

$$P_Z = 5W$$

$$I_Z = 500mA$$

$$20V_{max}$$

To Convert V_{max} to VDC,

$$V_{dc} = \frac{2V_{max}}{\pi}$$

$$V_s = \frac{2 \times 20}{\pi} = 12.73V_{DC}$$

Recall that $P = \overline{I}V$

$$\therefore V_Z = \frac{P_Z}{I_Z} = \frac{5}{500 \times 10^{-3}}$$

$$V_Z = 10V$$

Recall that $V_Z + V_R = V_s$

$$V_R = V_s - V_Z$$

$$\frac{2 \times 20}{\pi} - 10$$

$$= 12.73 - 10 = 2.73$$

$$\therefore V = IR$$

$$R = \frac{V}{I} = \frac{2.73}{500 \times 10^{-3}}$$

$$R = 5.46$$

Since it is connected in series, and same current flows

$$I_s = I_Z + I_L$$

$$I_L = I_s - I_Z$$

$$I_L = \frac{V_Z}{R}$$

$$= \frac{10V}{500\Omega} = 0.02A = 20mA$$

$$I_Z = 500mA - 20mA$$

$$= 480mA = 0.48A$$

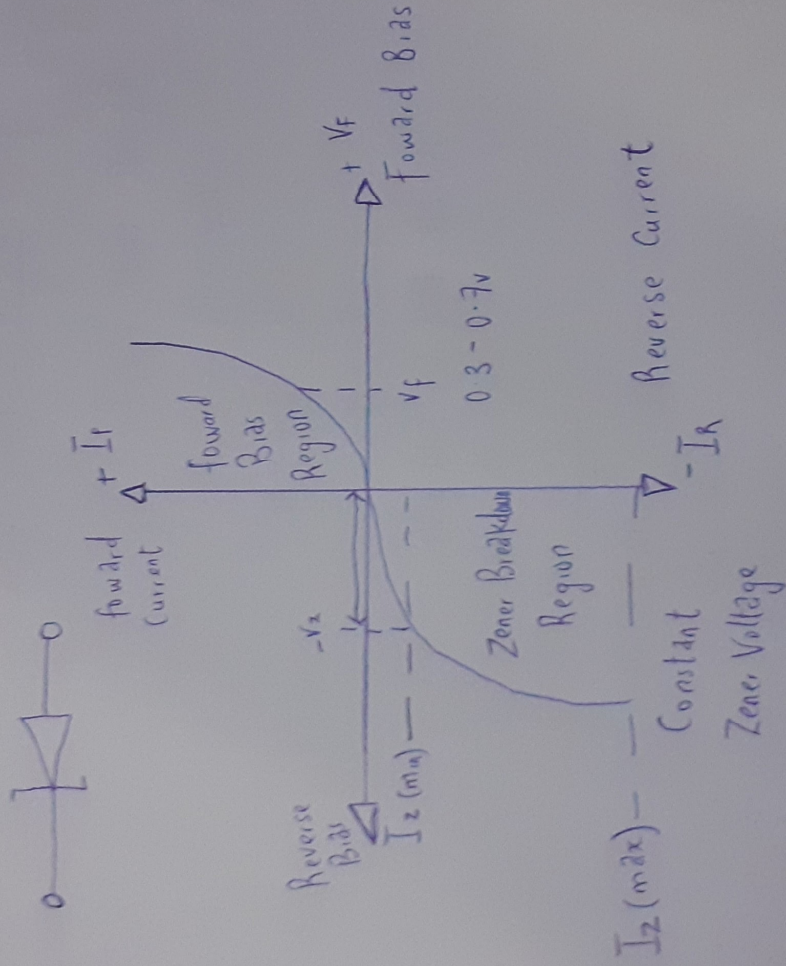
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BASIC ELECT

1) A Zener diode is one which is 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

