

Working principle of an optocoupler

Article Overview

An optocoupler transfers electrical signals between two isolated circuits using light, with an LED on the input side and a photosensitive device on the output side.

Basic Operation

An optocoupler, also called an opto-isolator, consists of two main components enclosed in a single package: a Light-Emitting Diode (LED) and a photosensitive device such as a phototransistor, photodiode, photoresistor, or photo-SCR . The LED converts the input electrical signal into light, typically infrared, which travels across an insulating barrier inside the optocoupler. This barrier provides electrical isolation, preventing direct current flow between the input and output circuits .

Signal Transfer Mechanism

When current flows through the LED, it emits light proportional to the input signal. The photosensitive device on the output side detects this light and changes its electrical properties accordingly. For example, in a phototransistor optocoupler, the light causes the transistor to conduct, allowing current to flow through its collector-emitter path. When the LED is off, the phototransistor remains non-conductive, effectively acting as an open switch . This mechanism allows the optocoupler to pass digital or analog signals while keeping the circuits electrically isolated.

Applications and Advantages

Optocouplers are widely used to protect sensitive electronics from high voltages, vo...

Article Content

Dec 04, 2025

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

Definition: An optocoupler or optoelectronic coupler is an electronic component that basically acts as an interface between the two

Apr 18, 2026

Optocoupler | Explore Our Workshop | Jameco Electronics

Understand what an optocoupler is and how it works at our electronics workshop at Jameco Electronics. Explore tutorials on how

Apr 24, 2026

Opto Coupled Devices

Designing Optocoupler Interfaces The main purpose of an optocoupler interface is to completely isolate the input circuit from the

Mar 13, 2026

What is Optocoupler and How it works?

They use light to pass signals between circuits. What is Optocoupler and How It Works As we have already learnt

Sep 16, 2025

What is Photocoupler | Optocoupler | Optoisolator

What is an Optocoupler (Optoisolator / Photocoupler)? An Optocoupler (Optoisolator / Photocoupler) is an electronic

May 17, 2026

What Is Optocoupler | Opto-coupler Working And Application

working principle of Optocoupler Saturation and linear Mode operation of the optocoupler Photodiode vs Phototransistor

Apr 29, 2026

Optocoupler working principle

This diagram explains the working of an optocoupler (opto-isolator). It contains an

Feb 04, 2026

Optocoupler Tutorial for Beginners

An optocoupler uses light to transfer signals from one circuit over to another. This guide shows you how they work

Aug 25, 2025

Optocoupler, Structure, Working, advantages, disadvantages and ...

Optocoupler is a electronic device which connects two isolated circuits by light. Basically it consists of LED and a

Jul 06, 2026

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

An Optocoupler is a combination of LED and a Photo-diode packed in a single package. As we can see in the below-shown circuit

Jan 27, 2026

What is Optocoupler? How does Optocoupler work? Optocoupler

In this article, what is optocoupler, how optocoupler works and some important specifications of the optocouplers are

Apr 26, 2026

What Is Optocoupler | Opto-coupler Working And Application

A: An optocoupler works by converting an electrical signal on the input side into light using the LED. This light then illuminates the

Feb 28, 2026

What is Optocoupler and How it works?

These components are called optocouplers or optoisolators or simply optos, and they perform the crucial function of

Oct 11, 2025

How an Optocoupler Works

Learn how an optocoupler works to safely separate high-voltage components and low-voltage devices while removing

Nov 03, 2025

How optocouplers work in circuits

Learn about optocouplers, also known as optoisolators, and how they work in electronic circuits. Discover their

Feb 07, 2026

Optocoupler Explained | Working, Types, and Applications in Electronics

Learn everything about the Optocoupler (Opto-isolator) in this detailed electronics lecture.

Mar 12, 2026

Understanding Optocouplers: How They Work and How to Use Them

This article will provide an in-depth overview of optocouplers, their working principles, and how to use them in practical

Jun 21, 2026

Optocoupler Working Principle: Types, CTR Formula and Industrial ...

Electronics · Optocoupler · Photocoupler · Electrical Isolation · Signal Coupling
Optocoupler Working Principle: How It

Dec 01, 2025

Optocouplers 101: A Comprehensive Guide for PCB

Simply put, optocouplers (or opto-isolators) are electronic components that transfer

Feb 10, 2026

Everything You Need to Know About Optocouplers in

Dive deep into the world of optocouplers with our comprehensive guide. Learn about their

Sep 05, 2025

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

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

Jan 03, 2026

What is An Optocoupler: How It Works and More

The primary purpose of an optocoupler is to provide electrical isolation between two circuits while allowing them to

Jul 09, 2026

Understanding Optocouplers: Principles, Types and Applications

Working of an Optocoupler The internal structure of an optocoupler consists primarily of a light-emitting diode (LED)

Apr 13, 2026

ANO007 | Understanding Phototransistor Optocouplers

An optocoupler, also known as photocoupler or opto-isolator, is a device which can transfer an electrical signal across two

Aug 18, 2025

What is an Optocoupler A.K.A Opto-isolator or Photocoupler?

Optocoupler or Opto-isolator, Symbol, Construction, Working, Types and Applications In electrical and electronic engineering, we

Mar 22, 2026

What Is An Optocoupler And How Does It Work?

Learn what an optocoupler is, how it works, and why it's essential for isolating electronic signals in industrial and

May 18, 2026

How Optocouplers work

Optocoupler. In this video we learn how optocouplers work and also look at some simple

Feb 19, 2026

Optocouplers Working Principle

Optocouplers are used to isolate sections of a circuit that are incompatible in terms of the voltage levels or currents

Jan 29, 2026

Optocoupler Working Principle: Types, CTR Formula and Industrial ...

How an Optocoupler Works: The Complete Operating Principle An optocoupler (also called a photocoupler, opto

Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: <https://www.iiss.co.za>

Email: sales@iiss.co.za

Phone: +27 63 174 2895

Address: Unit 8, Innovation Park, 15 Rivonia Road, Sandton, Johannesburg,
2196, South Africa

This document is for informational purposes only. Specifications subject to
change without notice.

