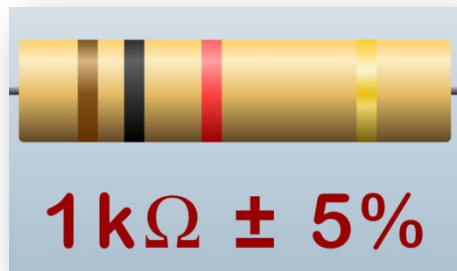


Resistor Colour Code

There are four coloured bands around the body of each resistor. Three of the bands are used to indicate the value of the resistor while the fourth indicates its tolerance. The bands are arranged at one end of the resistor body (below) to indicate the order in which they should be read.



The resistor value and tolerance codes are provided in the following tables.

COLOUR CODE

Bands 1,2 and 3

Colour	Value
Black	0
Brown	1
Red	2
Orange	3
Yellow	4
Green	5
Blue	6
Violet	7
Grey	8
White	9

TOLERANCE

4th Band

Colour	Value
Gold	$\pm 5\%$
Silver	$\pm 10\%$
No Band	$\pm 20\%$

The FIRST band (nearest the end of the resistor) indicates the value of the first digit in the value.

The SECOND band indicates the value of the second digit in the value.

The THIRD band indicates the number of 0's after the two digits.

The FOURTH band indicates the tolerance on the nominal indicated value.

A 5-band coding is used for metal film resistors. You might like to look this up in your reference library.

Examples

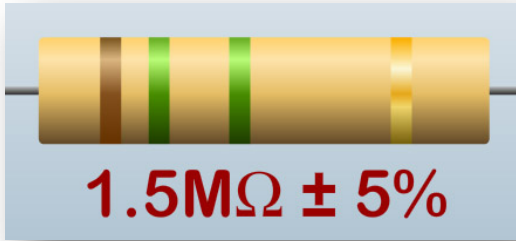
Printed Value when specifying resistor values:

- the symbol M signifies millions
- the symbol K signifies thousands
- the symbol R signifies ohms

The position of the symbol is used to represent the position of the decimal point.

Here are some examples:









Resistor Colour Code

Having calculated the ideal value for a resistor, the following points must be considered before making the final selection.

A Component Supplier's Catalogue would be useful for comparison when reading this page.

(a) Preferred Value

Manufacturers only produce a range of preferred values. Carbon film resistors are available in the E12 series. The 12 values used are:

1, 1.2, 1.5, 1.8, 2.2, 2.7, 3.3, 3.9, 4.7, 5.6, 6.8, 8.2

Together with multiples of 10 of these values, they increase by about 20% from one value to the next. The E24 series is used for metal film resistors. There are 24 values in this series with an increase of about 10% between one value and the next.

Look these up in your catalogue.

(b) Tolerance

This gives us an indication of how much above, or below, the stated value the resistor could be e.g. a 1.2kΩ carbon film resistor with a tolerance of $\pm 5\%$ could be as low as 1140Ω (1200-60) or as high as 1260Ω. This order of accuracy is good enough for most applications.

Metal film resistors have a tolerance of $\pm 1\%$ but are more expensive. Compare prices in your catalogue.

(c) Wattage

The same type and value of resistor will be offered with different power ratings. Carbon film resistors are usually available with power ratings of 0.125W, 0.25W,

0.5W, 1W and 2W. A power rating just above the calculated value should be used. Technical specification in your catalogue will show that the size of resistors increase with power rating.

(d) Stability

Resistors tend to increase in value if their temperature increases. This in turn would increase the power dissipated, resulting in a further temperature rise. High stability resistors keep their value constant for small increases in temperature.