

Example of an Optocoupler Circuit



Summary of Content

A basic optocoupler circuit uses an IR LED to drive a phototransistor, providing electrical isolation between input and output circuits.

Basic ON/OFF Optocoupler Circuit

A simple example involves a PC817 optocoupler:

- Input side (LED): Connect a current-limiting resistor (R1) in series with the LED to the input voltage. When the input switch (S1) is closed, current flows through the LED, causing it to emit infrared light.
- Output side (phototransistor): The phototransistor conducts when illuminated, allowing current to flow through a load resistor (R2) and generating a voltage across it. This voltage can be used to drive another circuit, such as a microcontroller input or a logic gate . Operation:
- S1 open → LED off → phototransistor off → no voltage across R2.
- S1 closed → LED on → phototransistor on → voltage develops across R2, signaling the input state to the output circuit while maintaining electrical isolation .

Interfacing with Logic Circuits

For digital logic applications, an optocoupler can interface TTL or CMOS logic:

- Use a resistor R1 to set the forward current through the LED according to the input voltage.
- Connect the phototransistor in common-emitter configuration with a pull-up resistor R2 to the output voltage rail.

Article Content

Activity: Optocouplers. [Analog Devices Wiki]

Activity: Optocouplers. Objective: In this activity you will construct an optocoupler from an infra-red LED and an NPN photo transistor.

Optocoupler Circuit Design and Detailed Analysis

Optocoupler circuit design is not that difficult as some thought. Once you know what a CTR is and learn how to use it, then

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

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

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

An optocoupler, also known as an opto-isolator or photocoupler, transfers electrical signals between circuits using light.

Optocoupler Tutorial and Optocoupler Application

Optocoupler Tutorial Optocouplers, also known as opto-isolators, uses infrared light to transfer electrical signals

Optocouplers Working Principle

Optocoupler Principle Optocouplers are used to isolate sections of a circuit that are incompatible in terms of the

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

Using Opto Couplers

There are many different applications for optocoupler circuits, so there are many different design requirements, but a basic design for

How an Optocoupler Works and Example Circuit

How an Optocoupler Works and Example Circuit How an Optocoupler Works and

Optocoupler Circuits, Working, Characteristics, Interfacing

The figure above shows a basic optocoupler circuit. The amount of current that may pass through the phototransistor

Opto Coupled Devices

In this case the optocoupler will be used in Saturation Mode. A switched mode power supply may need a DC sample voltage of

How to Use an Optocoupler to Pass Signals Between Controllers at ...

How to Use an Optocoupler to Pass Signals Between Controllers at Different Voltages: This tutorial makes use of the 4N25

PC817 Optocoupler pinout, working and Example with Arduino

PC817 consists of an LED emitting diode and phototransistor. They are coupled together optically. The Electrical signal transfers

Optocoupler: Its Types and Various Application in DC/AC Circuits

Optocoupler also called Opto-isolator, photo coupler or optical isolator. Often in circuits, especially low voltage or

optocoupler 01

A very simple model of a typical optocoupler. I thought I'd seen one somewhere in CL but I couldn't find it so here's

Everything You Need to Know About Optocouplers in

This is where the optocoupler comes in handy and isolates both networks. The

A Short De-mystification of Optocouplers

An optocoupler can make sure to galvanically isolate the lines so that magnetic waves

Optocouplers Selection Guide: Types, Features, Applications

Optocouplers are often referred to by their "output type"; for example, a phototransistor device might be called an optocoupler "with

Optocoupler Circuit Diagram

optocoupler circuit diagram When it comes to electronic circuitry, one component that is often overlooked but plays a

How to Build an Optocoupler Circuit

How to Build an Optocoupler Circuit In this project, we will show how to connect an optocoupler chip to a circuit. An optocoupler or

Everything You Need to Know About Optocouplers in

An optocoupler, also known as an opto-isolator, is an electronic component that transfers

Optocoupler Tutorial and Optocoupler Application

BenefitsMechanismDesignDefinitionExampleEffectsTypesApplicationsConstructionAdvantagesAn optocoupler or opto-isolator consists of a light emitter, the LED and a light sensitive receiver which can be a single photo-diode, photo-transistor, photo-resistor, photo-SCR, or a photo-TRIAC with the basic operation of an optocoupler being very simple to understand. See more on electronics-tutorials.ws Learn about Electronics

Using Opto Couplers - Learn About Electronics

In this example a PC817 optocoupler is shown isolating a circuit using HCT logic via a 7414 Schmitt

Detailed explanation of optocoupler circuit applications: Example ...

Without further ado, here's an example of a real-world project application: using a TLP521 optocoupler to control the

Application Examples

The interfacing of the optocoupler between digital or analogue signals needs to be designed correctly for proper protection. The

Optocoupler Circuit Operation | Specification | Applications

Optocoupler Circuit Operation: An Optocoupler Circuit Operation (optoelectronic coupler) is essentially a photo-transistor and an LED

How to Build an Optocoupler Circuit

In this project, we will go over how to build an optocoupler circuit so that we can create electrical isolation of the input and output of a

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