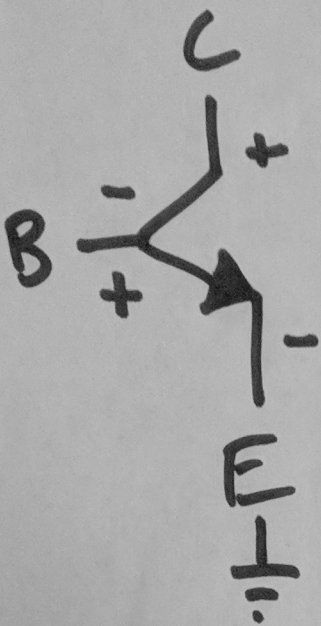
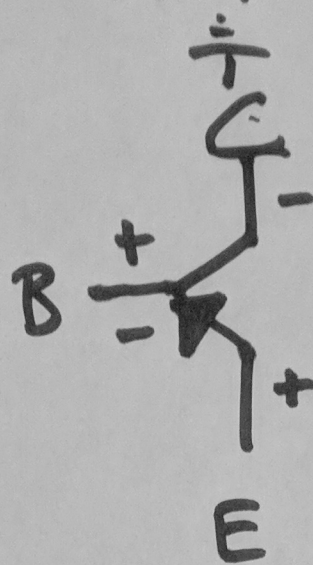


NPN



PNP



DC GAIN

$$\beta = \frac{I_C}{I_B}$$

$$\alpha = \frac{I_C}{I_E}$$

$V_{BE} = \text{DATASHEET}$

$$V_{RB} = V_{BB} - V_{BE}$$

$$V_{RB} = I_B R_B$$

$$I_B R_B = V_{BB} - V_{BE}$$

$$I_B = \frac{V_{BB} - V_{BE}}{R_B}$$

$$V_{CE} = V_{CC} - V_{RC}$$

$$V_{RC} = I_C R_C$$

$$V_{CE} = V_{CC} - I_C R_C$$

$$V_{CB} = V_{CE} - V_{BE}$$

