

BJT Bias Base Bias (H.6)

20170121

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References

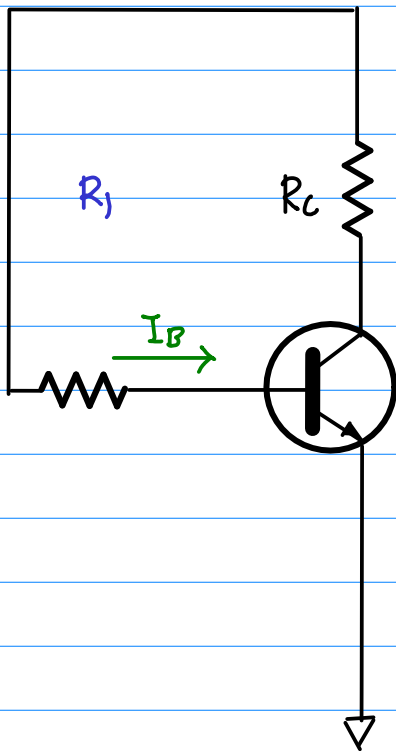
Based

[1] Floyd, Electronic Devices 7th ed

[2] Cook,

[2] en.wikipedia.org

Base Bias

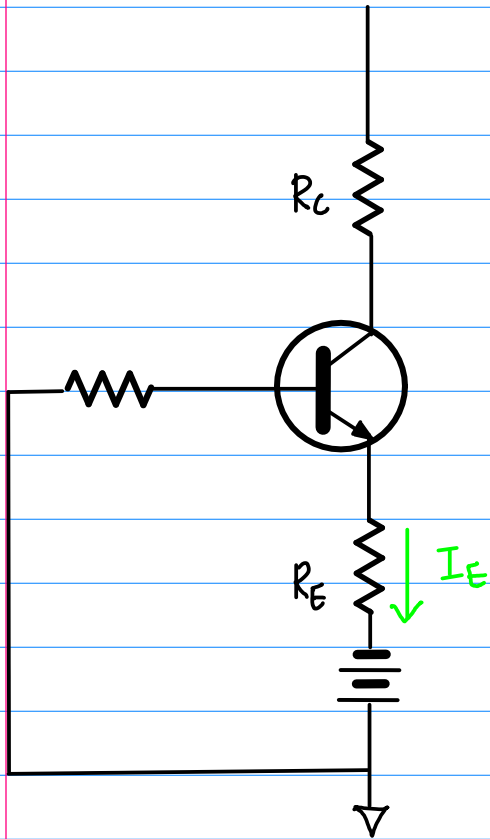


Q point values $I_C \cong I_E$

$$I_C = \beta_{DC} \left(\frac{V_{CC} - V_{BE}}{R_B} \right)$$

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

Emitter Bias

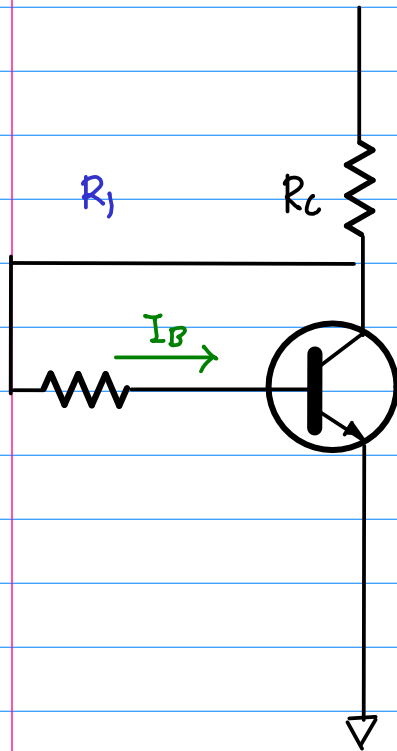


$$I_C \cong I_E$$

$$I_C = \frac{V_{BB} - V_{BE}}{R_E + R_B / \beta_{DC}}$$

