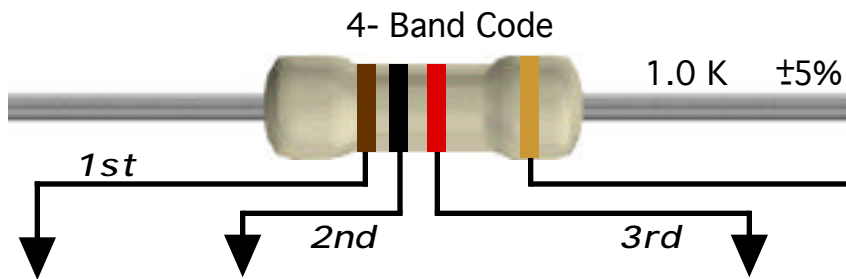
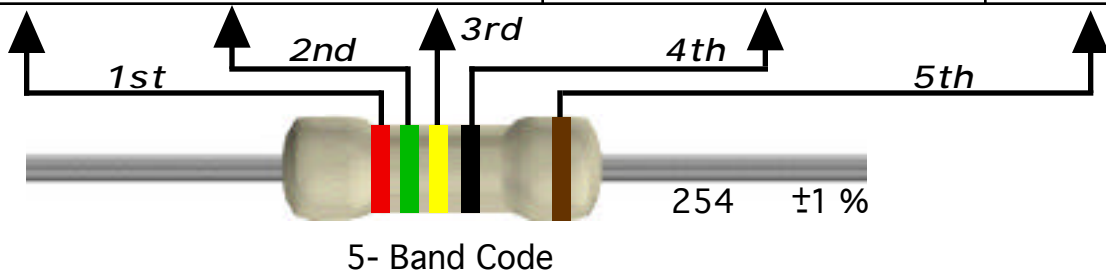


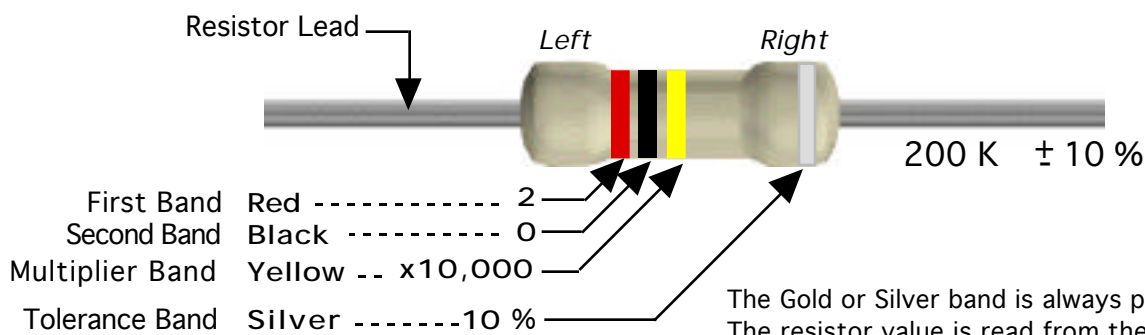
RESISTOR COLOR CODE GUIDE



Color	1st Band	2nd Band	3rd Band	Decimal Multiplier		Tolerance
Black	0	0	0	1	1	
Brown	1	1	1	10	10	± 1 %
Red	2	2	2	100	100	± 2 %
Orange	3	3	3	1K	1,000	
Yellow	4	4	4	10K	10,000	
Green	5	5	5	100K	100,000	
Blue	6	6	6	1M	1,000,000	
Violet	7	7	7	10M	10,000,000	
Gray	8	8	8	100,000,000		
White	9	9	9	1,000,000,000		
Gold				0.1		± 5 %
Silver				0.01		± 10 %
None						± 20 %



Calculation



Equation

$$20 \times 10,000 = 200,000$$

$$1,000 = 1K$$

Resistor = 200 K Ω
with a ± 10 % Tolerance

If there is no tolerance band, then find the side that has a band closest to a lead and make that the first band.

