

What voltage is required for an optocoupler

Article Overview

An optocoupler's voltage is defined by the forward voltage of its input LED, the reverse voltage limit of the LED, and the maximum isolation voltage between input and output circuits.

Input Side Voltage

The input of an optocoupler consists of a light-emitting diode (LED). The forward voltage of this LED typically ranges from 1.2V to 1.4V for standard infrared LEDs, depending on the specific device and current applied. The reverse voltage of the LED is usually low, often around 5V, and exceeding this can cause a reverse current that may damage the LED or reduce its light-emitting efficiency. The LED's voltage drop is proportional to the current flowing through it, and datasheets specify the maximum forward current to prevent overheating or destruction.

Output Side Voltage

The output side of an optocoupler is usually a phototransistor, photodarlington, or photo-SCR/triac. The voltage across the output device depends on the collector-emitter voltage (V_{CE}) for phototransistors or the blocking voltage for photo-SCRs and triacs. Typical phototransistor optocouplers can handle collector-emitter voltages from 20V up to 80V, while specialized devices may support higher voltages. The output voltage is controlled by the external circuit and the current transfer ratio (CTR) of the optocoupler.

Isolation Voltage

A key voltage specification is the isolation voltage, which defines the maximum voltage that can be applied between the input and output without breakdown. Standard optocouplers provide isolation up to 5kV RMS, ensuring that high voltages on the input side do not affect the output side. This voltage is tested for a short duration (e.g., 1 minute) and guarantees insulation under normal operating conditions.

Summary

- o Forward voltage (LED input): ~1.2-1.4V
 - o Reverse voltage (LED input): ~5V maximum
 - o Output voltage (phototransistor V_{CE}): 20-80V typical
 - o Isolation voltage: up to 5kV RMS
- Understanding these voltage limits is essential for designing circuits that safely use optocouplers to transfer signals between high-voltage and low-voltage sections while maintaining electrical isolation.

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High-speed optocouplers are used for fast-switching applications, and the optocoupler with the logic output can be

Optocoupler Tutorial Summary Optocouplers and Opto-isolators are great electronic devices that allow devices such

The possibility is very rare, such as if the potential is greater than the isolation voltage between the input and output

Optocoupler parameters like CTR, isolation voltage, and timing are key for reliable circuit design performance.

It consists of collector-emitter voltage (VCE) and collector current (IC) as a function of the base current (IBASE). With optocouplers,

The optocoupler can be used in many different applications as an interface between low voltage digital, such as 3.3V

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

Assuming that a single HCT output is only feeding this optocoupler, a logic 1 voltage of about 4.9V can be presumed. The output

Optocoupler parameters made easy: a beginner's guide to understanding the key parameters and their practical

I want to understand this the datasheet for the Everlight EL817 optocoupler but don't know what is the maximum power

Optocouplers provide both electrical insulation and signal isolation. The ability of an

Understanding Phototransistor Optocouplers An optocoupler, also known as photo-coupler or opto-isolator, is a

A: An optocoupler is used to transfer electrical signals between two isolated circuits. This is useful in

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applications

OPTOCOUPLER DEVICES AND APPLICATION An optocoupler (or an optoelectronic coupler) is basically an interface between two

Voltage Limitations: Optocouplers may have voltage limitations, restricting their use in high-voltage applications.

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