

Resistor Guide

Welcome to the Resistor Guide!

The Resistor Guide will guide you in the world of resistors. This site is designed as an educational reference, serving as a reliable source for all information related to resistors. Several subjects will be covered including:

Resistor Fundamentals

When you just start working with resistors you might wonder, [what is a resistor?](#) Or what exactly is the [resistance of a resistor?](#) Whenever you are working on circuits containing resistors, [Ohm's law](#) describes the fundamental behavior of resistors. [Kirchhoff's laws](#) can be used to analyse networks of resistors.

Resistors have several properties besides their rated resistance, such as their [temperature coefficient](#), [resistor noise](#) and [power rating](#). These resistor properties can be important to take into account depending on the application.

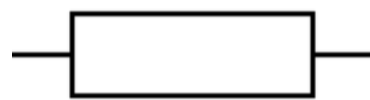


Resistor Standards and Codes

Resistors are used and manufactured by thousands of companies and people worldwide. Therefore several standards exist which help to harmonize resistors throughout the world.

To identify the value of axial resistors, a [resistor color code](#) is used. This color code consists of several colored bands. Surface mount resistors are identified by a [numerical resistor code](#). The nominal values of resistors are also standardized. Several ranges of preferred [resistor values](#) are available. Another important aspect of resistor standardization is the use of standardized [resistor symbols](#). The IEC standard symbol of a fixed value resistor is shown.

Resistor Types



Fixed resistor symbol (IEC standard)

Several different types of resistor exist. The most used resistors are fixed value resistors, but variable resistors are also very common. The most used variable resistors are the [potentiometer](#) and [rheostat](#). On the other hand, there are also many types of resistors which have a variable resistance that is dependent on external factors such as temperature ([thermistor](#)), light ([photoresistor](#)), voltage ([varistor](#)) or magnetic fields ([magneto resistor](#)).

Resistor Materials

Resistors can be produced in several ways based on different materials. These different materials all have their own characteristics. [Carbon film resistors](#) are one of the most common resistor types. Other resistor material types described in the Resistor Guide include: [carbon composition resistors](#), [metal film resistors](#), [metal oxide film resistors](#), [foil resistors](#) and [wire-wound resistors](#).

Resistor Applications

Resistors are used in numerous applications, including virtually every circuit and electric device. When used, they are often connected [in series](#) or [in parallel](#). A frequent application in hobby projects is to use a [resistor with an LED](#) to limit the current that will flow through the LED. A resistor can also be used to measure the current in a circuit; this is done using a [shunt resistor](#).

Resistor Fundamentals

- [What Is a Resistor?](#)
- [Ohm's Law](#)
- [Kirchhoff's Laws](#)
- [Electrical Resistivity](#)
- [Resistor Inductance](#)
- [Resistor Capacitance](#)
- [Resistance of a Resistor](#)
- [Resistor Properties](#)
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Resistor Standards and Codes

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Resistor Types

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- [Variable Resistor](#)
- [Potentiometer](#)
- [Potentiometer Taper](#)
- [Digital Potentiometer](#)
- [Rheostat](#)
- [Trimpot](#)
- [Thermistor](#)
- [NTC Thermistor](#)
- [PTC Thermistor](#)
- [Varistor](#)
- [Magneto Resistor](#)
- [Photoresistor](#)

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Resistor Materials

- [Wirewound Resistor](#)
- [Carbon Composition Resistor](#)
- [Carbon Film Resistor](#)
- [Metal Film Resistor](#)
- [Metal Oxide Film Resistor](#)
- [Foil Resistor](#)
- [Thin and Thick Film](#)

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Resistor Applications

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- [Resistors in Series](#)
- [Heater Resistor](#)
- [Resistors for LED Circuits](#)
- [Power Resistor](#)
- [Pull-up and Pull-down Resistors](#)
- [Blower Resistor](#)
- [Shunt Resistor](#)
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Resources

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- [Resistor Suppliers](#)

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