

$$V_{CC} := 12$$

$$I_C := 3.5$$

$$\beta := 160$$

$$R_S := 0.3$$

$$V_S := 10$$

$$f := 200$$

$$R_L := 5$$

$$V_{CEq} := \frac{V_{CC}}{2}$$

$$V_{CEq} = 6$$

$$V_{RC} := V_{CEq} \cdot \frac{3}{4}$$

$$V_{RE} := V_{CEq} \cdot \frac{1}{4}$$

$$V_{RC} = 4.5$$

$$V_{RE} = 1.5$$

$$R_C := \frac{V_{RC}}{I_C}$$

$$R_C = 1.286$$

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

$$I_B = 0.022$$

$$I_E := I_C + I_B$$

$$I_E = 3.522$$

$$R_E := \frac{V_{RE}}{I_E}$$

$$R_E = 0.426$$

$$V_{R2} := 0.7 + V_{RE}$$

$$V_{R2} = 2.2$$

$$I_{R2} := 10 \cdot I_B$$

$$I_{R2} = 0.219$$

$$R_2 := \frac{V_{R2}}{I_{R2}}$$

$$R_2 = 10.057$$

$$V_{R1} := V_{CC} - V_{R2}$$

$$V_{R1} = 9.8$$

$$R_1 := \frac{V_{R1}}{I_{R2}}$$

$$R_1 = 44.8$$

$$\left( \frac{25}{11} \right)$$

$$re' = 7.098 \times 10^{-3}$$

$$RINBASE := \beta \cdot re'$$

$$RINBASE = 1.136$$

$$RIN := \left( \frac{1}{R1} \right) + \left( \frac{1}{R2} \right) + \left( \frac{1}{RINBASE} \right)$$

$$RIN = 1.002$$

$$Vb := \left( \frac{RIN}{RS + RIN} \right) \cdot VS$$

$$Vb = 7.696$$

$$XC := \frac{RE}{10}$$

$$XC = 0.043$$

$$C2 := \frac{1}{2\pi f \cdot XC}$$

$$C2 = 0.019$$

حساب المقاومة الخارجيه

$$\text{RCOUT} := \frac{\text{RC} \cdot \text{RL}}{\text{RC} + \text{RL}}$$

$$\text{RCOUT} = 1.023$$

$$\text{AV} := \frac{\text{RCOUT}}{r_{e'}}$$

$$\text{AV} = 144.077$$

$$\text{AVt} := \left( \frac{\text{Vb}}{\text{VS}} \right) \cdot \text{AV}$$

$$\text{AVt} = 110.885$$

$$\text{ICac} := \beta \cdot \left( \frac{\text{Vb}}{\text{RINBASE}} \right)$$

$$\text{ICac} = 1.084 \times 10^3$$

$$\text{IS} := \frac{\text{VS}}{\text{RS} + \text{RIN}}$$

$$\text{IS} = 7.679$$

$$\text{AI} := \frac{\text{ICac}}{\text{IS}}$$

$$\text{AI} = 141.188$$

$$\text{Ap} := \text{AVt} \cdot \text{AI}$$

$$c3 := \frac{1.566 \times 10^4}{2\pi f \cdot \frac{RL \cdot 1000}{10}}$$

$$c3 = 1.592 \times 10^{-6}$$

$$c1 := \frac{1}{2\pi f \cdot \frac{RIN \cdot 1000}{10}}$$

$$c1 = 7.94 \times 10^{-6}$$

$$AP' := (ICac)^2 \cdot RC$$

$$AP' = 1.511 \times 10^6$$

$$AP'' := VS \cdot IS \cdot Ap$$

$$AP'' = 1.202 \times 10^6$$