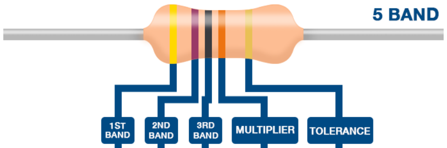
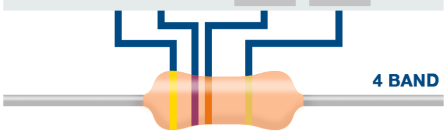
PASSIVE COMPONENTS

RESISTOR COLOR CODE

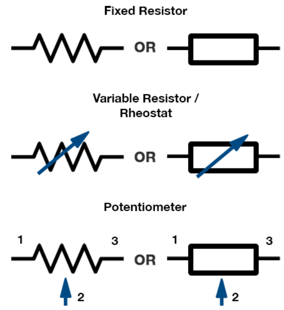


Color	1st Band	2nd Band	3rd Band	Multiplier	Tolerance
BLACK		0	0	x10^ 0	
BROWN	1	1	1	x10^ 1	±1%
RED	2	2	2	x10^ 2	±2%
ORANGE	3	3	3	x10^ 3	
YELLOW	4	4	4	x10^ 4	
GREEN	5	5	5	x10^ 5	±.50%
BLUE	6	6	6	x10^ 6	±.25%
VIOLET	7	7	7	x10^ 7	±.10%
GREY	8	8	8		±.05%
WHITE	9	9	9		
GOLD				x10^ -1	±5%
SILVER				x10^ -2	±10%

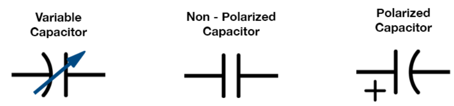


PASSIVE ELECTRONIC SYMBOLS

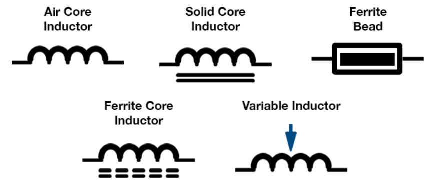
RESISTOR



CAPACITOR

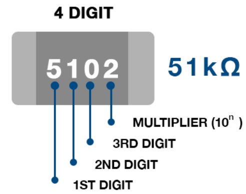


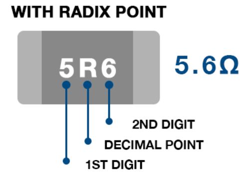
INDUCTOR



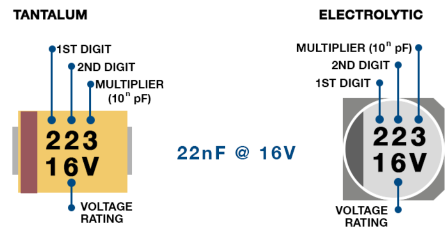
SMD

SMD RESISTOR MARKINGS



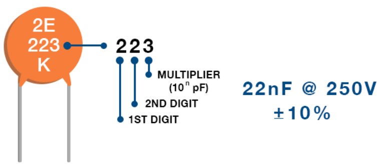


SMD CAPACITOR MARKINGS

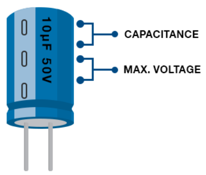


THROUGH HOLE CAPACITOR CODE

CERAMIC



ELECTROLYTIC



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%

CAPACITANCE CONVERSION VALUES

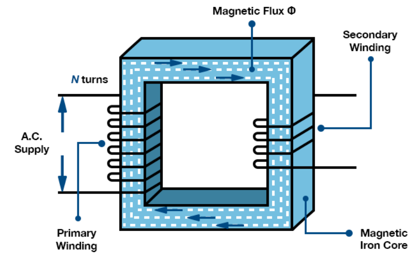
Microfarads (µF)		Nanofarads (nF)		Picofarads (pF)
0.000001 µF	⟷	0.001 nF	⟷	1 pF
0.00001 µF	⟷	0.01 nF	⟷	10 pF
0.0001 µF	⟷	0.1 nF	⟷	100 pF
0.001 µF	⟷	1 nF	⟷	1,000 pF
0.01 µF	⟷	10 nF	⟷	10,000 pF
0.1 µF	⟷	100 nF	⟷	100,000 pF
1 µF	⟷	1,000 nF	⟷	1,000,000 pF
10 µF	⟷	10,000 nF	⟷	10,000,000 pF
100 µF	⟷	100,000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

MAX. VOLTAGE

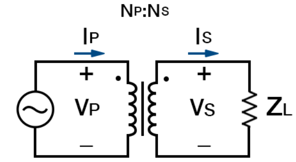
Code	Max. Voltage
1H	50V
2A	100V
2T	150V
2D	200V
2E	250V
2G	400V
2J	630V

TRANSFORMER

BASIC TRANSFORMER



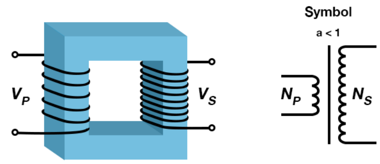
TURNS RATIO



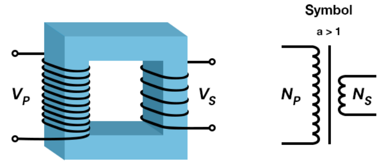
$$a = \frac{V_P}{V_S} = \frac{N_P}{N_S}$$

Where for a step-down transformer $a > 1$, for a step-up transformer $a < 1$.

STEP-UP TRANSFORMER



STEP-DOWN TRANSFORMER

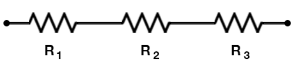


R, L, C IN SERIES / PARALLEL

RESISTOR NETWORK

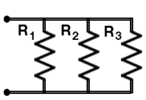
Series

$$R_{eq} = R_1 + R_2 + R_3$$



Parallel

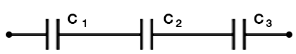
$$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$



CAPACITOR NETWORK

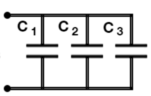
Series

$$\frac{1}{C_{eq}} = \frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3}$$



Parallel

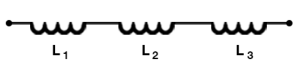
$$C_{eq} = C_1 + C_2 + C_3$$



INDUCTOR NETWORK

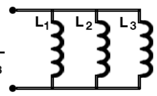
Series

$$L_{eq} = L_1 + L_2 + L_3$$



Parallel

$$\frac{1}{L_{eq}} = \frac{1}{L_1} + \frac{1}{L_2} + \frac{1}{L_3}$$



MOUSER ELECTRONICS.

PASSIVE COMPONENTS