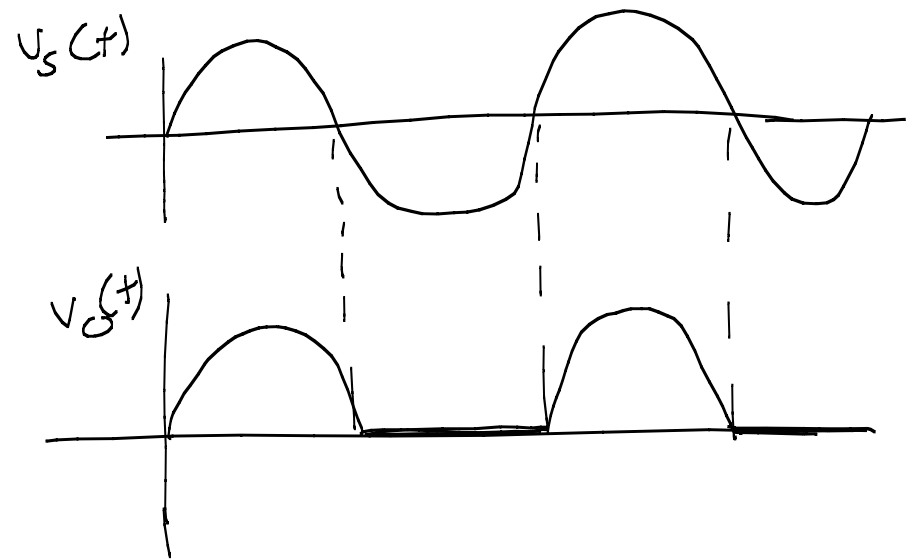
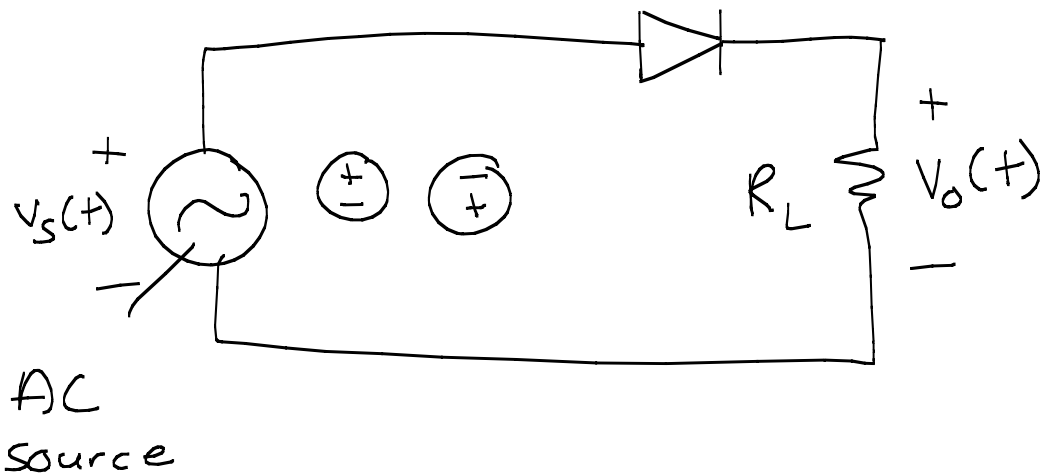


