the equations will reveal that the isolation provided by the JFET between the gate and channel by the SiO_2 layer results in a series of less complex equations than those encountered for the BJT configurations. The linkage provided by I_b between input and output circuits of the BJT transistor amplifier adds a touch of complexity to some of the equations.

TABLE 10.1 Summary of Transistor Configurations (A_v, Z_i, Z_o)

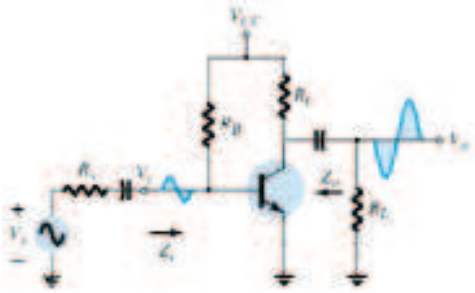
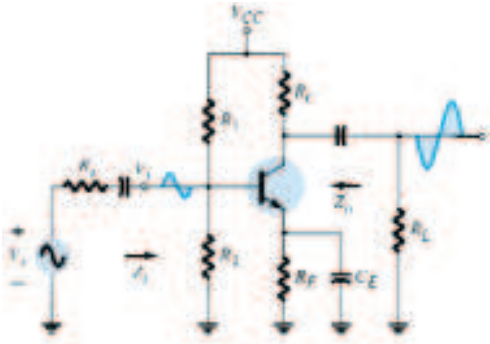
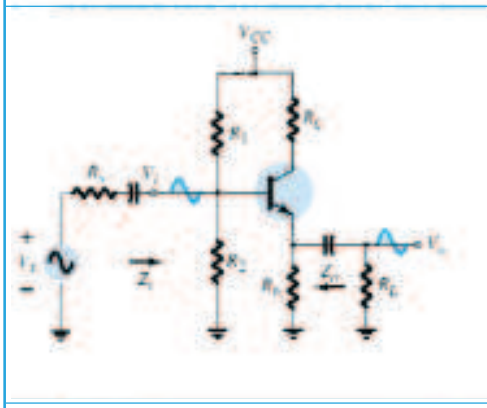
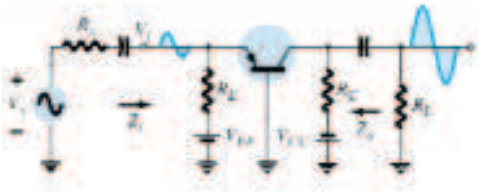
Configuration	$A_v = V_o/V_i$	Z_i	Z_o
	$\dfrac{-R_L\|R_C)}{r_e}$ $\dfrac{-h_{fe}}{h_{ie}}(R_L\|R_C)$ Including r_o: $-\dfrac{(R_L\|R_C\|r_o)}{r_e}$	$R_B\|\beta r_e$ $R_B\|h_{ie}$ $R_B\|\beta r_e$	R_C R_C $R_C\|r_o$
	$\dfrac{-(R_L\|R_C)}{r_e}$ $\dfrac{-h_{fe}}{h_{ie}}(R_L\|R_C)$ Including r_o: $\dfrac{-(R_L\|R_C\|r_o)}{r_e}$	$R_1\|R_2\|\beta r_e$ $R_1\|R_2\|h_{ie}$ $R_1\|R_2\|\beta r_e$	R_C R_C $R_C\|r_o$
	$\cong 1$ $\cong 1$ Including r_o: $\cong 1$	$R'_E = R_L\|R_E$ $R_1\|R_2\|\beta(r_e + R'_E)$ $R_1\|R_2\|(h_{ie} + h_{fe}R'_E)$ $R_1\|R_2\|\beta(r_e + R'_E)$	$R'_s = R_s\|R_1\|R_2$ $R_E\|\left(\dfrac{R'_s}{\beta} + r_e\right)$ $R_E\|\left(\dfrac{R'_s + h_{ie}}{h_{fe}}\right)$ $R_E\|\left(\dfrac{R'_s}{\beta} + r_e\right)$
	$\cong \dfrac{-(R_L\|R_C)}{r_e}$ $\cong \dfrac{-h_{fb}}{h_{ib}}(R_L\|R_C)$ Including r_o: $\cong \dfrac{-(R_L\|R_C\|r_o)}{r_e}$	$R_E\|r_e$ $R_E\|h_{ib}$ $R_E\|r_e$	R_C R_C $R_C\|r_o$

