

Tabela 5.1 Amplificadores transistorizados com TBJ sem carga.

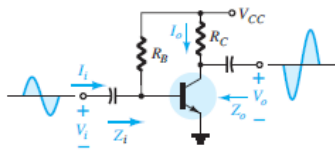
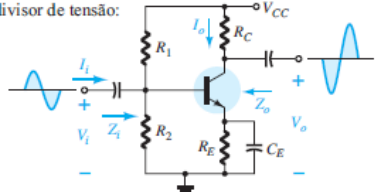
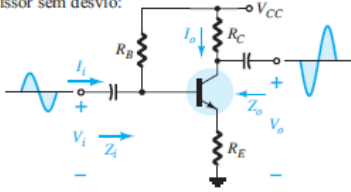
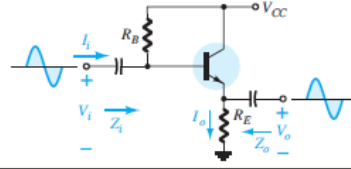
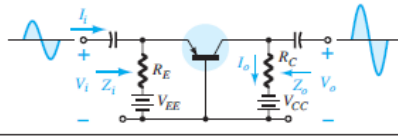
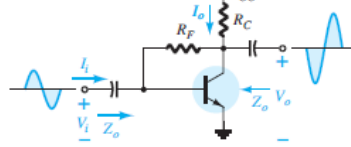
Configuração	Z_i	Z_o	A_v	A_i
<p>Polarização fixa:</p> 	<p>Média (1 kΩ)</p> $= R_B \parallel \beta r_e$ $\cong \beta r_e$ <p>$(R_B \geq 10\beta r_e)$</p>	<p>Média (2 kΩ)</p> $= R_C \parallel r_o$ $\cong R_C$ <p>$(r_o \geq 10R_C)$</p>	<p>Alta (−200)</p> $= -\frac{(R_C \parallel r_o)}{r_e}$ $\cong -\frac{R_C}{r_e}$ <p>$(r_o \geq 10R_C)$</p>	<p>Alta (100)</p> $= \frac{\beta R_B r_o}{(r_o + R_C)(R_B + \beta r_e)}$ $\cong \beta$ <p>$(r_o \geq 10R_C, R_B \geq 10\beta r_e)$</p>
<p>Polarização por divisor de tensão:</p> 	<p>Média (1 kΩ)</p> $= R_1 \parallel R_2 \parallel \beta r_e$	<p>Média (2 kΩ)</p> $= R_C \parallel r_o$ $\cong R_C$ <p>$(r_o \geq 10R_C)$</p>	<p>Alta (−200)</p> $= -\frac{R_C \parallel r_o}{r_e}$ $\cong -\frac{R_C}{r_e}$ <p>$(r_o \geq 10R_C)$</p>	<p>Alta (50)</p> $= \frac{\beta(R_1 \parallel R_2)r_o}{(r_o + R_C)(R_1 \parallel R_2 + \beta r_e)}$ $\cong \frac{\beta(R_1 \parallel R_2)}{R_1 \parallel R_2 + \beta r_e}$ <p>$(r_o \geq 10R_C)$</p>
<p>Polarização de emissor sem desvio:</p> 	<p>Alta (100 kΩ)</p> $= R_B \parallel Z_b$ $Z_b \cong \beta(r_e + R_E)$ $\cong R_B \parallel \beta R_E$ <p>$(R_E \gg r_e)$</p>	<p>Média (2 kΩ)</p> $= R_C$ <p>(qualquer nível de r_o)</p>	<p>Baixa (−5)</p> $= -\frac{R_C}{r_e + R_E}$ $\cong -\frac{R_C}{R_E}$ <p>$(R_E \gg r_e)$</p>	<p>Alta (50)</p> $\cong -\frac{\beta R_B}{R_B + Z_b}$
<p>Seguidor de emissor:</p> 	<p>Alta (100 kΩ)</p> $= R_B \parallel Z_b$ $Z_b \cong \beta(r_e + R_E)$ $\cong R_B \parallel \beta R_E$ <p>$(R_E \gg r_e)$</p>	<p>Baixa (20 Ω)</p> $= R_E \parallel r_e$ $\cong r_e$ <p>$(R_E \gg r_e)$</p>	<p>Baixa ($\cong 1$)</p> $= \frac{R_E}{R_E + r_e}$ $\cong 1$	<p>Alta (−50)</p> $\cong -\frac{\beta R_B}{R_B + Z_b}$
<p>Base-comum:</p> 	<p>Baixa (20 Ω)</p> $= R_E \parallel r_e$ $\cong r_e$ <p>$(R_E \gg r_e)$</p>	<p>Média (2 kΩ)</p> $= R_C$	<p>Alta (200)</p> $\cong \frac{R_C}{r_e}$	<p>Baixa (−1)</p> $\cong -1$
<p>Realimentação do coletor:</p> 	<p>Média (1 kΩ)</p> $= \frac{r_e}{\frac{1}{\beta} + \frac{R_C}{R_F}}$ $(r_o \geq 10R_C)$	<p>Média (2 kΩ)</p> $\cong R_C \parallel R_F$ <p>$(r_o \geq 10R_C)$</p>	<p>Alta (−200)</p> $\cong -\frac{R_C}{r_e}$ <p>$(r_o \geq 10R_C, R_F \gg R_C)$</p>	<p>Alta (50)</p> $= \frac{\beta R_F}{R_F + \beta R_C}$ $\cong \frac{R_F}{R_C}$

