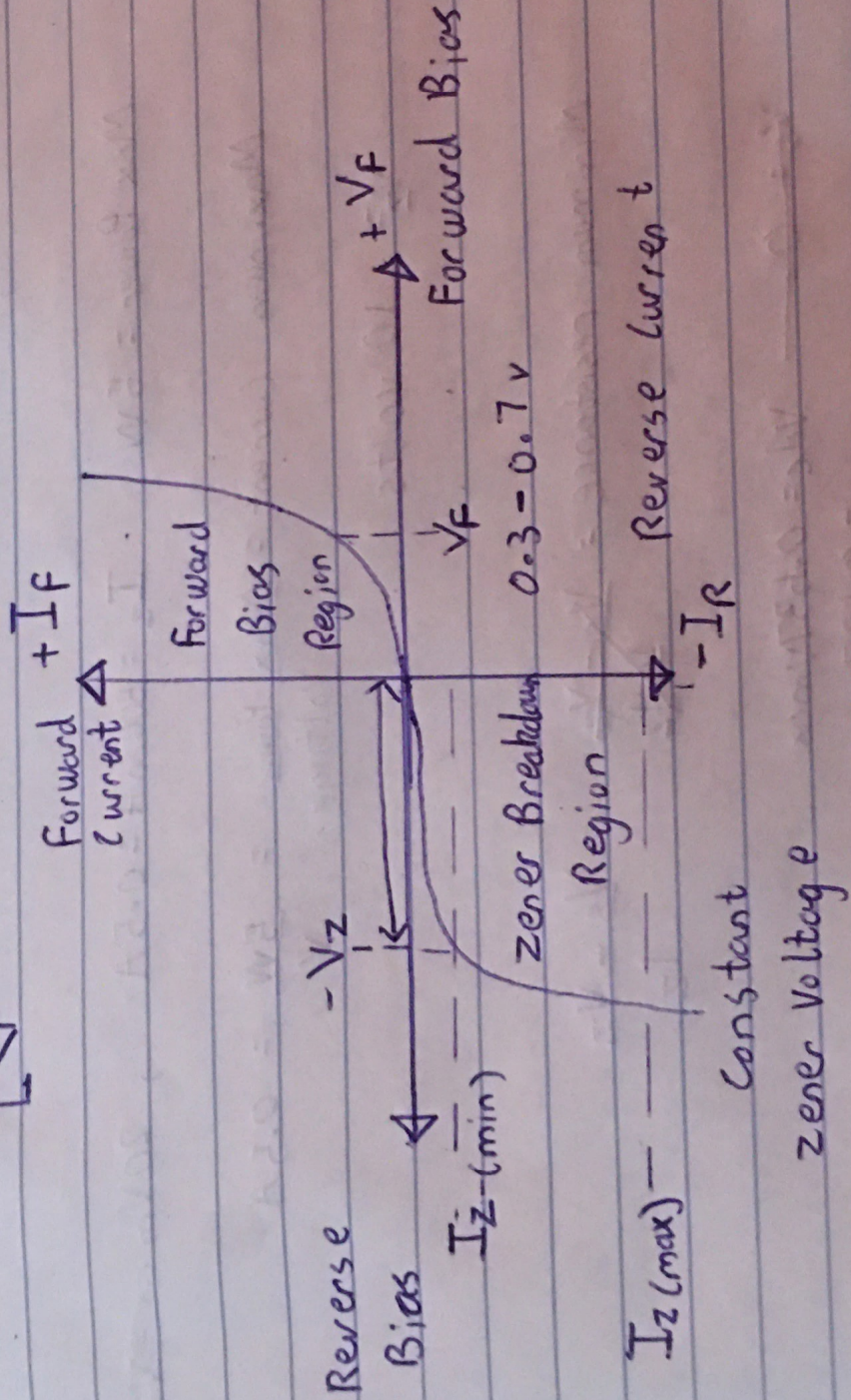
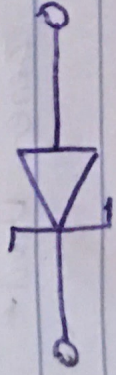
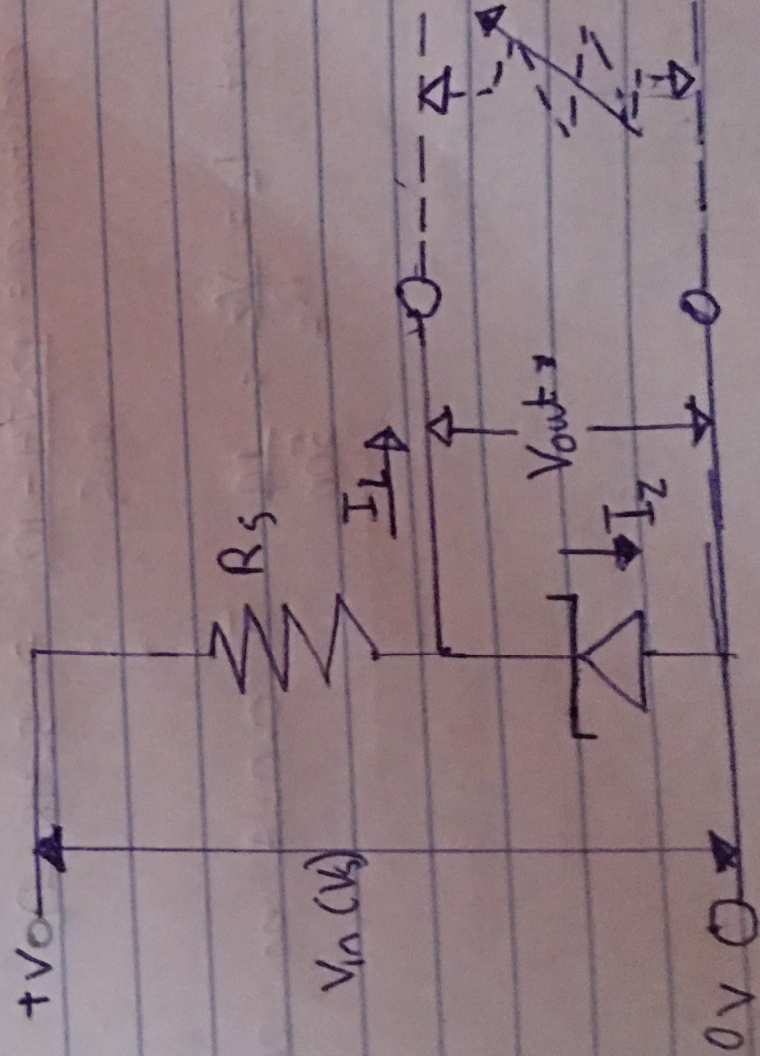


A zener diode is a diode similar to the standard PN junction diode but they are specially designed to have a low and specified Reverse Breakdown Voltage.



I-V characteristics curve



Labels

- + R_s - Resistor
- + V_s - Voltage source
- + V_{out} - stabilised output voltage
- + R_L - Load Resistance
- + I_Z - Load current across Zener Diode

2 Max Power = 5W $I_Z = 500\text{mA} = 0.5\text{A}$, $20\text{V}_{max} = V_s$

i Maximum Current = $\frac{\text{Max Power}}{\text{Voltage}}$ = $\frac{5\text{W}}{V} = 0.5\text{A}$

$V_Z = 10\text{volts}$

Minimum resistance = $\frac{V_s - V_Z}{I_Z}$

~~$V_s = 0$~~ $V_{dc} = 0.637V_{max}$
 $= 0.637 \times 20$
 $= 12.74\text{V}_{dc}$

Minimum resistance = $\frac{12.74 - 10}{0.5} = 5.48\ \Omega$

Load current $I_L = \frac{V_Z}{R_L} = \frac{10}{500} = 0.02\text{A}$ or 20mA

$I_Z = I_s - I_L$
 $= 500 - 20 = 480\text{mA}$