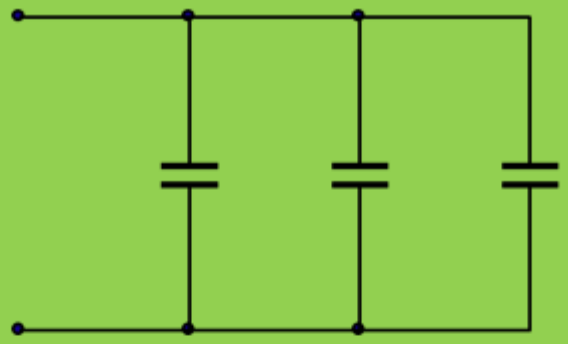
$$W = Pt$$

$$I = \frac{Q}{t}$$



Ohm's law formulas		To Calculate			
		Voltage (V)	Current (I)	Resistance (R)	Power (P)
Given parameters	Current & Resistance	$V = IR$	---	---	$P = I^2R$
	Current & Power	$V = \frac{P}{I}$	---	$R = \frac{P}{I^2}$	---
	Voltage & Current	---	---	$R = \frac{V}{I}$	$P = VI$
	Voltage & Resistance	---	$I = \frac{V}{R}$	---	$P = \frac{V^2}{R}$
	Voltage & Power	---	$I = \frac{P}{V}$	$R = \frac{V^2}{P}$	---
	Power & Resistance	$V = \sqrt{P.R}$	$I = \sqrt{P/R}$	---	---

$$I_1 = \frac{R_t}{R_1} * I_t$$

$$V = \frac{W}{Q}$$

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

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

kWh

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Basic Electrical Formulas

Ohm's Law Formula

Original statement

$$V = IR$$

V = voltage

I = Current

R = Resistance

Other derived formulas

Ohm's law formulas		To Calculate			
		Voltage (V)	Current (I)	Resistance (R)	Power (P)
Given parameters	Current & Resistance	$V = IR$	---	---	$P = I^2R$
	Current & Power	$V = \frac{P}{I}$	---	$R = \frac{P}{I^2}$	---
	Voltage & Current	---	---	$R = \frac{V}{I}$	$P = VI$
	Voltage & Resistance	---	$I = \frac{V}{R}$	---	$P = \frac{V^2}{R}$
	Voltage & Power	---	$I = \frac{P}{V}$	$R = \frac{V^2}{P}$	---
	Power & Resistance	$V = \sqrt{P.R}$	$I = \sqrt{P/R}$	---	---

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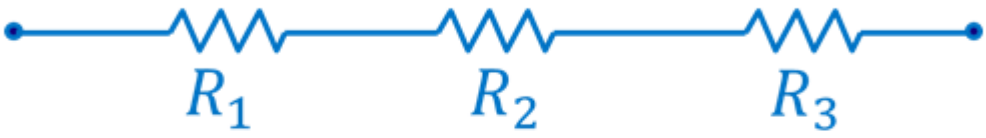
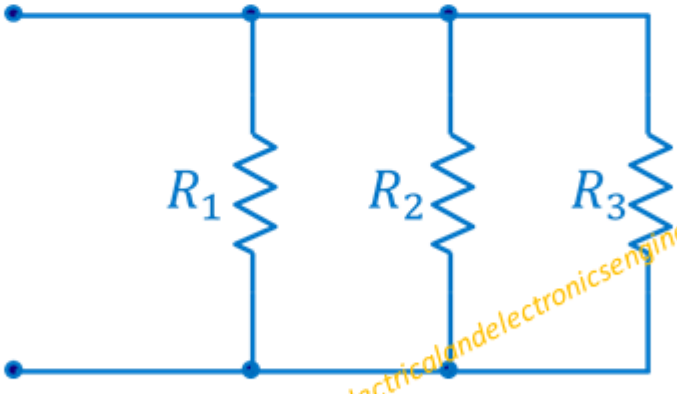
Resistors