Resistor Color Code 4 Band

Quick Guide

Color	Value
Black	0
Brown	1
Red	2
Orange	3
Yellow	4
Green	5
Blue	6
Violet	7
Gray	8
White	9
Gold (G)	± 5 %
Silver (s)	± 10 %
None	± 20 %

Band 3	Divide by
Gold	1
Silver	100

Tolerance	
Brown	± 1 %
Red	± 2 %
Gold	± 5 %
Silver	± 10 %
None	± 20 %

Resistance	Notation	Band 1	Band 2	Band 3	Tolerance
.22 ohm	R22	Red	Red	Silver	S, G, R, B
.27 ohm	R27	Red	Purple	Silver	S, G, R, B
.33 ohm	R33	Orange	Orange	Silver	S, G, R, B
.39 ohm	R39	Orange	White	Silver	S, G, R, B
.47 ohm	R47	Yellow	Purple	Silver	S, G, R, B
.56 ohm	R56	Green	Blue	Silver	S, G, R, B
.68 ohm	R68	Blue	Gray	Silver	S, G, R, B
.82 ohm	R82	Gray	Red	Silver	S, G, R, B
1.0 ohm	1R0	Brown	Black	Gold	S, G, R, B
1.1 ohm	1R1	Brown	Brown	Gold	S, G, R, B
1.2 ohm	1R2	Brown	Red	Gold	S, G, R, B
1.3 ohm	1R3	Brown	Orange	Gold	S, G, R, B
1.5 ohm	1R5	Brown	Green	Gold	S, G, R, B
1.6 ohm	1R6	Brown	Blue	Gold	S, G, R, B
1.8 ohm	1R8	Brown	Gray	Gold	S, G, R, B
2.0 ohm	2R0	Red	Black	Gold	S, G, R, B
2.2 ohm	2R2	Red	Red	Gold	S, G, R, B
2.4 ohm	2R2	Red	Yellow	Gold	S, G, R, B
2.7 ohm	2R7	Red	Purple	Gold	S, G, R, B
3.0 ohm	3R0	Orange	Black	Gold	S, G, R, B
3.3 ohm	3R3	Orange	Orange	Gold	S, G, R, B
3.6 ohm	3R6	Orange	Blue	Gold	S, G, R, B
3.9 ohm	3R9	Orange	White	Gold	S, G, R, B
4.3 ohm	4R3	Yellow	Orange	Gold	S, G, R, B
4.7 ohm	4R7	Yellow	Purple	Gold	S, G, R, B
5.1 ohm	5R1	Green	Brown	Gold	S, G, R, B
5.6 ohm	5R6	Green	Blue	Gold	S, G, R, B
6.2 ohm	6R2	Blue	Red	Gold	S, G, R, B
6.8 ohm	6R8	Blue	Gray	Gold	S, G, R, B
7.5 ohm	7R5	Purple	Green	Gold	S, G, R, B
8.2 ohm	8R2	Gray	Red	Gold	S, G, R, B
9.1 ohm	9R1	White	Brown	Gold	S, G, R, B
10 ohm	10R	Brown	Black	Black	S, G, R, B
11 ohm	11R	Brown	Brown	Black	S, G, R, B
12 ohm	12R	Brown	Red	Black	S, G, R, B
13 ohm	13R	Brown	Orange	Black	S, G, R, B
15 ohm	15R	Brown	Green	Black	S, G, R, B
16 ohm	16R	Brown	Blue	Black	S, G, R, B
18 ohm	18R	Brown	Gray	Black	S, G, R, B
20 ohm	20R	Red	Black	Black	S, G, R, B
22 ohm	22R	Red	Red	Black	S, G, R, B
24 ohm	24R	Red	Yellow	Black	S, G, R, B
27 ohm	27R	Red	Purple	Black	S, G, R, B

Quick Guide

Resistor Color Code 4 Band

Color	Value
Black	0
Brown	1
Red	2
Orange	3
Yellow	4
Green	5
Blue	6
Violet	7
Gray	8
White	9
Gold (G)	± 5 %
Silver (s)	± 10 %
None	± 20 %

