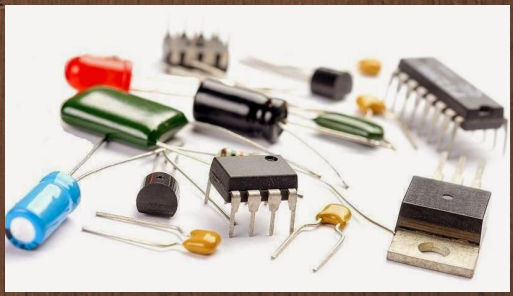
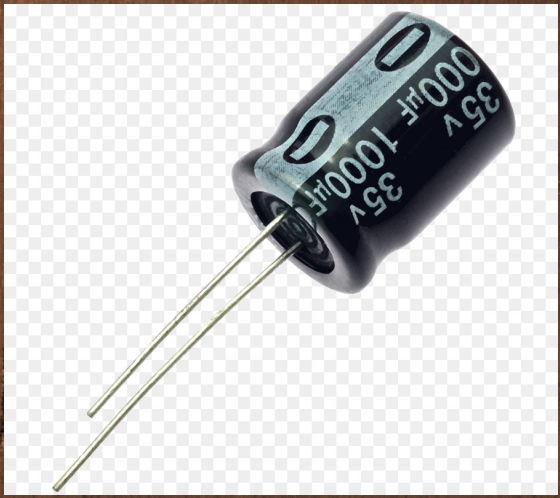
Electronics snippets- Capacitors



The Capacitance of a Capacitor

- Capacitance is the ability of a capacitor to store maximum amount of electrical charge in it.
- Capacitance exists in any object if that can be electrically charged.
- A parallel-plate capacitor is a general form of energy storage device.
- The capacitance is measured in the units of “Farad” and this is obtained from the name of ‘Michel Farad’.
- One farad is defined as the capacitance of a capacitor when capacitor is charged with One Coulomb of electricity and there is a potential difference of One volt across the plates.


35V
000μF 1000μF
35V

- Capacitance has always positive (+ve) value and it has no negative (-ve) values.
- Usually the Farad is a large unit; it has some subunits for measurements of the capacitance.
- They are micro-Farads (uF), nano-Farads (nF) and pico-Farads (pF).
- The capacitance of a parallel plate capacitor is directly proportional to the surface area (A) of the metal plates and it is inversely proportional to the separation distance between the plates (d).

If the charges on the plates are +Q and -Q respectively, and V is the potential difference between the two plates, then the capacitance C of a capacitor is given by

$$C = Q/V$$

This gives the voltage and current relationship as,

$$I\,(t) = C*dV(t)/dt$$