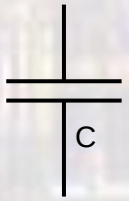
Capacitor Circuits

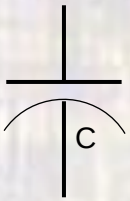
Last updated 1/6/25

Capacitor Circuits

- Capacitor
  - Store electrical charge
  - Units: Farads (F)

Schematic Symbol

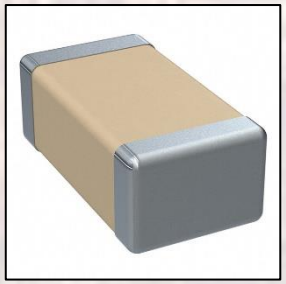


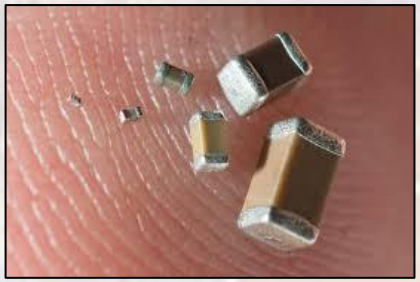


Physical

Leaded

Chip

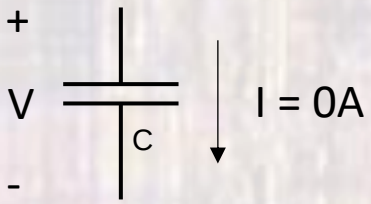


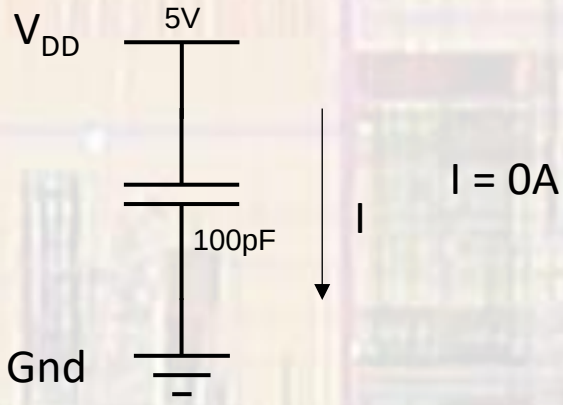


Capacitor Circuits

- DC Circuit Characteristics
  - Capacitors look like open circuits to DC voltages

I = 0



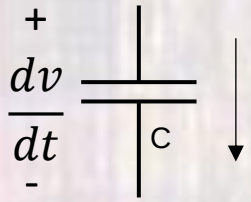


Capacitor Circuits

- Transient Circuit Characteristics

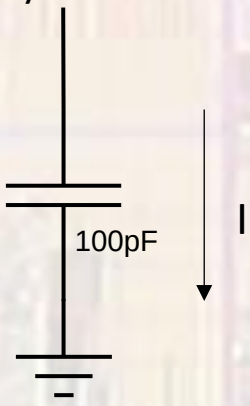
$$I = C\frac{dv}{dt}$$

amps = Farads * volts/sec



$$I = C\frac{dv}{dt}$$

$$\frac{dv}{dt} = 2\text{v/us}$$

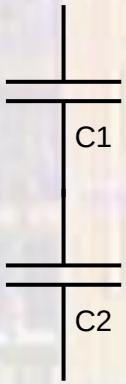


I = 100pF * 2v/us = 200ua

Capacitor Circuits

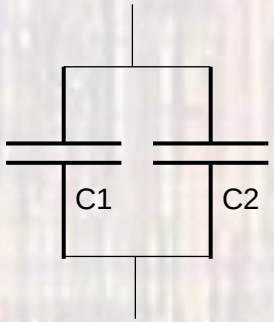
- Capacitor Configurations

Series



Ceq = 1/(1/C1 + 1/C2)

Parallel



Ceq = C1 + C2