

Physics - Current, potential difference and resistance

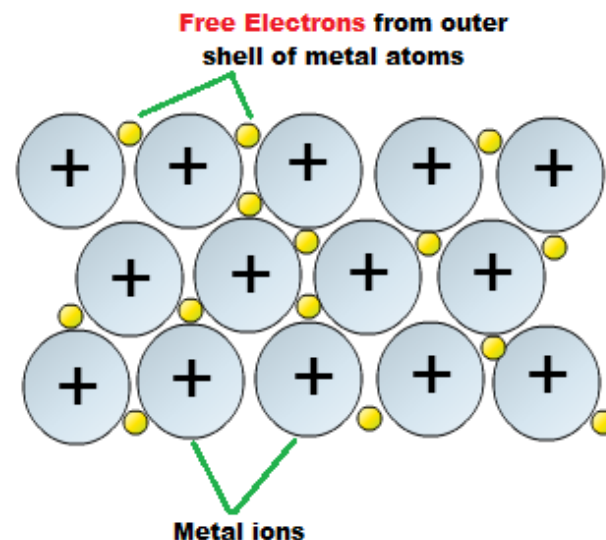
Key word	Definition
Current (I)	Rate of flow of charge i.e. free electrons
Charge (Q)	Property of a particle that causes it to be positive or negative
Amps (A)	The unit of current
Coulombs (C)	The unit of charge
Voltage (V)	Energy per unit charge. Sometimes called potential difference
Volts (V)	The unit of voltage
Resistance (R)	Opposition to the flow of current caused by ions in the metallic structure
Ohms (Ω)	The unit of resistance

Inside a metal:

Electricity flows through metals which are conductors because they have free electrons that move through them

Current

Free electrons flow through the metal lattice when a charge is applied.

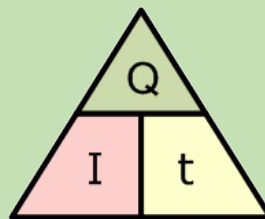


$$Q = It$$

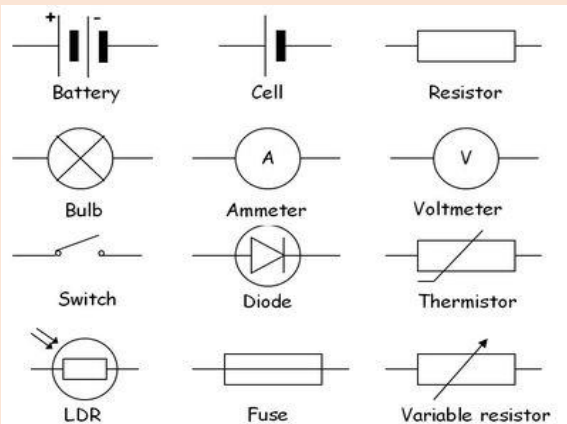


Key Equation

Q = charge (C)
I = current (A)
t = time (s)



Circuit Symbols:



Voltage

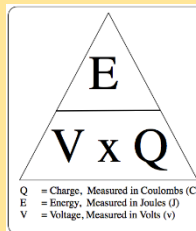
Voltage is the energy carried by the electrons when the charge flows



Key Equation

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

E = energy (J)
Q = charge (C)
V = voltage (V)



Resistance

Is the opposition to electron flow caused by the metal ions that get in the way.



Key Equation

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

R = resistance (Ω)
I = current (A)

V = Voltage/ potential difference (V)