Resistors in series



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

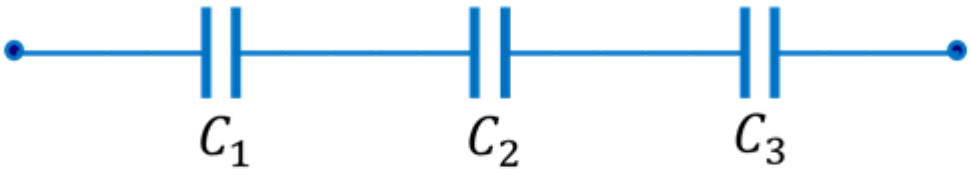
Resistor in parallel



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

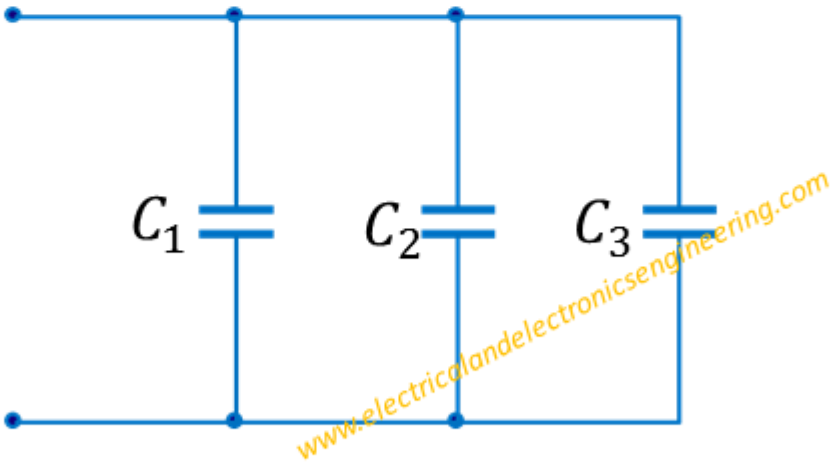
Capacitors

Capacitors in series



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

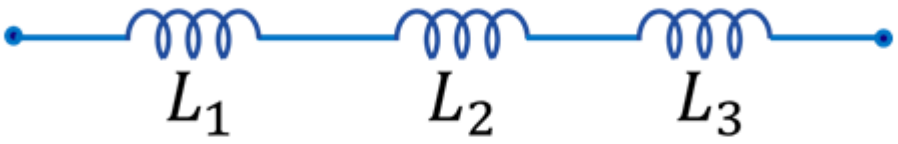
Capacitors in parallel



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

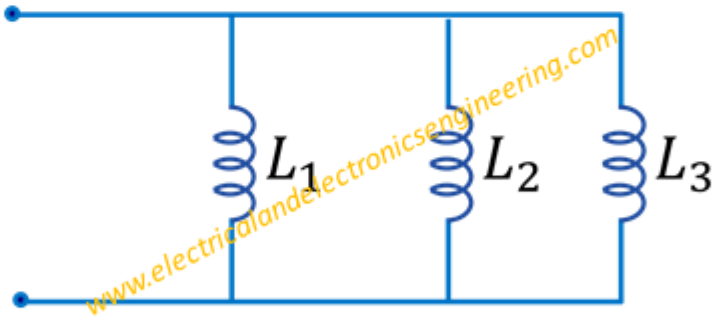
Inductors

Inductors in series



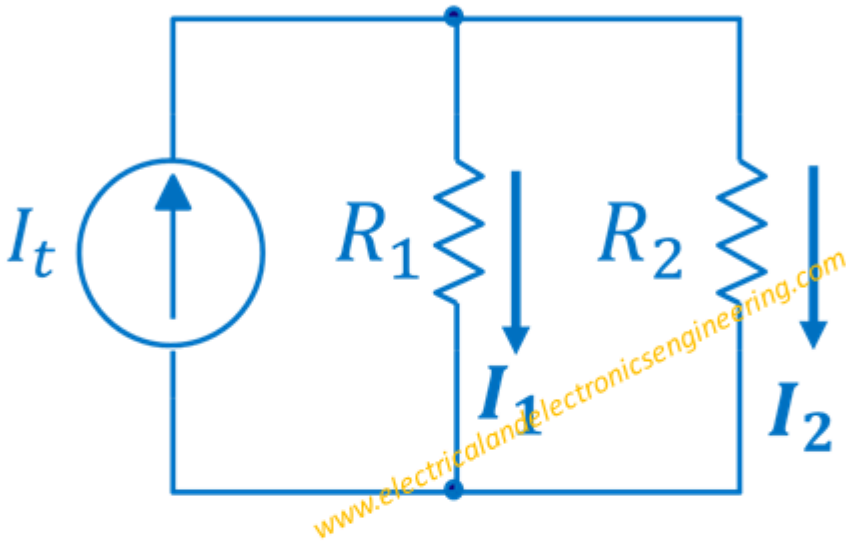
$$L_{eq} = L_1 + L_2 + L_3$$

Inductors in parallel



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

