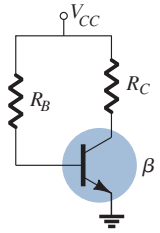
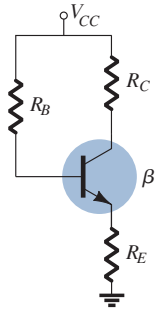
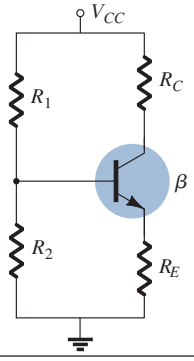
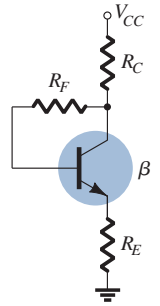
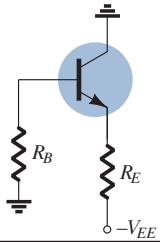
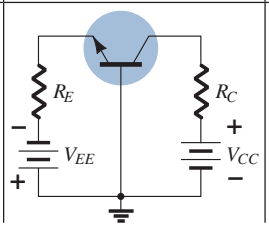
TABLE 1

BJT Bias Configurations

Type	Configuration	Pertinent Equations
Fixed-bias		$I_B = \frac{V_{CC} - V_{BE}}{R_B}$ $I_C = \beta I_B, I_E = (\beta + 1)I_B$ $V_{CE} = V_{CC} - I_C R_C$
Emitter-bias		$I_B = \frac{V_{CC} - V_{BE}}{R_B + (\beta + 1)R_E}$ $I_C = \beta I_B, I_E = (\beta + 1)I_B$ $R_i = (\beta + 1)R_E$ $V_{CE} = V_{CC} - I_C (R_C + R_E)$
Voltage-divider bias		EXACT: $R_{Th} = R_1 \| R_2, E_{Th} = \frac{R_2 V_{CC}}{R_1 + R_2}$ $I_B = \frac{E_{Th} - V_{BE}}{R_{Th} + (\beta + 1)R_E}$ $I_C = \beta I_B, I_E = (\beta + 1)I_B$ $V_{CE} = V_{CC} - I_C (R_C + R_E)$ APPROXIMATE: $\beta R_E \geq 10R_2$ $V_B = \frac{R_2 V_{CC}}{R_1 + R_2}, V_E = V_B - V_{BE}$ $I_E = \frac{V_E}{R_E}, I_B = \frac{I_E}{\beta + 1}$ $V_{CE} = V_{CC} - I_C(R_C + R_E)$
Collector-feedback		$I_B = \frac{V_{CC} - V_{BE}}{R_F + \beta(R_C + R_E)}$ $I_C = \beta I_B, I_E = (\beta + 1)I_B$ $V_{CE} = V_{CC} - I_C (R_C + R_E)$
Emitter-follower		$I_B = \frac{V_{EE} - V_{BE}}{R_B + (\beta + 1)}$ $I_C = \beta I_B, I_E = (\beta + 1)I_B$ $V_{CE} = V_{EE} - I_E R_E$
Common-base		$I_E = \frac{V_{EE} - V_{BE}}{R_E}$ $I_B = \frac{I_E}{\beta + 1}, I_C = \beta I_B$ $V_{CE} = V_{EE} + V_{CC} - I_E(R_C + R_E)$ $V_{CB} = V_{CC} - I_C R_C$