TABLE 10.1 Summary of Transistor Configurations (A_v, Z_i, Z_o) (Continued)

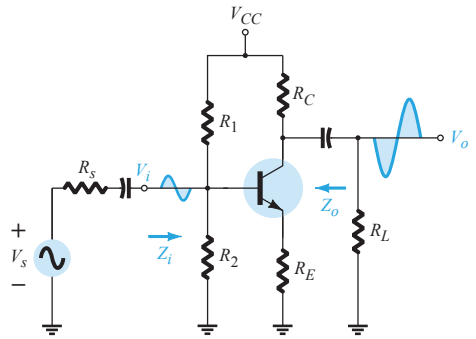
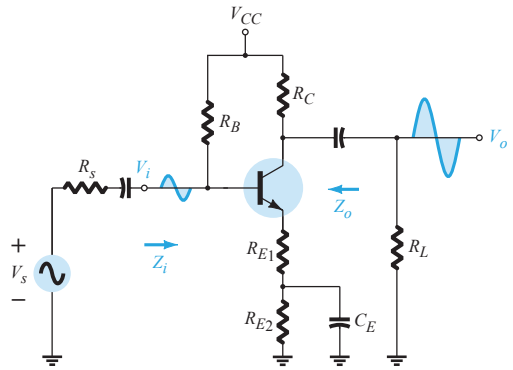
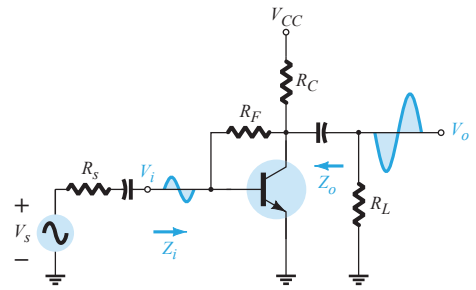
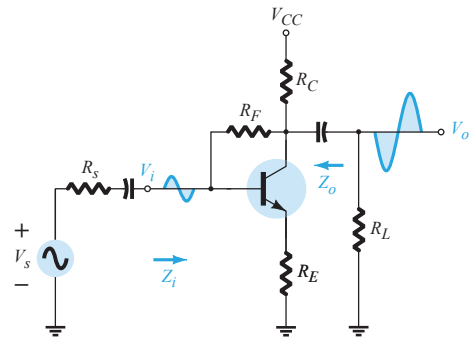
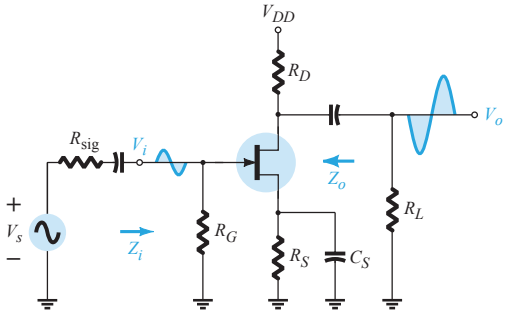
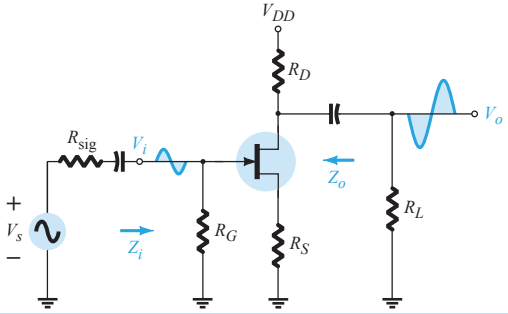
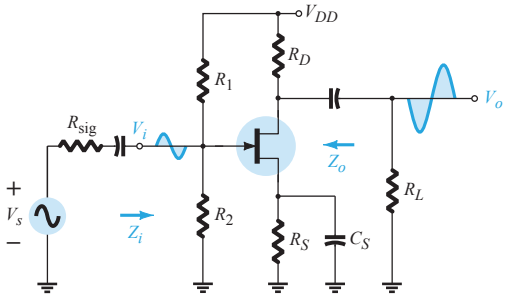
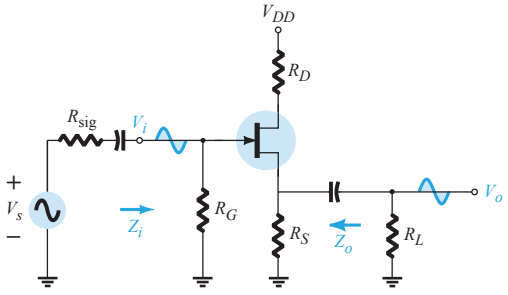
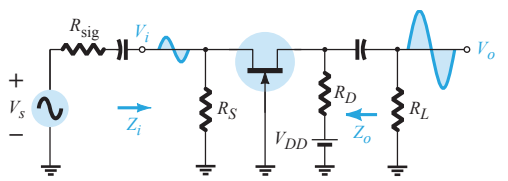
Configuration	$A_v = V_o/V_i$	Z_i	Z_o
	$\frac{-R_L\|R_C)}{R_E}$ $\frac{-(R_L\|R_C)}{R_E}$ Including r_o: $\frac{-(R_L\|R_C)}{R_E}$	$R_1\|R_2\|\beta(r_e + R_E)$ $R_1\|R_2\|(h_{ie} + h_{fe}R_E)$ $R_1\|R_2\|\beta(r_e + R_E)$	R_C R_C $\cong R_C$
	$\frac{-R_L\|R_C}{R_{E_1}}$ $\frac{-(R_L\|R_C)}{R_{E_1}}$ Including r_o: $\frac{-R_L\|R_C}{R_{E_1}}$	$R_B\|\beta(r_e + R_{E_1})$ $R_B\|(h_{ie} + h_{fe}R_{E_1})$ $R_B\|\beta(r_e + R_{E_1})$	R_C R_C $\cong R_C$
	$\frac{-(R_L\|R_C)}{r_e}$ $\frac{-h_{fe}}{h_{ie}}(R_L\|R_C)$ Including r_o: $\frac{-(R_L\|R_C\|r_o)}{r_e}$	$\beta r_e\|\frac{R_F}{\|A_v\|}$ $h_{ie}\|\frac{R_F}{\|A_v\|}$ $\beta r_e\|\frac{R_F}{\|A_v\|}$	R_C R_C $R_C\|R_F\|r_o$
	$\frac{-(R_L\|R_C)}{R_E}$ $\frac{-(R_L\|R_C)}{R_E}$ Including r_o: $\cong \frac{-(R_L\|R_C)}{R_E}$	$\beta R_E\|\frac{R_F}{\|A_v\|}$ $h_{fe}R_E\|\frac{R_F}{\|A_v\|}$ $\cong \beta R_E\|\frac{R_F}{\|A_v\|}$	$\cong R_C\|R_F$ $\cong R_C\|R_F$ $\cong R_C\|R_F$

