Lista 2 – Eletrônica Aplicada, Prof. Marcelo Perotoni

Capítulo 17 Boylestad, versão biblioteca UFABC em português

17.1 A_f=-9.95

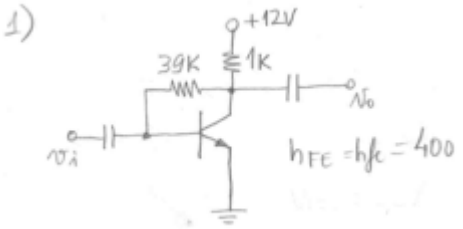
17.2 0.2%

17.3 A_f=-14.3 Z_{if}=31K5 Z_{of}=2K4

17.4 Atenção, erro na tradução brasileira, considere R_2=200K A=-33.5 β= -0.2 A_f=-4.4

17.5 h_{ie}=1.18K Z_i=1.18K Z_o=R_C=4K7 β=-R_E=-1200 A_f=-0.82E-3 A=-0.063 Z_{if}=91.18K Z_{of}=363K

Exercício Prof. Hamilton Klimach, UFRGS, Eletrônica Fundamental

(a) Calcule o ponto Q do transistor (b) Identifique o tipo de realimentação, tipo de amostra e comparação (c) Calcule o ganho A, R_{iF} e R_{of} (d) Calcule A_v e A_i Considere h_{fe}=400 e V_{beq}=0.6 Ib=2.57e-5 Ic=10.3mA Amostra tensão, compara corrente, convenção Boylestad tensão em paralelo. h_{ie}=1K A=-(-h_{fe}/h_{ie})[R_C//R_F][h_{ie}//R_F]= -380.25 β =-1/RF= -2.56E-5 A_f=A/(1+ βA) = -377 Z_i = resist entrada laço aberto = 970 Z_0 = resist saída laço aberto = 970 Z_{if} = resist entrada realimentada = 961 Z_{0f} = resist saída realimentada = 961	

Capítulo 8 Sedra-Smith, versão original americana, 5ª edição

D*8.35 Figure P8.35 shows a series–shunt feedback amplifier without details of the bias circuit.

(a) Sketch the A circuit and the circuit for determining β.
(b) Show that if $A\beta$ is large then the closed-loop voltage gain is given approximately by

$$A_f \equiv \frac{V_o}{V_s} \simeq \frac{R_F + R_E}{R_E}$$

(c) If R_E is selected equal to 50 Ω, find R_F that will result in a closed-loop gain of approximately 25 V/V.
(d) If Q_1 is biased at 1 mA, Q_2 at 2 mA, and Q_3 at 5 mA, and assuming that the transistors have $h_{fe} = 100$, find approximate values for R_{C1} and R_{C2} to obtain gains from the stages of the A circuit as follows: a voltage gain of Q_1 of about −10 and a voltage gain of Q_2 of about −50.
(e) For your design, what is the closed-loop voltage gain realized?
(f) Calculate the input and output resistances of the closed-loop amplifier designed.

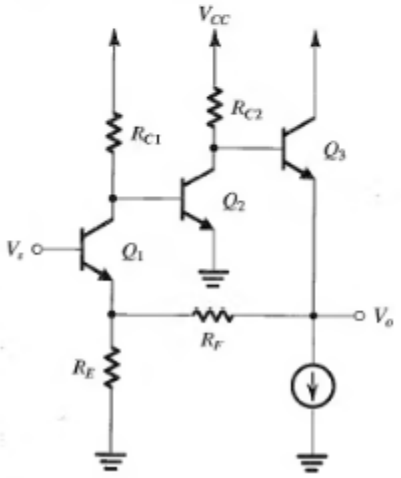


FIGURE P8.35

Amostra tensão, compara tensão, convenção Boylestad "tensão série"

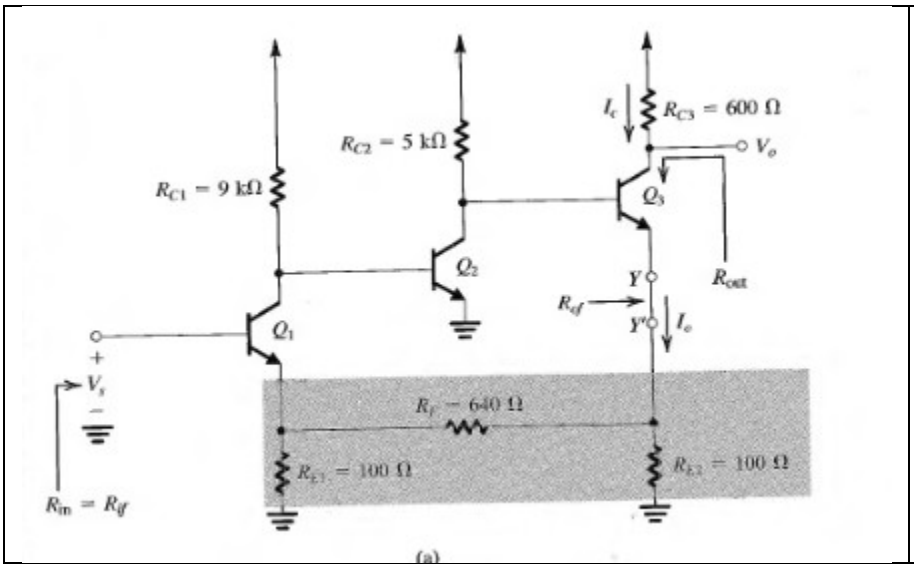
(a) $\beta = R_E/(R_E+R_F)$
(b) $A_f \approx 1/\beta = 1+(R_E/R_F)$
(c) $R_F = 1200$
(d) $r_{e1}=26$ $r_{e2}=13$ $r_{e3}=5.2$
$A_{v1}= -10$ $A_{v2}= -50$
$R_{C1}=1720$ $R_{C2}=654$
$A_{v3}=0.996$
(e) $A=498$ $A\beta=19.92$ e $A_f=23.8$
(f) $R_i=7K4$ $R_{if}=154k$
$R_o=R_E//r_e=11.12$
$R_{of}=0.53$

8.36 For the circuit in Fig. 8.17(a), find an approximate value for I_o/V_s assuming that the loop gain is large. Use it to determine the voltage gain V_o/V_s. Compare your results with the values found in Example 8.2.

Amostra corrente, compara tensão, convenção Boylestad "corrente série"

$\beta = R_{E1}R_{E2}/(R_{E1}+R_{E2}+R_F)$
$=11.9$

$A_f^* = 1/\beta = 84\mu A/V$
$V_o/V_s = R_{C3}A_f^* = -50.4$


I_c
$R_{C3} = 600\ \Omega$
V_o
$R_{C2} = 5\ \text{k}\Omega$
$R_{C1} = 9\ \text{k}\Omega$
Q_3
Q_2
Y
R_{out}
R_{of}
Y'
I_o
Q_1
+
V_s
−
$R_f = 640\ \Omega$
$R_{E1} = 100\ \Omega$
$R_{E2} = 100\ \Omega$
$R_{in} = R_{if}$
(a)