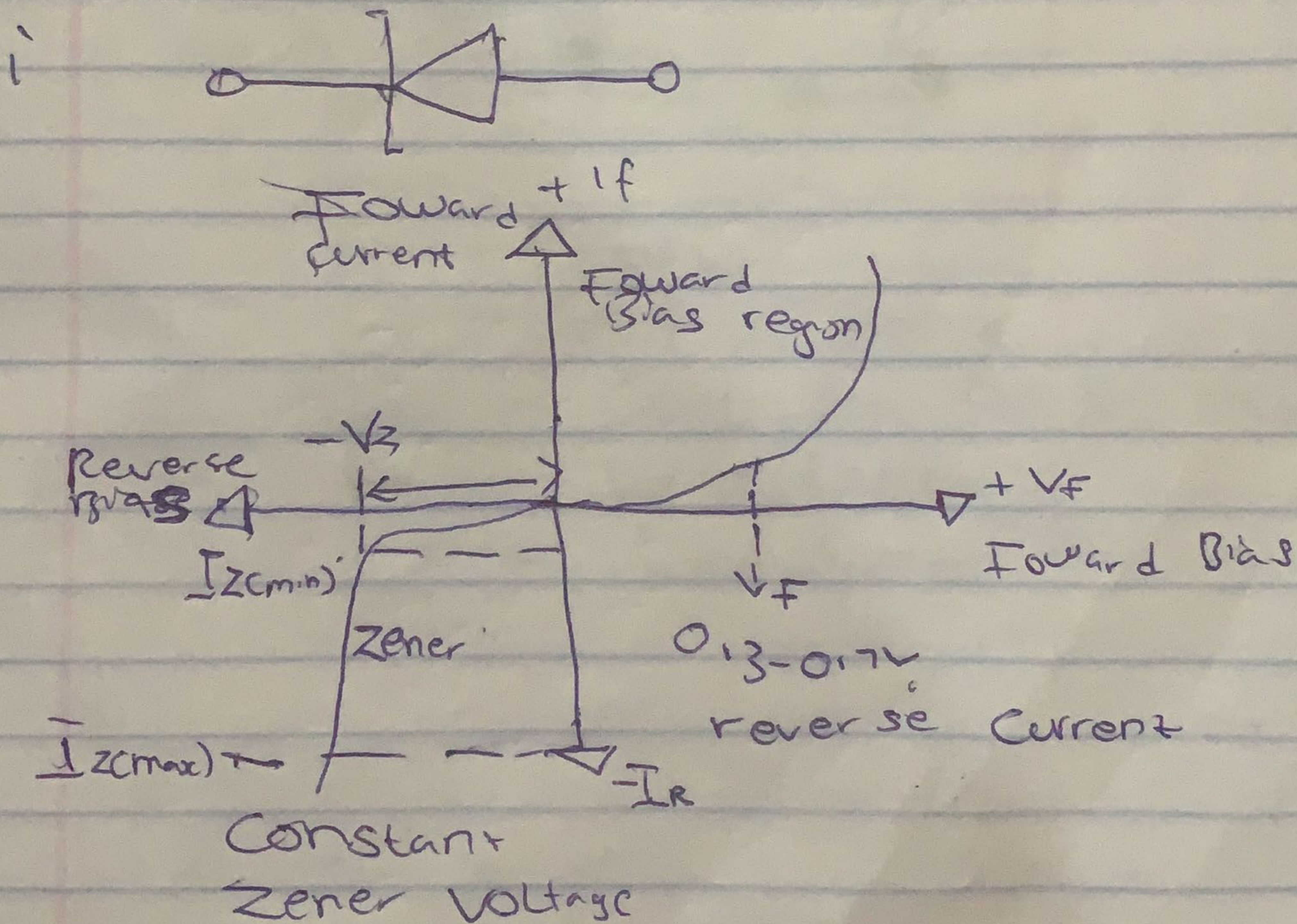


NAME EMMANUEL ETEYEN ARCHIBONG

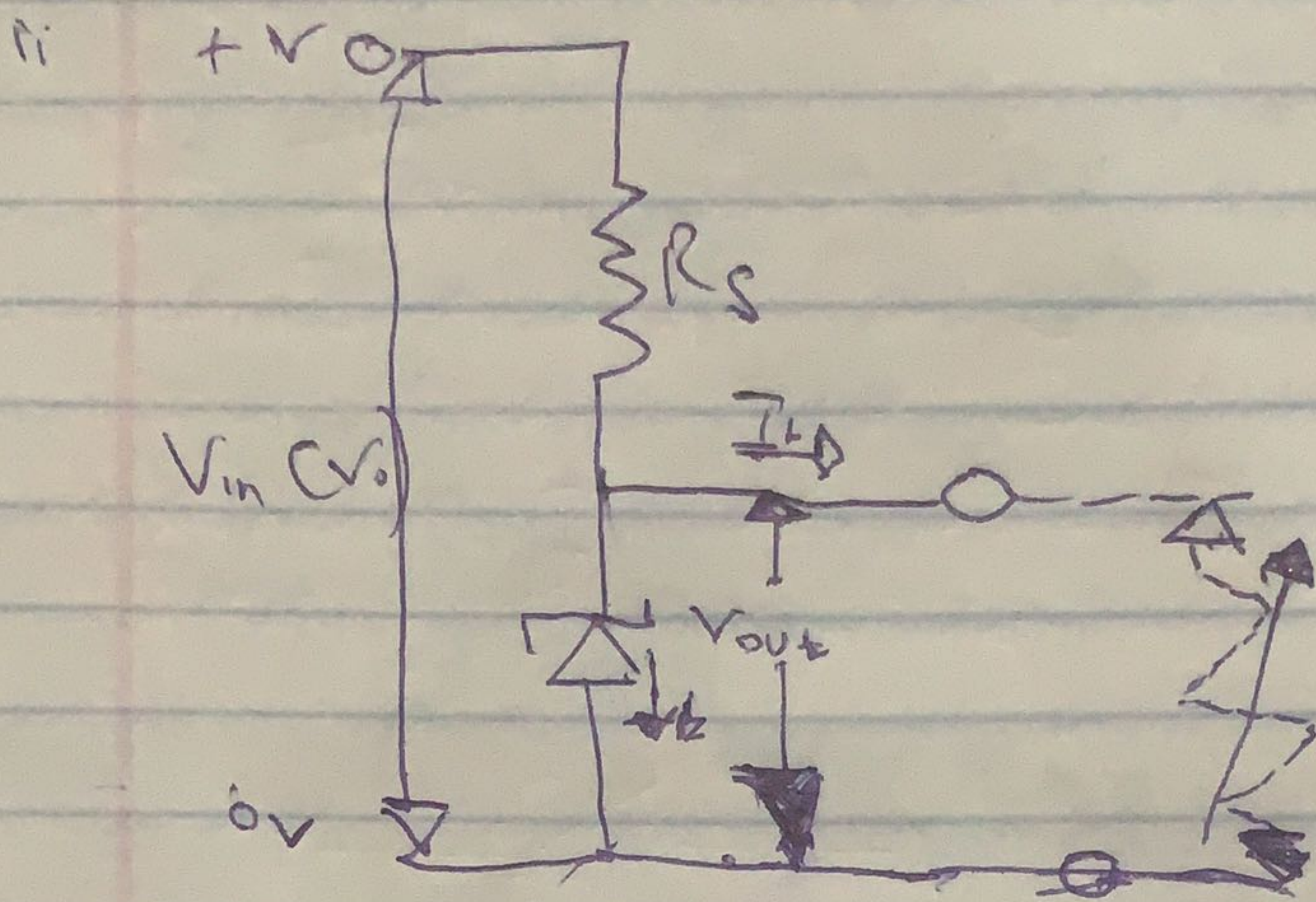
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Computer Engineering

1.) 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 characteristic curve



- + R_s - Resistor
- + V_s - Voltage source
- + V_{out} - Stabilised output voltage
- + R_L - Load resistance
- + I_L - Load current across Zener Node

$$2 \quad \text{Max power} = 5W \quad I_Z = 500mA = 0.5A,$$

$$20V_{max} = V_S$$

$$1 \quad \text{Maximum Current} = \frac{\text{Max power}}{\text{Voltage}} = \frac{5W}{V}$$

$$= 0.5A$$

$$V_Z = 10 \text{ Volts}$$

$$\text{Minimum ~~Current~~ ^{resistance}} = \frac{V_S - V_Z}{I_Z}$$

$$V_{se} = 0.637 V_{max}$$

$$= 0.637 \times 20$$

$$= 12.74V_{dc}$$

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

$$1 \quad \text{Load Current } I_L = \frac{V_Z}{R_L} = \frac{10}{500} = 0.02A$$

$$\text{or } 20mA$$