TABLE 10.1 (Continued)

Configuration	$A_v = V_o/V_i$	Z_i	Z_o
	$-g_m(R_D\|\|R_L)$ Including r_d: $-g_m(R_D\|\|R_L\|\|r_d)$	R_G R_G	R_D $R_D\|\|r_d$
	$\dfrac{-g_m(R_D\|\|R_L)}{1+g_mR_S}$ Including r_d: $\dfrac{-g_m(R_D\|\|R_L)}{1+g_mR_S+\dfrac{R_D+R_S}{r_d}}$	R_G R_G	$\dfrac{R_D}{1+g_mR_S}$ $\cong \dfrac{R_D}{1+g_mR_S}$
	$-g_m(R_D\|\|R_L)$ Including r_d: $-g_m(R_D\|\|R_L\|\|r_d)$	$R_1\|\|R_2$ $R_1\|\|R_2$	R_D $R_D\|\|r_d$
	$\dfrac{g_m(R_S\|\|R_L)}{1+g_m(R_S\|\|R_L)}$ Including r_d: $= \dfrac{g_mr_d(R_S\|\|R_L)}{r_d+R_D+g_mr_d(R_S\|\|R_L)}$	R_G R_G	$R_S\|\|1/g_m$ $\dfrac{R_S}{1+\dfrac{g_mr_dR_S}{r_d+R_D}}$
	$g_m(R_D\|\|R_L)$ Including r_d: $\cong g_m(R_D\|\|R_L)$	$\dfrac{R_S}{1+g_mR_S}$ $Z_i = \dfrac{R_S}{1+\dfrac{g_mr_dR_S}{r_d+R_D\|\|R_L}}$	R_D $R_D\|\|r_d$