

# BJT Bias Emitter Bias (H.7)

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# References

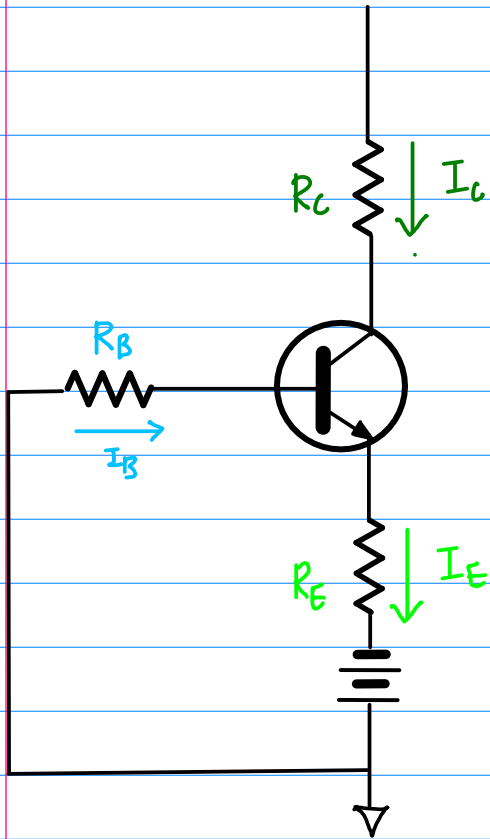
Based

[1] Floyd, Electronic Devices 7th ed

[2] Cook,

[2] [en.wikipedia.org](http://en.wikipedia.org)

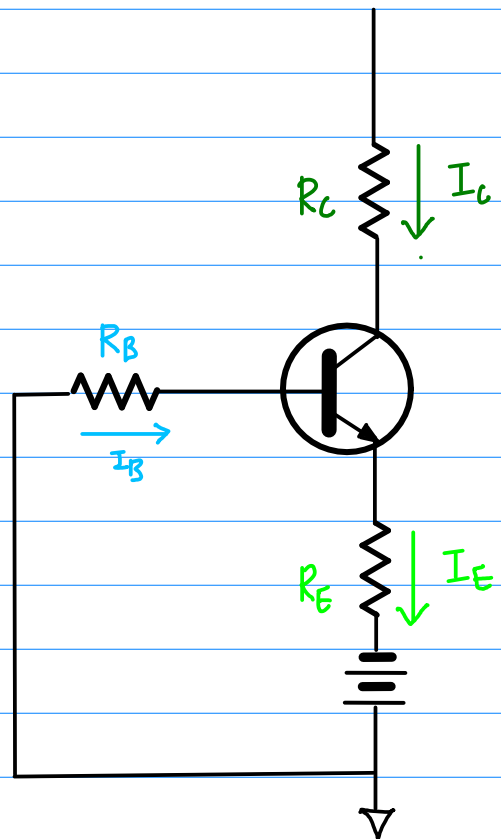
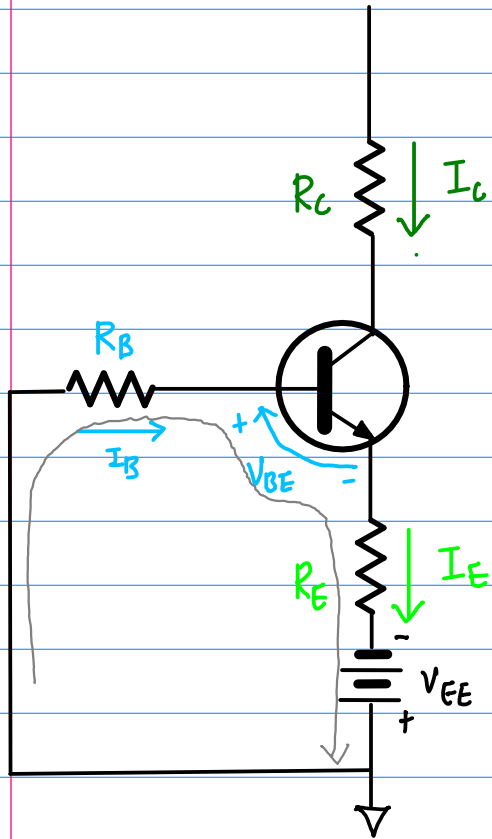
# Emitter Bias



$$I_C \cong I_E$$

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

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



$$V_{R_B} + V_{BE} + V_{R_E} + V_{EE} = 0$$

$$V_E = V_{EE} + I_E R_E$$

$$I_B R_B + V_{BE} + I_E R_E + V_{EE} = 0$$

$$V_B = V_E + V_{BE}$$

$$I_B R_B + V_{BE} + I_E R_E = -V_{EE}$$

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

$$I_E \cong I_C = \beta_{DC} I_B$$

$$I_B \cong \frac{I_E}{\beta_{DC}}$$

$$\frac{I_E}{\beta_{DC}} R_B + V_{BE} + I_E R_E = -V_{EE}$$

$$I_E \left( \frac{R_B}{\beta_{DC}} + R_E \right) + V_{BE} = -V_{EE}$$

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







