Resistor Circuits

Last updated 10/3/24

These slides review basic resistor circuits

Resistor Circuits

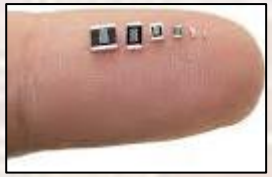
- Resistor
  - Resists the flow of electrical current
  - Units: Ohms (Ω)

Schematic Symbol

Physical

Leaded

Chip

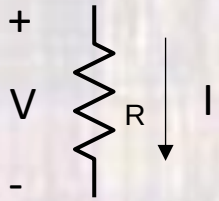


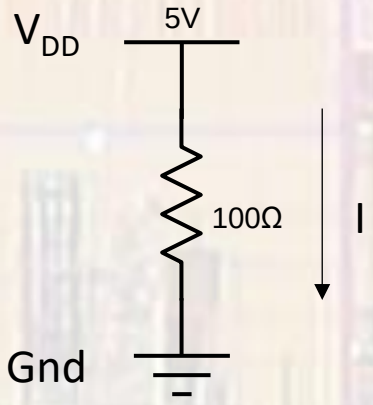
Resistor Circuits

- DC Circuit Characteristics

I = V / R

Amps = Volts / Ohms





I = 5V / 100Ω

I = 50mA

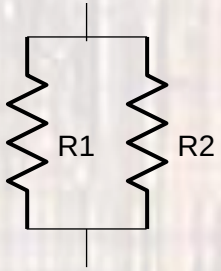
Resistor Circuits

- Resistor Configurations

Series

Req = R1 + R2

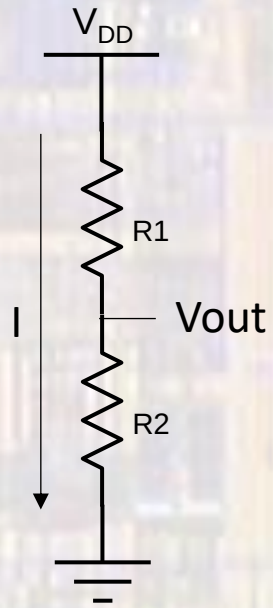
Parallel



Req = 1/(1/R1 + 1/R2)

Resistor Circuits

- Resistor Divider



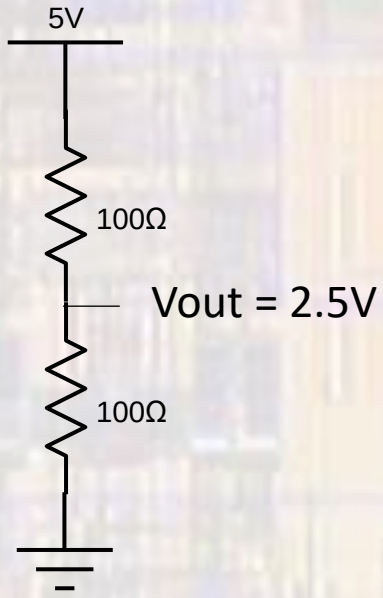
$I = V_{DD} / (R1 + R2)$

$Vout = I * R2$

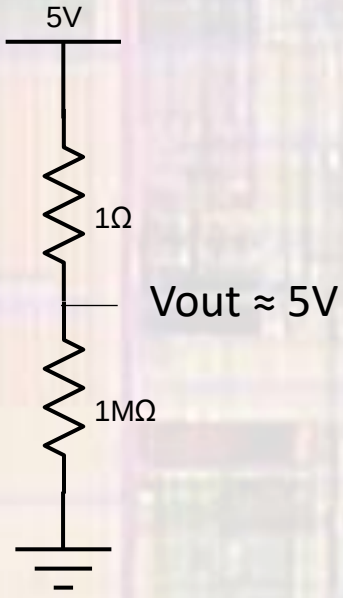
$$V_{out} = V_{DD}\left(\frac{R_2}{R_1 + R_2}\right)$$

Resistor Circuits

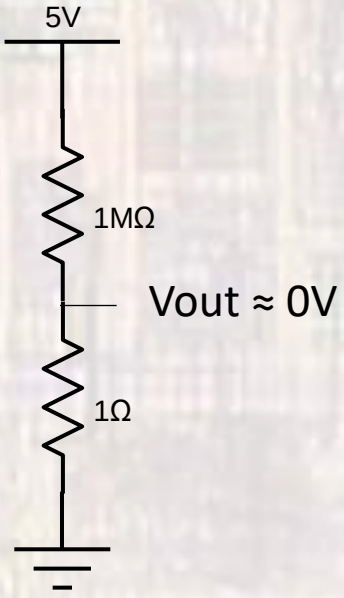
- Pull-up / Pull-down Circuits



Divider



Pull-up



Pull-down