Tabela 5.2 Amplificadores transistorizados com TBJ incluindo o efeito de R_s e R_L .

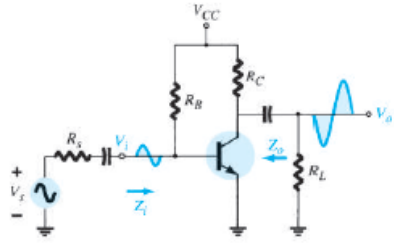
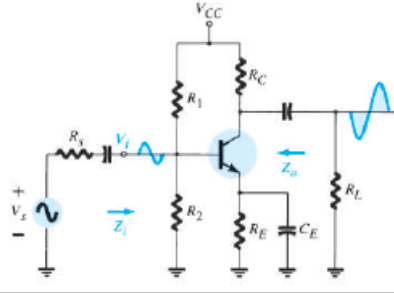
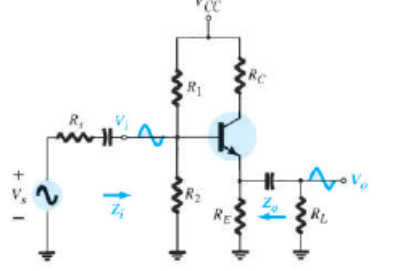
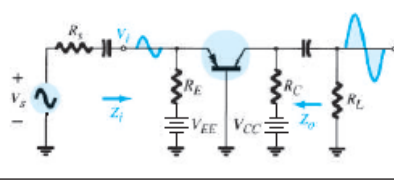
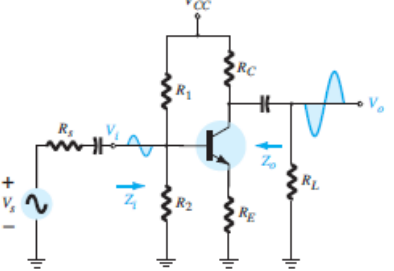
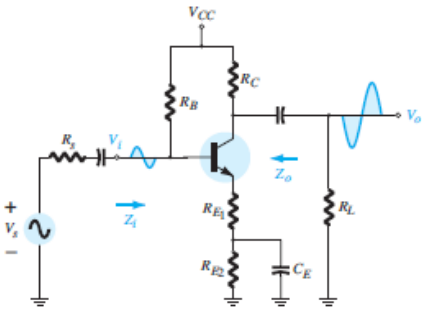
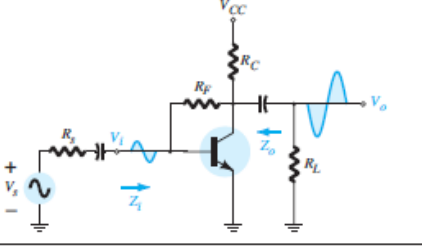
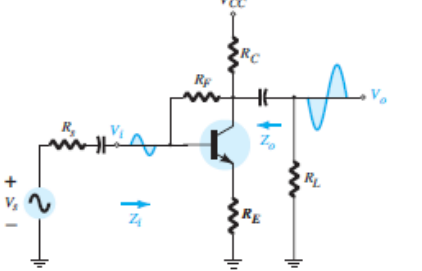
Configuração	$A_{v_L} = V_o/V_i$	Z_i	Z_o
	$\frac{-(R_L \parallel R_C)}{r_e}$	$R_B \parallel \beta r_e$	R_C
Incluindo r_o :	$-\frac{(R_L \parallel R_C \parallel r_o)}{r_e}$	$R_B \parallel \beta r_e$	$R_C \parallel r_o$
	$\frac{-(R_L \parallel R_C)}{r_e}$	$R_1 \parallel R_2 \parallel \beta r_e$	R_C
Incluindo r_o :	$-\frac{(R_L \parallel R_C \parallel r_o)}{r_e}$	$R_1 \parallel R_2 \parallel \beta r_e$	$R_C \parallel r_o$
	$\cong 1$	$R'_E = R_L \parallel R_E$ $R_1 \parallel R_2 \parallel \beta(r_e + R'_E)$	$R'_s = R_s \parallel R_1 \parallel R_2$ $R_E \parallel \left(\frac{R'_s}{\beta} + r_e \right)$
Incluindo r_o :	$\cong 1$	$R_1 \parallel R_2 \parallel \beta(r_e + R'_E)$	$R_E \parallel \left(\frac{R'_s}{\beta} + r_e \right)$