Current Divider

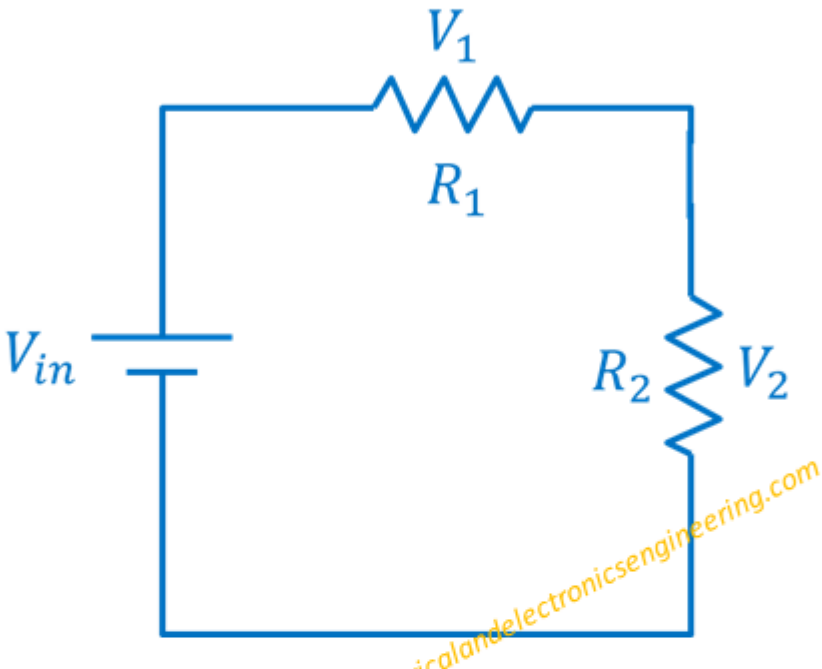


$$I_1 = \frac{R_t}{R_1} * I_t$$

$$where\ R_t = R_1 || R_2$$

$$I_2 = \frac{R_t}{R_2} * I_t$$

Voltage Divider



$$V_1 = \frac{R_1}{R_1 + R_2} * V_{in}$$

$$where\ R_t = R_1 + R_2$$

$$V_2 = \frac{R_2}{R_1 + R_2} * V_{in}$$

Voltage

To Calculate	Formula	Given
Voltage	$V = \frac{W}{Q}$	When energy and coulombs are known
Energy	$W = QV$	When volts and coulombs are known
Coulombs	$Q = \frac{W}{V}$	When energy and volts are known

Current

To Calculate	Formula	Given
Current	$I = \frac{Q}{t}$	When charge and time is known
Charge	$Q = I.t$	When current and time are known
Time	$t = \frac{Q}{I}$	When charge and current are known

