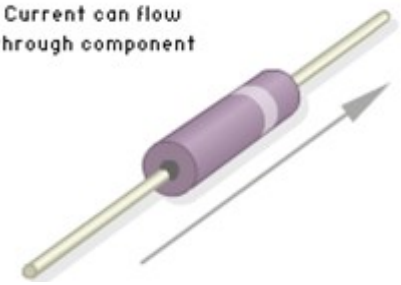
Other Circuit Components
SPH4C

Semi-conducting materials exhibit _____ properties. The way in which the material is connected to a power supply determines whether it will conduct an electrical current or impede it from flowing.

The most common semi-conducting material is _____, which needs to have very small amounts of other elements such as boron and phosphorous added to it in order to become a semi-conductor. This is called _____.

The simplest kind of semiconductor device is a _____, in which the electrical current can be made to flow in _____ direction only. If the diode is reversed the flow of current is prevented. The direction that current is allowed to pass is called the _____.



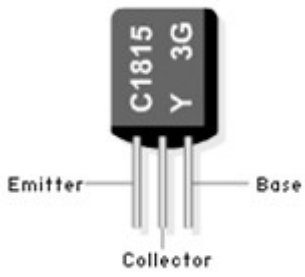
The direction that current is not allowed to pass is called the _____.

A common use for diodes is in _____ circuits, which changes alternating current (AC) into _____ current (DC), as in a cell phone charger.

A **light-emitting diode** or _____ is a special kind of diode, made from gallium arsenide phosphide, that _____ when current passes through it (an ILED emits _____ light). The current required to power an LED is usually _____.

_____ on a **photodiode** generates an electrical current (in photovoltaic mode). Photodiodes are the basis of _____.

Transistors have three leads: the _____, _____ and _____. A _____ current at the _____ terminal (that is, flowing from the base to the emitter) can _____ or _____ a much _____ current between the _____ and emitter terminals.



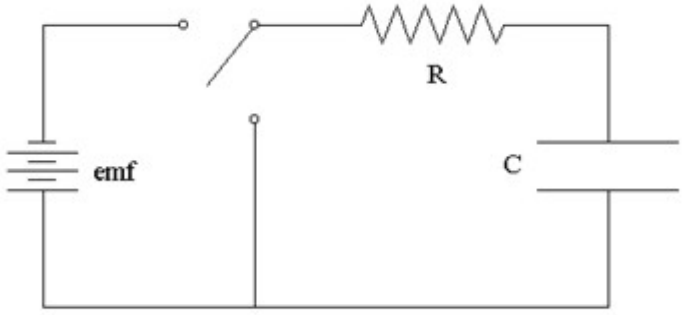
A **capacitor** is a discrete component which can _____ an electrical _____ for a period of time. The larger the _____ the more charge it can store.

When you **connect a capacitor to a battery**, here's what happens:

The _____ on the capacitor that attaches to the _____ terminal of the battery _____ electrons that the battery is producing.

The plate on the capacitor that attaches to the positive terminal of the battery _____ electrons to the battery.

Once it's charged, the capacitor has the _____ as the battery.



Here you have a battery, a light bulb and a capacitor.

When you closed the switch to connect the battery, the light bulb would _____ as current flows from the battery to the capacitor to _____. The bulb would get _____ and finally go out once the capacitor _____.

Then you could change the switch position. Current would flow from one plate of the capacitor to the other. The light bulb would light and then get dimmer and dimmer, finally going out once the capacitor had completely _____(the same number of electrons on both plates). The difference between a capacitor and a battery is that a capacitor can _____ its entire charge in a tiny fraction of a second. The electronic _____ on a camera uses a capacitor