$$V_{CE} = V_{CC} + V_{EE} - I_C(R_C + R_E)$$

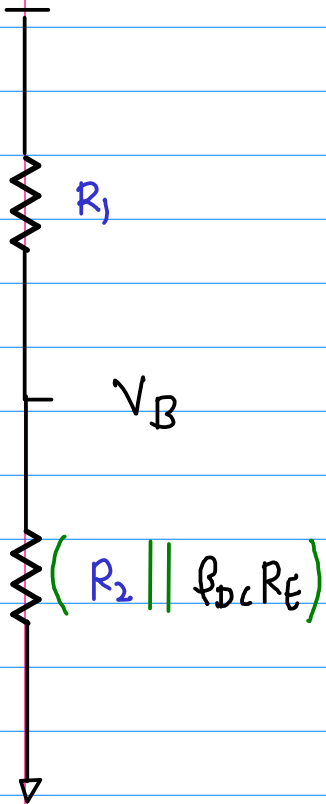
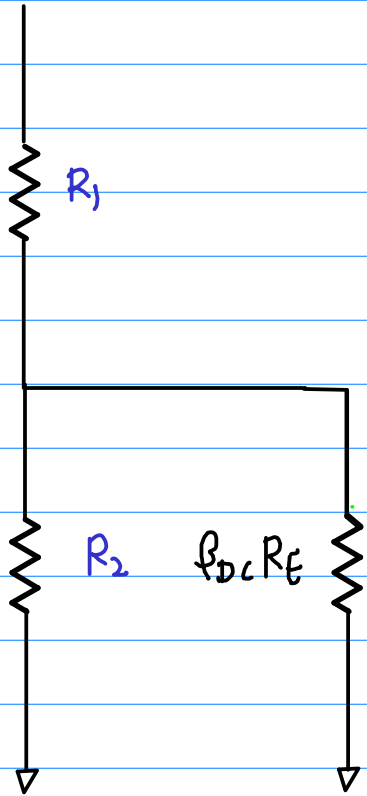
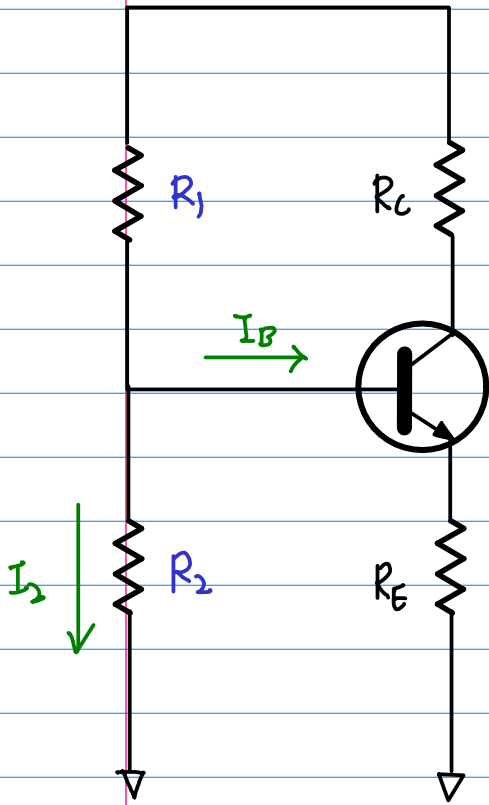
Collector Feedback Bias



$$I_C \cong I_E$$

$$I_C = \frac{V_{CC} - V_{BE}}{R_C + R_B/\beta_{DC}}$$

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



$$V_B = \frac{(R_2 \parallel \beta_{DC} R_E)}{R_1 + (R_2 \parallel \beta_{DC} R_E)} \cdot V_{CC}$$

$$\approx \frac{R_2}{R_1 + R_2} \cdot V_{CC}$$

$$R_2 \ll \beta_{DC} R_E \quad (R_2 \parallel \beta_{DC} R_E) \approx R_2$$









