What are the pin functions of an optocoupler module



Overview

Learn how optocouplers ensure electrical isolation and signal transfer in circuits. This guide covers their components, working principles, and applications.

Key Takeaways

Optocoupler module pins transfer signals between isolated circuits, with input pins controlling the internal LED and output pins connected to the phototransistor, providing electrical isolation.

Input Pins

Pin 1 (Anode of LED): Receives the positive input signal. When voltage is applied, current flows through the internal infrared LED, causing it to emit light that activates the phototransistor on the output side. Pin 2 (Cathode of LED): Connected to the input ground.

Completes the LE

D circuit and ensures proper current flow through the LED.

Output Pins

Pin 3 (Collector of Phototransistor): Acts as the output signal pin.

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When the LE

D is on, the phototransistor conducts, pulling this pin LOW.

When the LE

D is off, the phototransistor is non-conductive, and the pull-up resistor holds the output HIGH. Pin 4 (Emitter of Phototransistor / Output GND): Connected to the output ground. Provides a reference for the output circuit and completes the phototransistor path.

Key Features

Electrical Isolation: Input and output sides are galvanically isolated, preventing high-voltage spikes from affecting sensitive circuits.

Open-

Collector Output: The output pin is open-collector, requiring a pull-up resistor to define the HIGH state when the phototransistor is off.

Active-

Low Operation: The output is inverted relative to the input; when the input LED is activated, the output pin is pulled LOW. Separate Power Domains: Input-side VCC/GND and output-side VCC/GND are independent, maintaining isolation and protecting microcontrollers or low-voltage devices. Understanding these pin functions is essential for correctly wiring optocoupler modules in applications such as microcontroller interfacing, relay driving, AC load control, and signal isolation in noisy environments.

Article Content

Optocouplers Guide: Understanding Types, Applications, and ...

Learn how optocouplers ensure electrical isolation and signal transfer in circuits. This guide covers their components, working principles, and applications. An optocoupler, also known as

PC817 Optocoupler pinout, working and Example with Arduino

When the LED is energised by an input signal, it emits light that is detected by the photodetector, which then produces an output signal. This

Optocoupler Circuits, Working, Characteristics, Interfacing

OPTOCOUPLERS OR OPTOISOLATORS are devices that enable efficient transmission of DC signal and other data across two circuit stages, and also simultaneously maintain an excellent

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Optocoupler Tutorial for Beginners

An optocoupler (or opto-isolator) is a component that transfer signals between circuits using light. In this guide, you''ll learn how they work and how you can use one in your own projects.

What are Optocouplers? Definition, construction and working of ...

Optocouplers are common component by which electrical isolation can be supplied between the input and output source. It is a 6 pin device and can have any number of photodetectors. Here, a beam of

ANO007 | Understanding Phototransistor Optocouplers

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

What is Optocoupler and How it works?

These components are called optocouplers or optoisolators or simply optos, and they perform the crucial function of passing signals between isolated sections of circuitry. They use light to

Using Opto Couplers

The main purpose of an optocoupler interface is to completely isolate the input circuit from the output circuit, which normally means there will be two completely separate power supplies, one for the input

Optocoupler Tutorial and Optocoupler Application

This type of optocoupler configuration forms the basis of a very simple Solid State Relay application. It can be used to control any AC mains powered loads such as lamps, motors or resistive

Optocouplers Guide: Understanding Types, Applications, and ...

Understanding the Optocoupler Pinout To build the circuit correctly, you need to understand the pinout of the optocoupler. Each pin has a specific function, and connecting them

Best Raspberry Pi Boards for IoT, AI, NAS and Industrial Projects in ...

As of 2026, Raspberry Pi is no longer only a hobbyist single-board computer ecosystem. Raspberry Pi Holdings reports 73M+ units sold, and its FY25 SBC and Compute Module unit sales

ANO007 | Understanding Phototransistor Optocouplers

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A phototransistor optocoupler is formed by an infrared light emitter device (IR-LED) (Gallium Arsenide (GaAs)) and a light detector device (phototransistor), both optically coupled and typically

Introduction of Optocouplers

Opto-couplers, with light emitting and light sensitive devices- MOC3020, MOC3021, MCT2E, MOC363 explained with pin descriptions, features and applications.

Optocouplers Selection Guide: Types, Features, Applications

Video credit: myvideoisonutube / CC BY-SA 4.0 Types Optocoupler types are determined by the type of detector used, as described below. Certain types have different characteristics and are therefore

What Is Optocoupler and Its Application with Examples

An optocoupler is a semiconductor device that transmits an electrical signal between two isolated circuits using light. This process ensures there is no direct electrical connection between the

ESP32 Controlling Relays and AC Appliances

To achieve true galvanic isolation, remove this jumper cap entirely. Connect your ESP32''s 3.3V rail to the module''s VCC pin to power only the input side of the optocoupler''s LED. Route a completely

How Optocouplers Work

FREE COURSE!! Learn about optocouplers. We''ll look at how they are used to control circuits, how they work and also how to design some simple optocoupler circuits to show the working

Optocoupler Circuits, Working, Characteristics, Interfacing

Optocouplers become an effective replacement for relays, and for transformers for interfacing digital circuits stages. Additionally, Optocoupler frequency response prove to be

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