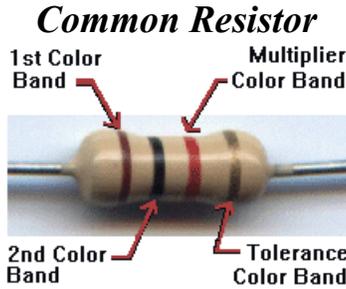


Resistor Color Code Chart



Resistors are color coded for easy reading. Imagine how many blind technicians there would be otherwise.

To determine the value of a given resistor look for the gold or silver tolerance band and rotate the resistor as in the photo above. (Tolerance band to the right). Look at the 1st color band and determine its color. This may be difficult on small or oddly colored resistors. Now look at the chart and match the "1st & 2nd color band" color to the "Digit it represents". Write this number down.

Now look at the 2nd color band and match that color to the same chart. Write this number next to the 1st Digit.

The Last color band is the number you will multiply the result by. Match the 3rd color band with the chart under multiplier. This is the number you will multiply the other 2 numbers by. Write it next to the other 2 numbers with a multiplication sign before it. Example : 2 2 x 1,000.

To pull it all together now, simply multiply the first 2 numbers (1st number in the tens column and 2nd in the ones column) by the Multiplier.

Example :



= 200,000 Ohms = 200KΩ

- First color is red which is 2
- Second color is black which is 0
- third color is yellow which is 10,000
- Tolerance is silver which is 10%

1st. & 2nd Color Band	Digit it Represents	-----Multiplier-----
 BLACK	0	X1
 BROWN	1	X10
 RED	2	X100
 ORANGE	3	X1,000 or 1K
 YELLOW	4	X10,000 or 10K
 GREEN	5	X100,000 or 100K
 BLUE	6	X1,000,000 or 1M
 VIOLET	7	Silver is divide by 100
 GRAY	8	Gold is divide by 10
 WHITE	• 9	<ul style="list-style-type: none"> • Tolerances • Gold= 5% • Silver=10% • None=20%

Tolerance Explanation

Resistors are never the exact value that the color codes indicate. Therefore manufacturers place a tolerance color band on the resistor to tell you just how accurate this resistor is made. It is simply a measurement of the imperfections. Gold means the resistor is within 5% of being dead-on accurate. Silver being within 10% and no color band being within 20%. To determine the exact range that the resistor may be, take the value of the resistor and multiply it by 5, 10, or 20%. That is the number that the resistor may go either way.

Example: A 1,000 Ohm resistor with a gold band maybe any value between 950 to 1050 Ohms.

Example: A 22,000 Ohm resistor with a silver band maybe any value between 19,800 and 24,200 Ohms.

FAQ

Just a few common questions to help you out.

1) Which side of the resistor do I read from?

The Gold or Silver band is always set to the right,

Therefore the equation is:

$$20 \times 10,000 = 200,000 \text{ Ohms}$$

Direct questions to:
electronics@pobox.com

[BACK](#)

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then you read from left to right. Sometimes there will be no tolerance band -- Simply find the side that has a band closest to a lead and make that the first band.

2) Sometimes the colors are hard to make out. How do I make certain what the value of the resistor really is?

Occasionally the colors are jumbled or burnt off. The only way to read it then is with a multimeter across the leads

3) How do I remember this sequence of colors?

Remember the color codes with this sentence:

Big **B**rown **R**abbits **O**ften **Y**ield **G**reat **B**ig **V**ocal
Groans **W**hen **G**ingerly **S**lapped.