1 A; 3-wire connection/high-side switching; Frequency: 100 kHz; Red status

IGBT/MOSFET Gate Drivers Optocouplers | FOD3182

The FOD3182 is a 3A output current, high-speed MOSFET gate drive optocoupler. It consists of an aluminium gallium arsenide (AlGaAs) light emitting diode (LED) optically coupled to a CMOS

Optocouplers, Optoisolators | Isolators | DigiKey

When and Why to Use an Optocoupler Over a Transistor or Relay Optocouplers are ideal when electrical isolation is required between control and power stages. For example, in industrial

Low Voltage, High Performance Optocouplers | FODM8071

The FODM8071 is a 3.3V/5V high-speed logic gate output Optocoupler, which supports isolated communications allowing digital signals to communicate between systems without conducting ground

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Note how the high-frequency portion does not exactly match the analytical graph of Figure 16. This is because the optocoupler has another pole at higher frequency causing a steeper gain roll-off and

High Performance Transistor Optocouplers | HCPL0500

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The HCPL05XX, and HCPL04XX optocouplers consist of an AlGaAs LED optically coupled to a high speed photodetector transistor housed in a compact 8-pin small outline package. A separate

Understanding Phototransistor Optocouplers

Understanding Phototransistor Optocouplers Content you may also like An optocoupler, also known as photo-coupler or opto-isolator, is a component which can transfer an electrical signal

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