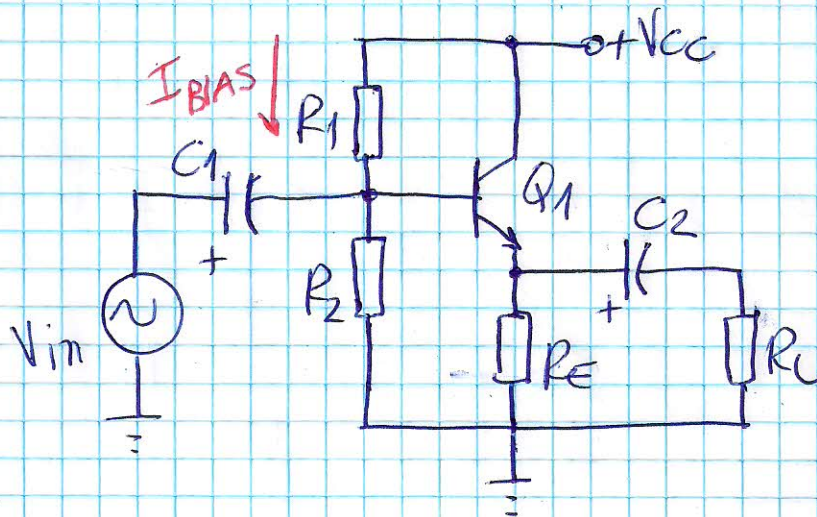


PROJETO AMPLIFICADOR SEGUIDOR DE EMISSOR

1. TOPOLOGIA



2. DADOS

$$V_{CC} = 12V; R_L = 200\Omega; \beta = 100; f_{min} = 30Hz$$

3. CÁLCULOS

$$R_E = R_L$$

$$R_E = 200\Omega$$

$$V_E = \frac{V_{CC}}{2} = \frac{12}{2} = 6$$

$$I_E = \frac{6}{200} = 30mA$$

$$I_b = \frac{I_E}{\beta} = \frac{303}{100} = 3.03 \text{ mA}$$

$$10 \leq K \leq 100$$

$$I_{BIAS} = K \cdot I_b$$

$$I_{BIAS} = 10 \cdot 3.03 \text{ mA} = 30.3 \text{ mA}$$

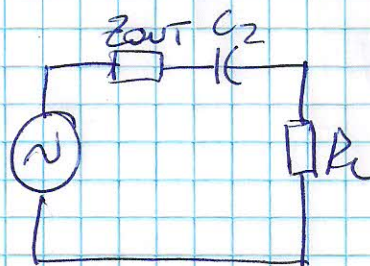
$$R_1 = R_2 = \frac{V_{CC}}{2 \cdot I_{BIAS}} = \frac{6}{30.3 \text{ mA}} = 198 \Omega$$

$$P_{Q1} = V_{CE} \cdot I_E = 6 \cdot 30.3 \text{ mA} = 181.8 \text{ mW}$$

$$r_e = \frac{25 \text{ mV}}{I_E} = \frac{25 \text{ mV}}{30.3 \text{ mA}} = 0.83 \Omega$$

$$Z_{out} = r_e \quad | \quad r_e \ll R_E$$

$$C_2 = \frac{1}{2\pi (Z_{out} + R_L) \cdot f_{min}}$$



$$C_2 \approx \frac{1}{2\pi \cdot R_L \cdot f_{min}} = \frac{1}{2\pi \cdot 200 \cdot 30} \approx 26 \mu\text{F}$$

$$Z_b = \beta(r_e + r'_e)$$

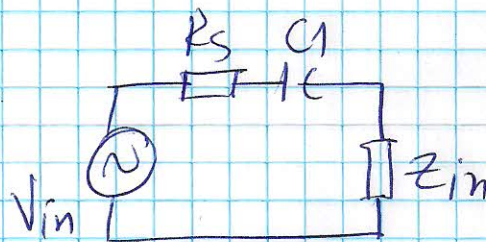
$$r'_e = R_L // R_E = 100$$

$$Z_b \approx \beta \cdot r'_e \quad | \quad r_e \ll r'_e$$

$$Z_b \approx 100 \cdot 100 = 10 \text{ K}\Omega$$

$$Z_{in} = 1 \text{ K}\Omega \leftarrow Z_{in} = R_1 // R_2 \quad | \quad Z_b \gg 10 \cdot R_1 // R_2$$

$$C_1 = \frac{1}{2\pi \cdot (R_s + Z_{in}) f_{min}}$$



$$C_1 = \frac{1}{2\pi \cdot Z_{in} \cdot f_{min}} \quad | \quad R_s = 0$$

$$C_1 = \frac{1}{2\pi \cdot 1 \text{ K} \cdot 30} \approx 5 \text{ nF}$$

LEANDRO TEODORO

tilibra