

## נוסחאות טרנזיסטור ביפולרי לאות קטן

### C.E

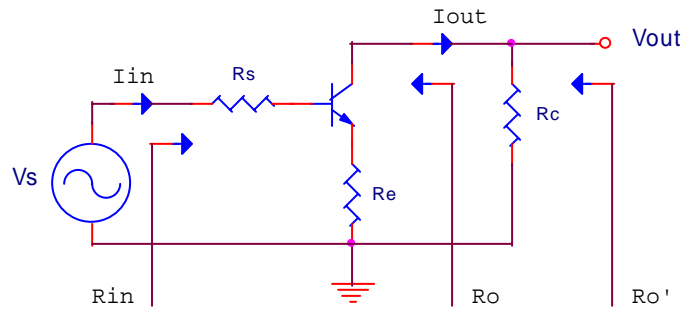
$$A_i = \frac{I_{out}}{I_{in}} = -h_{fe}$$

$$R_{in} = R_s + h_{ie} + (h_{fe} + 1) \cdot R_e$$

$$A_v = A_i \cdot \frac{R_c}{R_i} = \frac{-h_{fe} \cdot R_c}{R_s + h_{ie} + (h_{fe} + 1) \cdot R_e}$$

$$R_o = \infty$$

$$R_o' = R_c$$



### C.C

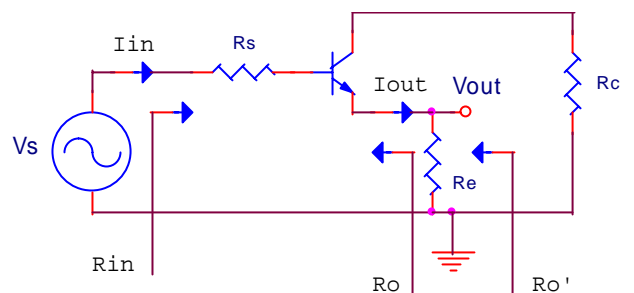
$$A_i = \frac{I_{out}}{I_{in}} = h_{fe} + 1$$

$$R_{in} = R_s + h_{ie} + (h_{fe} + 1) \cdot R_e$$

$$A_v = A_i \cdot \frac{R_e}{R_i} = \frac{(h_{fe} + 1) \cdot R_e}{R_s + h_{ie} + (h_{fe} + 1) \cdot R_e}$$

$$R_o = \frac{R_s + h_{ie}}{h_{fe} + 1}$$

$$R_o' = R_o \parallel R_e$$



**C.B**

$$A_i = \frac{I_{out}}{I_{in}} = \frac{h_{fe}}{h_{fe} + 1}$$

$$R_{in} = R_s + \frac{h_{ie} + R_b}{h_{fe} + 1}$$

$$A_v = A_i \cdot \frac{R_c}{R_i} = \frac{h_{fe} \cdot R_c}{R_b + h_{ie} + (h_{fe} + 1) \cdot R_s}$$

$$R_o = \infty$$

$$R_o' = R_c$$