	$\cong \frac{-(R_L \parallel R_C)}{r_e}$	$R_E \parallel r_e$	R_C
Incluindo r_o :	$\cong \frac{-(R_L \parallel R_C \parallel r_o)}{r_e}$	$R_E \parallel r_e$	$R_C \parallel r_o$
	$\frac{-(R_L \parallel R_C)}{R_E}$	$R_1 \parallel R_2 \parallel \beta(r_e + R_E)$	R_C
Incluindo r_o :	$\frac{-(R_L \parallel R_C)}{R_E}$	$R_1 \parallel R_2 \parallel \beta(r_e + R_E)$	$\cong R_C$

Tabela 5.2 Amplificadores transistorizados com incluindo o efeito de R_s e R_L (continuação).

Configuração	$A_{v_L} = V_o/V_i$	Z_i	Z_o
	$\frac{-(R_L \parallel R_C)}{R_{E1}}$	$R_B \parallel \beta(r_e + R_{E1})$	R_C
	Incluindo r_o : $\frac{-(R_L \parallel R_C)}{R_{E1}}$	$R_B \parallel \beta(r_e + R_E)$	$\cong R_C$
	$\frac{-(R_L \parallel R_C)}{r_e}$	$\beta r_e \parallel \frac{R_F}{ A_v }$	R_C
	Incluindo r_o : $\frac{-(R_L \parallel R_C \parallel r_o)}{r_e}$	$\beta r_e \parallel \frac{R_F}{ A_v }$	$R_C \parallel R_F \parallel r_o$
	$\frac{-(R_L \parallel R_C)}{R_E}$	$\beta R_E \parallel \frac{R_F}{ A_v }$	$\cong R_C \parallel R_F$
	Incluindo r_o : $\cong \frac{-(R_L \parallel R_C)}{R_E}$	$\cong \beta R_E \parallel \frac{R_F}{ A_v }$	$\cong R_C \parallel R_F$