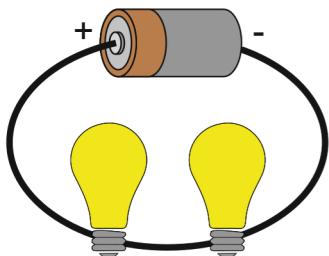


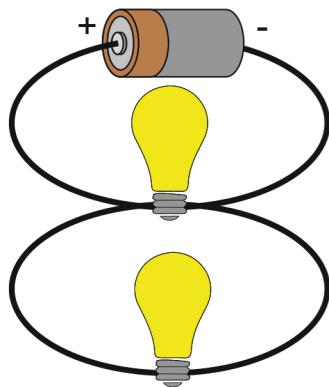
SERIES CIRCUIT

**Battery voltage**

In a series circuit the battery voltage should be equivalent to and not greater than the **SUM** of the bulb voltages, providing all the bulbs are of the same voltage. E.g. Two 1.5V bulbs would need a 3V battery.

NOTE You cannot isolate a bulb in this type of circuit i.e. If one bulb blows, all the lights will go out (think Christmas lights....). This circuit is only useful for connecting a very small number of bulbs.

PARALLEL CIRCUIT

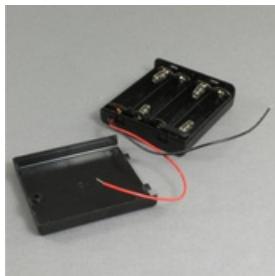
**Battery voltage**

In a parallel circuit the battery voltage should be equivalent to and never greater than the **voltage of an individual bulb** providing all bulbs are of the same voltage.

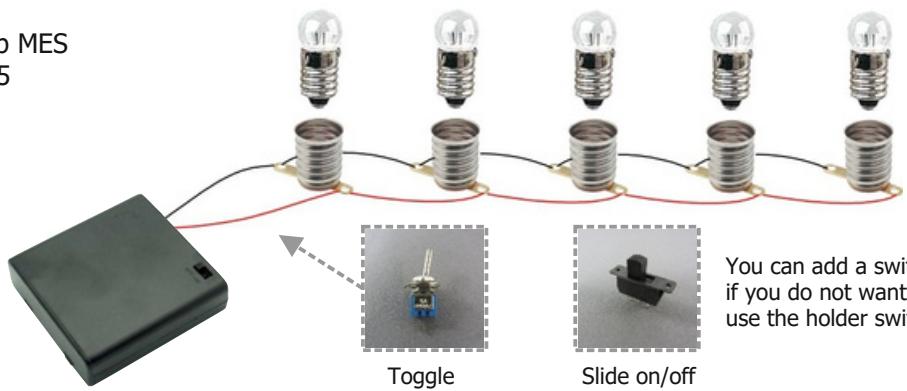
E.g. Any number of 1.5V bulbs can be connected in parallel, requiring only a 1.5V battery (useful for connecting a large number of bulbs in one circuit).

NOTE A higher voltage battery could potentially damage the bulbs. A lower battery voltage (than total bulb voltage) can be used - but may cause a slightly dimmer glow.

CONNECTING MES BULBS



Example: Bulb MES 100MA 6V Pk5



Recommended: In a parallel circuit 4 AA batteries will power the whole circuit. This holder comes with a switch.

You can add a switch if you do not want to use the holder switch

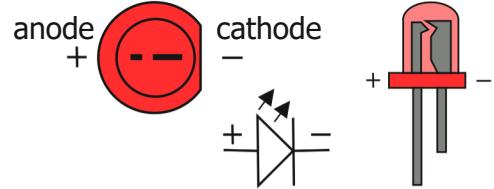
LED - LIGHT EMITTING DIODE

Advantages over incandescent light sources:

Efficiency: they emit more light per watt than with incandescent bulbs.

Longer lifetime: they tend to slowly dim over time, rather than the abrupt failure of incandescent bulbs.

Size: can be very small (smaller than 2mm).



BASIC DEFINITIONS

Voltage: the force that pushes an electrical current.(E.M.F.Electro-motiveforce)

UNITS= volts= V

Current: the flow of electrons around a closed circuit

UNITS= amps= I

Resistance: the property of a material to restrict the flow of an electrical current

UNITS= Ohms = Ω /R