Common Components

Resistors (5%)

value	range
10 33	
11 36	
12 39	
13 43	10Ω
15 47	to
16 51	680KΩ
18 56	
20 62	
22 68	
24 75	
27 82	
30 91	

Capacitors

value	range
1.0	
1.5	value x 1pF
2.2	to
3.3	value x 10^3uF
4.7	
6.8	

Power Transformers

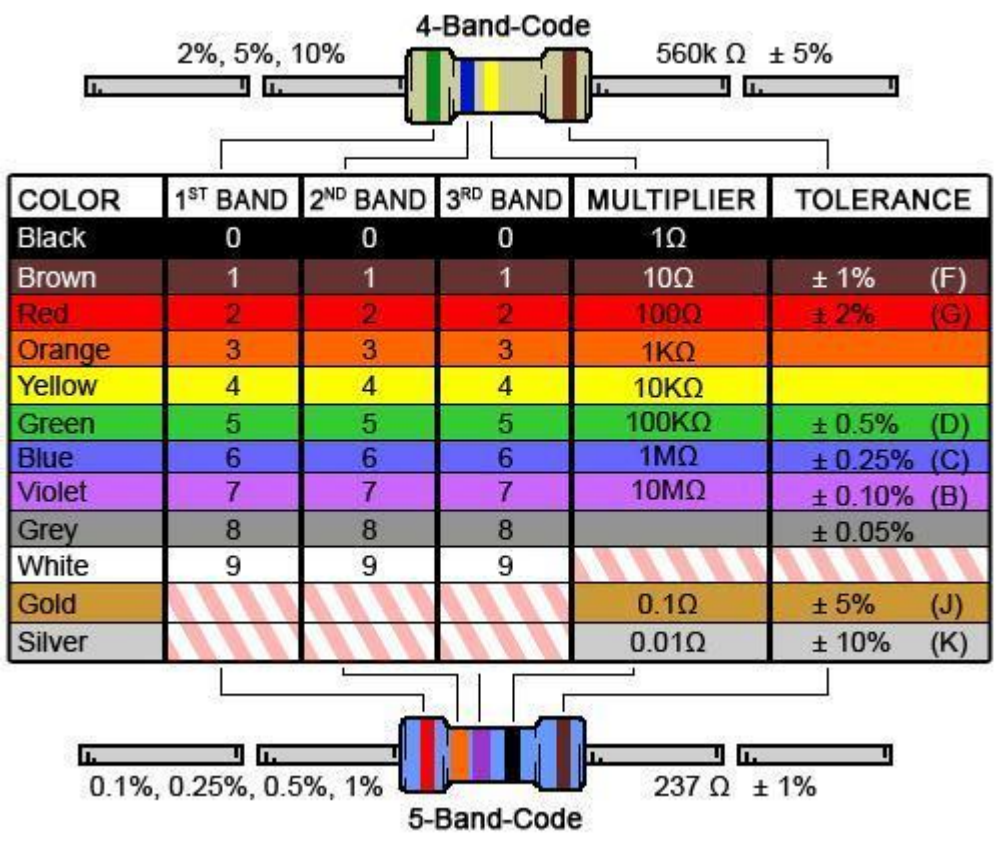
Secondary voltage (rms)	
5	14
6.3	18
8	24
10	28
12	60

Inductors

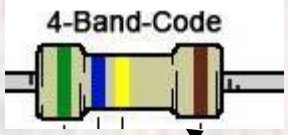
value	range
1.0 3.6	
1.1 3.9	value x 1nH
1.2 4.3	to
1.3 4.7	value x 10^3uH
1.5 5.1	
1.6 5.6	
1.8 6.2	
2.0 6.8	
2.2 7.5	
2.4 8.2	
2.7 8.7	
3.0 9.1	
3.3	

Resistor Values

- Color Chart
  - Count the number of bands on the resistor first (4 or 5)



COLOR	1ST BAND	2ND BAND	3RD BAND	MULTIPLIER	TOLERANCE
Black	0	0	0	1Ω	
Brown	1	1	1	10Ω	± 1% (F)
Red	2	2	2	100Ω	± 2% (G)
Orange	3	3	3	1KΩ	
Yellow	4	4	4	10KΩ	
Green	5	5	5	100KΩ	± 0.5% (D)
Blue	6	6	6	1MΩ	± 0.25% (C)
Violet	7	7	7	10MΩ	± 0.10% (B)
Grey	8	8	8		± 0.05%
White	9	9	9		
Gold				0.1Ω	± 5% (J)
Silver				0.01Ω	± 10% (K)



gap

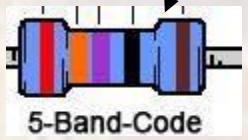
Green 5
Blue 6
Yellow 4

$(5x10 + 6) \times 10^4 = 560{,}000\Omega = 560K\Omega$

Gold +/- 5%

560KΩ +/-5%

Note – we use Engineering Notation



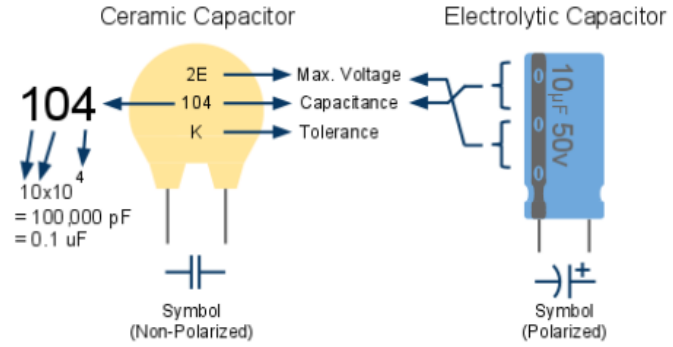
gap

red – orange – violet – black – brown

$(2x100 + 3x10 + 7) \times 10^0 = 237\Omega$ +/- 1%

Capacitor Values

- Value Chart
  - Values are coded in pF for Ceramic capacitors



Capacitance Conversion Values

Microfarads (µF)	Nanofarads (nF)	Picofarads (pF)
0.000001 µF	0.001 nF	1 pF
0.00001 µF	0.01 nF	10 pF
0.0001 µF	0.1 nF	100 pF
0.001 µF	1 nF	1,000 pF
0.01 µF	10 nf	10,000 pF
0.1 µF	100 nF	100,000 pF
1 µF	1,000 nF	1,000,000 pF
10 µF	10,000 nF	10,000,000 pF
100 µF	100,000 nF	100,000,000 pF

Max. Operating Voltage

Code	Max. Voltage
1H	50V
2A	100V
2T	150V
2D	200V
2E	250V
2G	400V
2J	630V

Tolerance

Code	Percentage
B	± 0.1 pF
C	±0.25 pF
D	±0.5 pF
F	±1%
G	±2%
H	±3%
J	±5%
K	±10%
M	±20%
Z	+80%, -20%

Inductor Values

- Value Chart
  - Inductors use both the color code and numerical marking approach
  - The base value for inductance is uH

  - 104 marking → $10x10^4$uH → 100,000 uH → 100mH
  - Brown, Black, Red → $10x10^2$ → 1000uH = 1mH