

# CD0044 & CD0046 FORMULA SHEET

$$I = \frac{V}{R}$$

$$P = V \times I : P = I^2 R : P = \frac{V^2}{R}$$

$$EFF\% = \frac{OUTPUT}{INPUT} \times 100$$

$$ENERGY = P \times t$$

$$Q = V \times C$$

$$R_T = R_1 + R_2 + R_3 \text{ etc}$$

$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} \text{ or}$$

$$R_T = (R_1^{x-1} + R_2^{x-1} + R_3^{x-1})^{x-1} \text{ or}$$

$$R_T = 1 \div (1/R_1 + 1/R_2 + 1/R_3)$$

$$R = \frac{\rho \cdot l}{A}$$

$$R_T = R_0 (1 + \alpha t)$$

$$\mathcal{T} = R \times C, \quad \mathcal{T} = \frac{L}{R}$$

1 Litre of water has a mass of 1 KG

1 watt = 1 joule / sec

pico	= x 10 <sup>-12</sup>
nano	= x 10 <sup>-9</sup>
micro	= x 10 <sup>-6</sup>
milli	= x 10 <sup>-3</sup>
<b>UNIT</b>	= x 10 <sup>0</sup>
Kilo	= x 10 <sup>3</sup>
Mega	= x 10 <sup>6</sup>
giga	= x 10 <sup>9</sup>
tera	= x 10 <sup>12</sup>

Colour code

**4-Band Color Code**: 25kΩ ±5%

**5-Band Color Code**: 460kΩ ±1%

**6-Band Color Code**: 276Ω ±5%

1st Digit	2nd Digit	3rd Digit	Multiplier	Tolerance	Temperature Coefficient
0	0	0	0.01 Silver	±10% Silver	100ppm
1	1	1	0.1 Gold	±5% Gold	50ppm
2	2	2	1	±1%	15ppm
3	3	3	10	±2%	25ppm
4	4	4	100		
5	5	5	1k		
6	6	6	10k	±0.5%	
7	7	7	100k	±0.25%	
8	8	8	1M	±0.1%	
9	9	9	10M		

SILVER	0.01	Tolerance 10%
GOLD	0.1	Tolerance 5%
BLACK	0	
BROWN	1	Tolerance 1%
RED	2	Tolerance 2%
ORANGE	3	
YELLOW	4	
GREEN	5	
BLUE	6	
VIOLET	7	
GREY	8	
WHITE	9	

	Resistivity	Temperature coefficient of R
copper	1.72 x 10 <sup>-8</sup> Ω.m	0.00428 Ω/Ω/°c
Aluminium	2.82 x 10 <sup>-8</sup> Ω.m	0.0036 Ω/Ω/°c
Iron	9.7 x 10 <sup>-8</sup> Ω.m	0.006 Ω/Ω/°c
Nichrome	110 x 10 <sup>-8</sup> Ω.m	0.00017 Ω/Ω/°c

## Universal Time Constant Curve

