



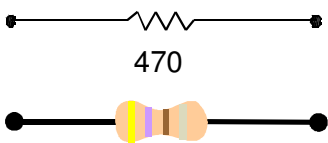
Appendix D:  
Resistor  
Color Codes

Figure G.2 shows a drawing of a resistor below its circuit symbol. The circuit symbol typically has the resistance value written below or next to it. The colored stripes on the part drawn below the symbol indicate its value, which is measured in Ohms. The omega symbol ( $\Omega$ ) is used to denote the Ohm.

D

Most common types of resistors have colored bands that indicate their value. The resistors that we’re using in this series of experiments are typically “1/4 watt, carbon film, with a 5% tolerance.” If you look closely at the sequence of bands you’ll

Figure G.2: Resistor  
Circuit Symbol and  
Corresponding Component



notice that one of the bands (on an end) is gold. This is band #4, and the gold color designates that it has a

5% tolerance.

The resistor color code is an industry standard in designating the resistance of a resistor. Each color band represents a number and the order of the color band will represent a number value. The first two color bands indicate a number. The third color band indicates the multiplier (the number of trailing zeros). The fourth band indicates the tolerance of the resistor +/- 5, 10 or 20%.

Table G.1: Variable Declaration Sizes

Color	1 <sup>st</sup> Digit	2 <sup>nd</sup> Digit	Multiplier	Tolerance
black	0	0	1	
brown	1	1	10	
red	2	2	100	
orange	3	3	1,000	
yellow	4	4	10,000	
green	5	5	100,000	
blue	6	6	1,000,000	
violet	7	7	10,000,000	
gray	8	8	100,000.000	
white	9	9	1,000,000,000	
gold				5%
silver				10%
no color				20%

A resistor has the following color bands:

Band #1. = Red  
Band #2. = Violet  
Band #3. = Yellow  
Band #4. = Gold



Looking at our chart above, we see that red has a value of 2.

So we write: "2."

Violet has a value of 7.

So we write: "27"

Yellow has a value of 4.

So we write: "27 and four zeros" or "270000."

This resistor has a value of 270,000 ohms (or 270 k $\Omega$ ) and a tolerance of 5%.