Band 3 Divide by	
Gold	10
Silver	100

Tolerance	
Brown	± 1 %
Red	± 2 %
Gold	± 5 %
Silver	± 10 %
None	± 20 %

30 ohm	30R	Orange	Black	Black	S,G,R,B
33 ohm	33R	Orange	Orange	Black	S,G,R,B
36 ohm	36R	Orange	Blue	Black	S,G,R,B
39 ohm	39R	Orange	White	Black	S,G,R,B
43 ohm	43R	Yellow	Orange	Black	S,G,R,B
47 ohm	47R	Yellow	Purple	Black	S,G,R,B
51 ohm	51R	Green	Brown	Black	S,G,R,B
56 ohm	56R	Green	Blue	Black	S,G,R,B
62 ohm	62R	Blue	Red	Black	S,G,R,B
68 ohm	68R	Blue	Gray	Black	S,G,R,B
75 ohm	75R	Purple	Green	Black	S,G,R,B
82 ohm	82R	Gray	Red	Black	S,G,R,B
91 ohm	91R	White	Brown	Black	S,G,R,B
100 ohm	100R	Brown	Black	Brown	S,G,R,B
110 ohm	110R	Brown	Brown	Brown	S,G,R,B
120 ohm	120R	Brown	Red	Brown	S,G,R,B
130 ohm	130R	Brown	Orange	Brown	S,G,R,B
150 ohm	150R	Brown	Green	Brown	S,G,R,B
160 ohm	160R	Brown	Blue	Brown	S,G,R,B
180 ohm	180R	Brown	Gray	Brown	S,G,R,B
200 ohm	200R	Red	Black	Brown	S,G,R,B
220 ohm	220R	Red	Red	Brown	S,G,R,B
240 ohm	240R	Red	Yellow	Brown	S,G,R,B
270 ohm	270R	Red	Purple	Brown	S,G,R,B
300 ohm	300R	Orange	Black	Brown	S,G,R,B
330 ohm	330R	Orange	Orange	Brown	S,G,R,B
360 ohm	360R	Orange	Blue	Brown	S,G,R,B
390 ohm	390R	Orange	White	Brown	S,G,R,B
430 ohm	430R	Yellow	Orange	Brown	S,G,R,B
470 ohm	470R	Yellow	Purple	Brown	S,G,R,B
510 ohm	510R	Green	Brown	Brown	S,G,R,B
560 ohm	560R	Green	Blue	Brown	S,G,R,B
620 ohm	620R	Blue	Red	Brown	S,G,R,B
680 ohm	680R	Blue	Gray	Brown	S,G,R,B
750 ohm	750R	Purple	Green	Brown	S,G,R,B
820 ohm	820R	Gray	Red	Brown	S,G,R,B
910 ohm	910R	White	Brown	Brown	S,G,R,B
1.0 k	1K0	Brown	Black	Red	S,G,R,B
1.1 k	1K1	Brown	Brown	Red	S,G,R,B
1.2 k	1K2	Brown	Red	Red	S,G,R,B
1.3 k	1K3	Brown	Orange	Red	S,G,R,B
1.5 k	1K5	Brown	Green	Red	S,G,R,B
1.6 k	1K6	Brown	Blue	Red	S,G,R,B
1.8 k	1K8	Brown	Gray	Red	S,G,R,B

Resistor Color Code 4 Band

Quick Guide

Color	Value
Black	0
Brown	1
Red	2
Orange	3
Yellow	4
Green	5
Blue	6
Violet	7
Gray	8
White	9
Gold (G)	± 5 %
Silver (s)	± 10 %
None	± 20 %

Band 3 Divide by	
Gold	10
Silver	100

Tolerance	
Brown	± 1 %
Red	± 2 %
Gold	± 5 %
Silver	± 10 %
None	± 20 %

2.0 k	2K0	Red	Black	Red	S, G, R, B
2.2 k	2K2	Red	Red	Red	S, G, R, B
2.4 k	2K4	Red	Yellow	Red	S, G, R, B
2.7 k	2K7	Red	Purple	Red	S, G, R, B
3.0 k	3K0	Orange	Black	Red	S, G, R, B
3.3 k	3K3	Orange	Orange	Red	S, G, R, B
3.6 k	3K6	Orange	Blue	Red	S, G, R, B
3.9 k	3K9	Orange	White	Red	S, G, R, B
4.3 k	4K3	Yellow	Orange	Red	S, G, R, B
4.7 k	4K7	Yellow	Purple	Red	S, G, R, B
5.1 k	5K1	Green	Brown	Red	S, G, R, B
5.6 k	5K6	Green	Blue	Red	S, G, R, B
6.2 k	6K2	Blue	Red	Red	S, G, R, B
6.8 k	6K8	Blue	Gray	Red	S, G, R, B
7.5 k	7K5	Purple	Green	Red	S, G, R, B
8.2 k	8K2	Gray	Red	Red	S, G, R, B
9.1 k	9K1	White	Brown	Red	S, G, R, B
10 k	10K	Brown	Black	Orange	S, G, R, B
11 k	11K	Brown	Brown	Orange	S, G, R, B
12 k	12K	Brown	Red	Orange	S, G, R, B
13 k	13K	Brown	Orange	Orange	S, G, R, B
15 k	15K	Brown	Green	Orange	S, G, R, B
16 k	16K	Brown	Blue	Orange	S, G, R, B
18 k	18K	Brown	Gray	Orange	S, G, R, B
20 k	20K	Red	Black	Orange	S, G, R, B
22 k	22K	Red	Red	Orange	S, G, R, B
24 k	24K	Red	Yellow	Orange	S, G, R, B
27 k	27K	Red	Purple	Orange	S, G, R, B
30 k	30K	Orange	Black	Orange	S, G, R, B
33 k	33K	Orange	Orange	Orange	S, G, R, B
36 k	36K	Orange	Blue	Orange	S, G, R, B
39 k	39K	Orange	White	Orange	S, G, R, B
43 k	43K	Yellow	Orange	Orange	S, G, R, B
47 k	47K	Yellow	Purple	Orange	S, G, R, B
51 k	51K	Green	Brown	Orange	S, G, R, B
56 k	56K	Green	Blue	Orange	S, G, R, B
62 k	62K	Blue	Red	Orange	S, G, R, B
68 k	68K	Blue	Gray	Orange	S, G, R, B
75 k	75K	Purple	Green	Orange	S, G, R, B
82 k	82K	Gray	Red	Orange	S, G, R, B
91 k	91K	White	Brown	Orange	S, G, R, B
100 k	100K	Brown	Black	Yellow	S, G, R, B
110 k	110K	Brown	Brown	Yellow	S, G, R, B
120 k	120K	Brown	Red	Yellow	S, G, R, B