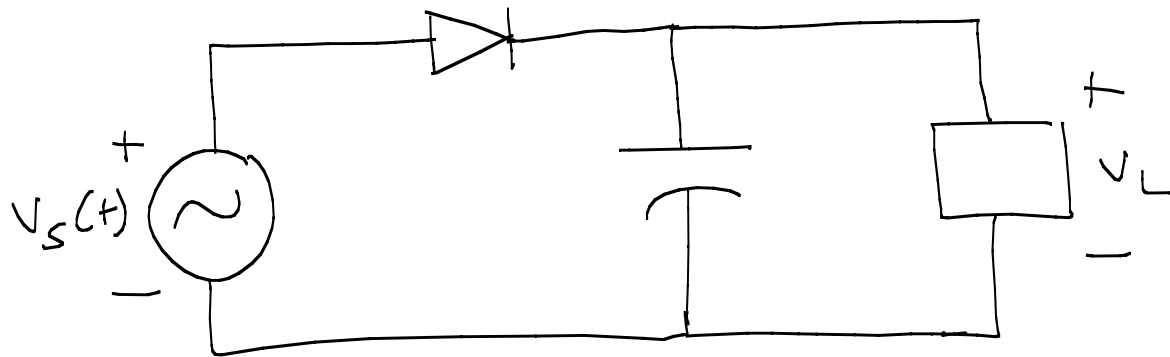
Rectifier Circuit

⇒ Used to convert AC power to DC power
⇒ Power Supplies

Half-Wave Rectifier

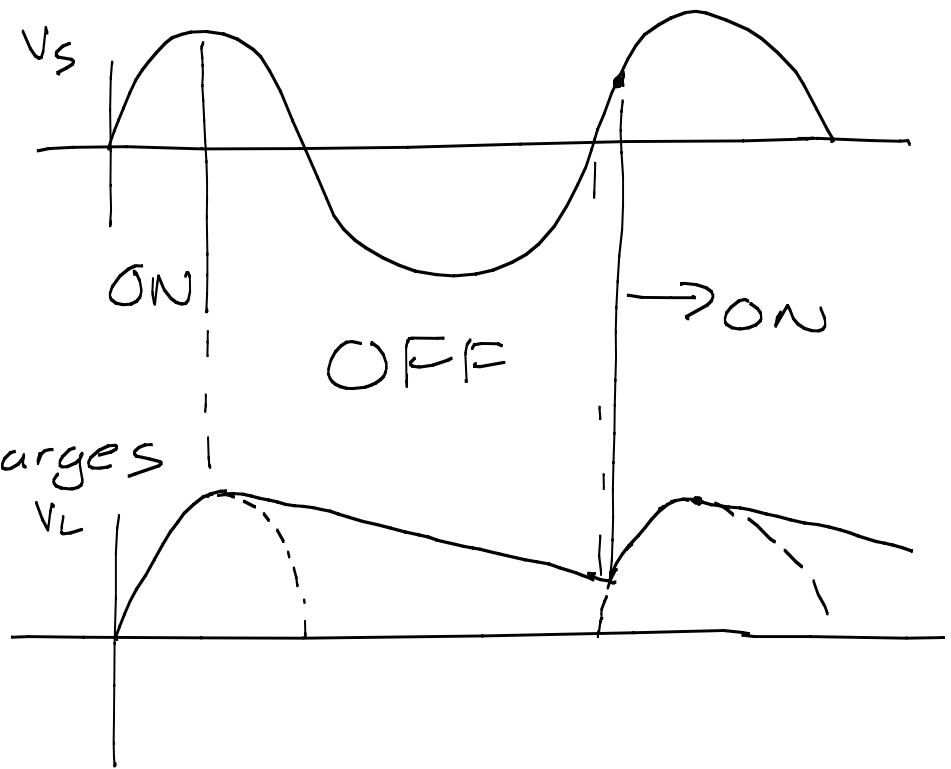


Half-Wave Rectifier with Smoothing Capacitor



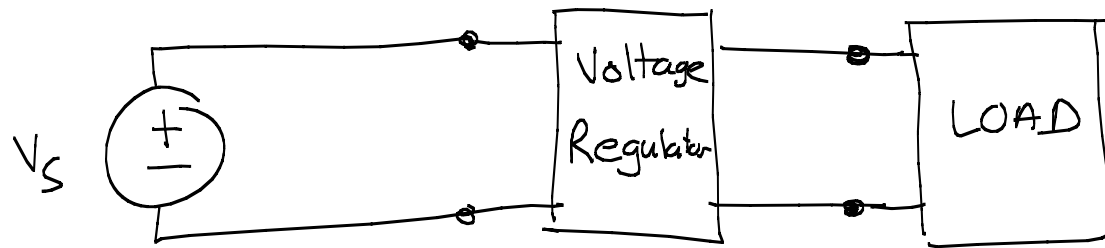
Forward Bias, \Rightarrow Diode is ON
 Capacitor is being charged

Reverse Bias \Rightarrow Diode is OFF
 Capacitor discharges to the load



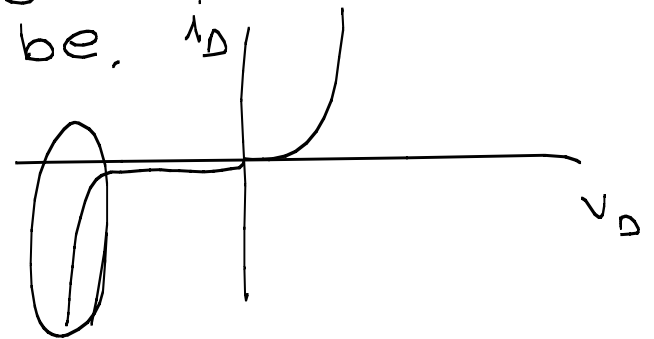
Voltage Regulator Circuit

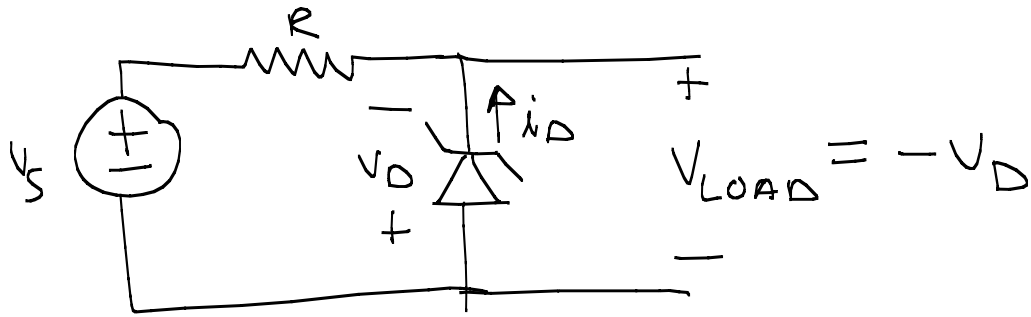
- ⇒ Need to Supply a nearly constant voltage
- ⇒ Supply Sources can have variable voltages
- ⇒ AC line could have fluctuations



Voltage Regulator

- ⇒ Zener Diode
- ⇒ Reverse Breakdown voltage is what you want + the load voltage to be.





KVL (Perimeter)

$$-v_s - i_D R + v_{LOAD} = 0$$

$$-v_s - i_D R - v_D = 0$$

$$v_s + i_D R + v_D = 0$$

$$i_D = -\frac{1}{R} v_D - \frac{v_s}{R}$$

Load
Line