Power

Formulas to calculate Power	
General formula	$P = \frac{W}{t}$
In terms of voltage and current	$P = VI$
In terms of current and resistance	$P = I^2R$
In terms of voltage and resistance	$P = \frac{V^2}{R}$
In terms of velocity	$P = F.v$
In terms of workdone	$P = \frac{mgh}{t}$

Where

- P = Power - watts
- W = Energy – joules
- V = Voltage –volts
- I = Current – amperes
- R = Resistance – ohms
- F = Force – Newtons
- v = velocity – meter/second
- m = mass
- g = gravity
- h = height
- t = time - second

Energy

$$W = Pt$$

Where

W = Energy

P = Power

t = Time

Commercial unit of energy = 1 kWh

1 kWh = 1000 Wh

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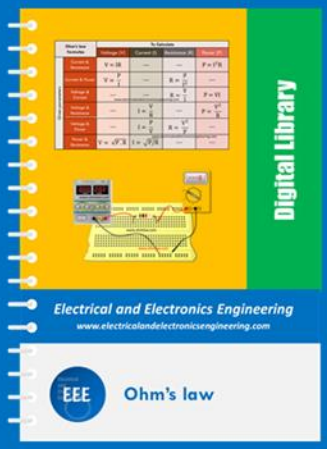

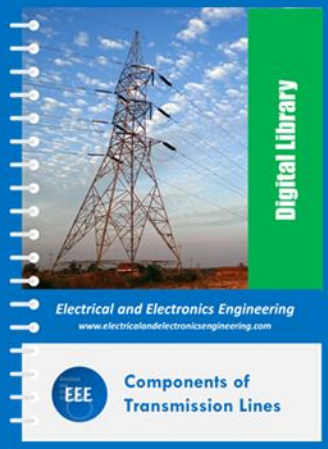

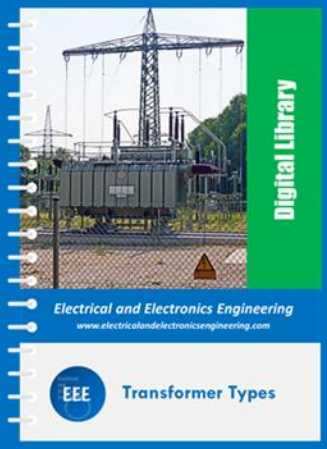

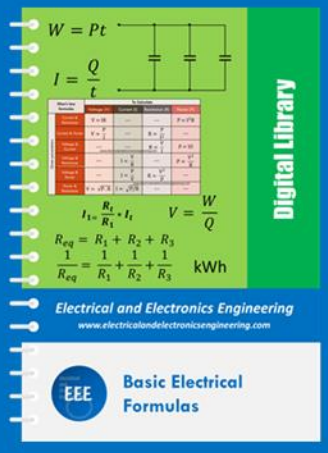

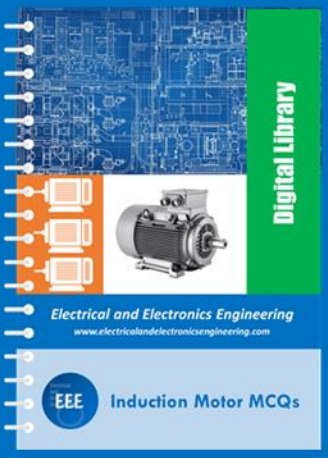

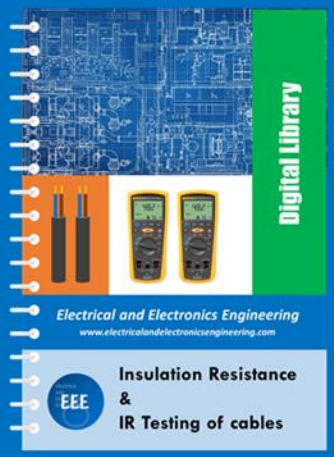

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