Resistor Color Code 4 Band

Quick Guide

Color	Value
Black	0
Brown	1
Red	2
Orange	3
Yellow	4
Green	5
Blue	6
Violet	7
Gray	8
White	9
Gold (G)	± 5 %
Silver (s)	± 10 %
None	± 20 %

Band 3 Divide by	
Gold	10
Silver	100

Tolerance	
Brown	± 1 %
Red	± 2 %
Gold	± 5 %
Silver	± 10 %
None	± 20 %

130 k	130K	Brown	Orange	Yellow	S, G, R, B
150 k	150K	Brown	Green	Yellow	S, G, R, B
160 k	160K	Brown	Blue	Yellow	S, G, R, B
180 k	180K	Brown	Gray	Yellow	S, G, R, B
200 k	200K	Red	Black	Yellow	S, G, R, B
220 k	220K	Red	Red	Yellow	S, G, R, B
240 k	240K	Red	Yellow	Yellow	S, G, R, B
270 k	270K	Red	Purple	Yellow	S, G, R, B
300 k	300K	Orange	Black	Yellow	S, G, R, B
330 k	330K	Orange	Orange	Yellow	S, G, R, B
360 k	360K	Orange	Blue	Yellow	S, G, R, B
390 k	390K	Orange	White	Yellow	S, G, R, B
430 k	430K	Yellow	Orange	Yellow	S, G, R, B
470 k	470K	Yellow	Purple	Yellow	S, G, R, B
510 k	510K	Green	Brown	Yellow	S, G, R, B
560 k	560K	Green	Blue	Yellow	S, G, R, B
620 k	620K	Blue	Red	Yellow	S, G, R, B
680 k	680K	Blue	Gray	Yellow	S, G, R, B
750 k	750K	Purple	Green	Yellow	S, G, R, B
820 k	820K	Gray	Red	Yellow	S, G, R, B
910 k	910K	White	Brown	Yellow	S, G, R, B
1 M	1M0	Brown	Black	Green	S, G, R, B
1.1 M	1M1	Brown	Brown	Green	S, G, R, B
1.2 M	1M2	Brown	Red	Green	S, G, R, B
1.3 M	1M3	Brown	Orange	Green	S, G, R, B
1.5 M	1M5	Brown	Green	Green	S, G, R, B
1.6 M	1M6	Brown	Blue	Green	S, G, R, B
2.0 M	2M0	Red	Black	Green	S, G, R, B
2.2 M	2M2	Red	Red	Green	S, G, R, B
2.4 M	2M4	Red	Yellow	Green	S, G, R, B
2.7 M	2M7	Red	Purple	Green	S, G, R, B
3.0 M	3M0	Orange	Black	Green	S, G, R, B
3.3 M	3M3	Orange	Orange	Green	S, G, R, B
3.6 M	3M6	Orange	Blue	Green	S, G, R, B
3.9 M	3M9	Orange	White	Green	S, G, R, B
4.3 M	4M3	Yellow	Orange	Green	S, G, R, B
4.7 M	4M7	Yellow	Purple	Green	S, G, R, B
5.1 M	5M1	Green	Brown	Green	S, G, R, B
5.6 M	5M6	Green	Blue	Green	S, G, R, B
6.2 M	6M2	Blue	Red	Green	S, G, R, B
6.8 M	6M8	Blue	Gray	Green	S, G, R, B
7.5 M	7M5	Purple	Green	Green	S, G, R, B
8.2 M	8M2	Gray	Red	Green	S, G, R, B
9.1 M	9M1	White	Brown	Green	S, G, R, B
10 M	10M	Brown	Black	Blue	S, G, R, B