

Resistors

A resistor is an electrical component used to create resistance in the flow of an electrical current. The amount of resistance a resistor has is measured in ohms. Resistors are important as supply too much voltage to a component you can completely destroy it. Resistors can be used to prevent this with just a little bit of math.

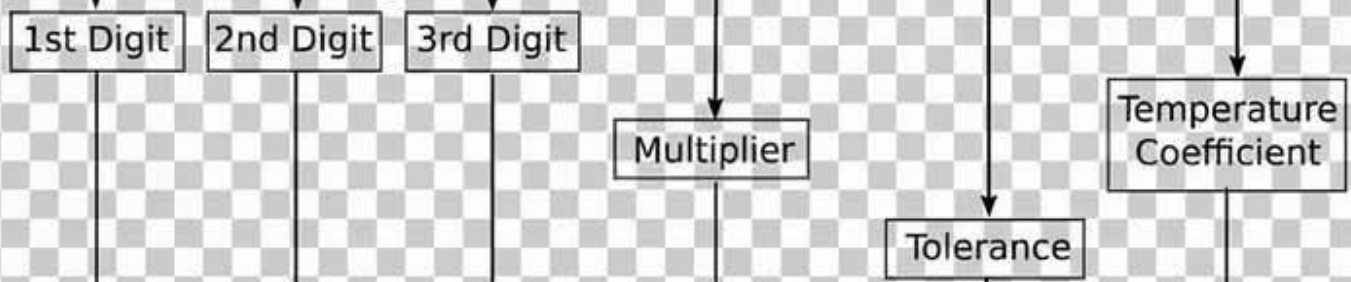
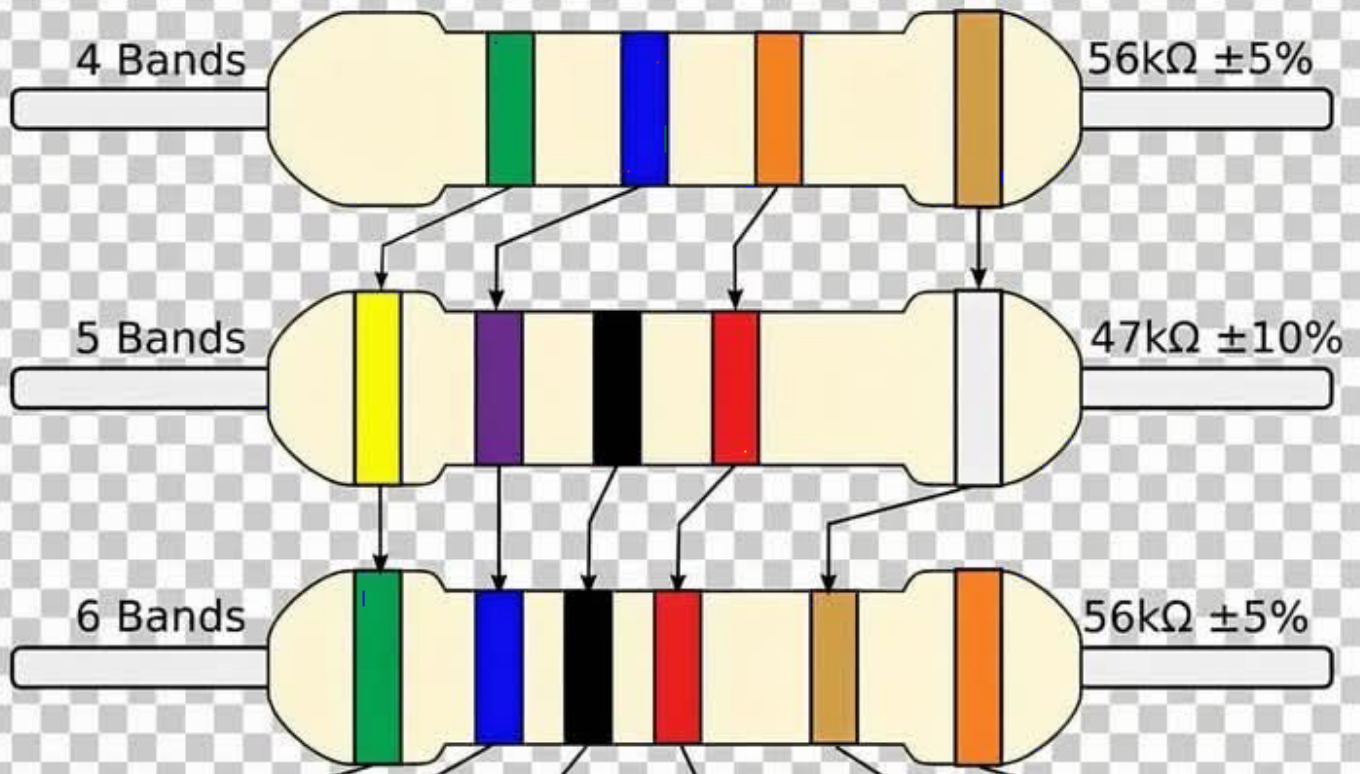
To make calculations easier, I have linked 2 tools to help you calculate exactly what you need and what you have.

<https://ohmslawcalculator.com/ohms-law-calculator>


<https://www.digikey.com/en/resources/conversion-calculators/conversion-calculator-resistor-color-code>

Read the color bands from left to right. The colors on the first 2 or 3 bands correspond to numbers from 0 to 9, which represent the significant digits of the resistor's ohmic value. The last band gives the multiplier. For example, a resistor with brown, green and green bands is rated at 15 mega-ohms (15,000,000 ohms). The code is as follows:[\[2\]](#)

- Black: 0 significant digit, multiplier of 1
- Brown: 1 significant digit, multiplier of 10
- Red: 2 significant digit, multiplier of 100
- Orange: 3 significant digit, multiplier of 1,000 (kilo)
- Yellow: 4 significant digit, multiplier of 10,000 (10 kilo)
- Green: 5 significant digit, multiplier of 100,000 (mega)
- Blue: 6 significant digit, multiplier of 1,000,000 (10 mega)
- Violet: 7 significant digit
- Gray: 8 significant digit
- White: 9 significant digit
- Gold: multiplier of 1/10
- Silver: multiplier of 1/100



	0	0	×1		
1	1	1	×10	±1%	100
2	2	2	×100	±2%	50
3	3	3	×1K	±3%	15
4	4	4	×10K	±4%	25
5	5	5	×100K	±0.5%	
6	6	6	×1M	±0.25%	10
7	7	7	×10M	±0.10%	5
8	8	8	×100M	±0.05%	
9	9	9	×1G		
			÷10	±5%	

1R0	10R	100R	1k0
1R2	12R	120R	1k2
1R5	15R	150R	1k5
1R8	18R	180R	1k8
2R2	22R	220R	2k2
2R7	27R	270R	2k7
3R3	33R	330R	3k3
3R9	39R	390R	3k9
4R7	47R	470R	4k7
5R6	56R	560R	5k6
6R8	68R	680R	6k8
8R2	82R	820R	8k2
10k	100k	1M0	10M
12k	120k	1M2	22M
15k	150k	1M5	OR1
18k	180k	1M8	R22
22k	220k	2M2	OR0
27k	270k	2M7	zero ohm (link)
33k	330k	3M3	
39k	390k	3M9	$\frac{1}{10}$ th watt
47k	470k	4M7	and
56k	560k	5M6	0.25 watt
68k	680k	6M8	
82k	820k	8M2	

Revision #2

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