ELECTRONICS GUIDE

A Guide to Commonly Used Conversion Factors,
Formulas, Tables, and Color Codes

1. Ohm's Law Formulas For DC Circuits

Component	**Unit**			
Power	Watts	$P=IE$	$P=I^2R$	$P=E^2/R$
Current	Amps	$I=E/R$	$I=P/E$	$I=\sqrt{(P/R)}$
Voltage	Volts	$E=IR$	$E=P/I$	$E=\sqrt{(PR)}$
Resistance	Ohms	$R=E/I$	$R=E^2/P$	$R=P/I^2$

2. Resistors In Series

$R_{total} = R_1 + R_2 + R_3 + \ldots.$

3. Two Resistors In Parallel

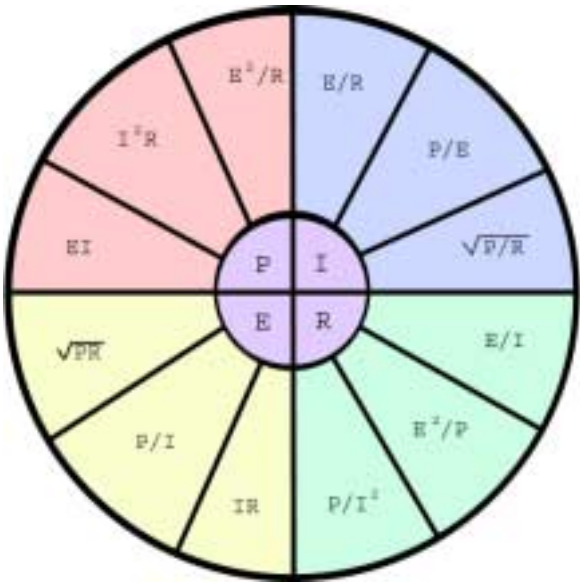
$$R_t = \frac{R_1 R_2}{R_1 + R_2}$$

4. Equal Resistors In Parallel

$R_{total} = R/n$
Where n = Number Of Resistors

5. Resistors In Parallel
(General Formula)

$$R_{total} = \frac{1}{1/R_1 + 1/R_2 + 1/R_3 + \ldots.}$$



6. Resistor Color Code

0	Black	
1	Brown	
2	Red	
3	Orange	
4	Yellow	
5	Green	
6	Blue	
7	Violet	
8	Gray	
9	White	
5%	Gold	
10%	Silver	
20%	No Color	

The third color band indicates the number of zeros to be added after the figures given by the first two color bands. But if the third color band is gold, multiply by 0.1 and if silver, multiply by 0.01. Do not get confused by the fourth color band with indicates tolerance. Thus, a resistor marked blue-red-gold-gold has a resistance of 6.2 ohms and 5% tolerance.

7. Engineering Notation

Standard Notation	Engineering Notation	Unit Of Measure	Symbol
1,000,000,000	1×10^{9}	Giga	G
1,000,000	1×10^{6}	Mega	M
1,000	1×10^{3}	Kilo	K
0	1×10^{0} Or 1	Units	
.001	1×10^{-3}	mili	m
.000001	1×10^{-6}	micro	μ
.000000001	1×10^{-9}	nano	n
.000000000001	1×10^{-12}	pico (micro-micro)	p