

CHAPTER 10
KEY EQUATIONS

Equation Number	Key Equation
10.1	$i_D = I_s \left[\exp\left(\frac{v_D}{nV_T}\right) - 1 \right]$
10.2	$V_T = \frac{kT}{q}$
10.5	$V_{SS} = R i_D + v_D$
10.10	$C = \frac{I_L T}{V_r}$
10.12	$C = \frac{I_L T}{2V_r}$
10.15	$r_d \cong \left[\left(\frac{di_D}{dv_D} \right)_Q \right]^{-1}$
10.22	$r_d = \frac{nV_T}{I_{DQ}}$

CHAPTER 11
KEY EQUATIONS

Equation Number	Key Equation
11.1	$v_o(t) = A_v v_i(t)$
11.2	$A_i = \frac{i_o}{i_i}$
11.3	$A_i = \frac{i_o}{i_i} = \frac{v_o/R_L}{v_i/R_i} = A_v \frac{R_i}{R_L}$
11.4	$G = \frac{P_o}{P_i}$
11.5	$G = \frac{P_o}{P_i} = \frac{V_o I_o}{V_i I_i} = A_v A_i = (A_v)^2 \frac{R_i}{R_L}$
11.6	$A_v = A_{v1} A_{v2}$
11.7	$P_s = V_{AA} I_A + V_{BB} I_B$
11.8	$P_i + P_s = P_o + P_d$
11.9	$\eta = \frac{P_o}{P_s} \times 100\%$
	$G_{msc} = \frac{i_{osc}}{v_i}$
	$R_{moc} = \frac{v_{ooc}}{i_i}$
11.10	$A_v = \frac{V_o}{V_i}$
11.11	$t_r \cong \frac{0.35}{B}$
11.21	$v_{id} = v_{i1} - v_{i2}$
11.22	$v_o = A_d v_{id}$
11.23	$v_{icm} = \frac{1}{2}(v_{i1} + v_{i2})$
11.24	$v_o = A_d v_{id} + A_{cm} v_{icm}$
11.25	$CMRR = 20 \log \frac{ A_d }{ A_{cm} }$

CHAPTER 7
KEY EQUATIONS

Equation Number	Key Equation
7.1	$AA = A$
7.2	$A1 = A$
7.3	$A0 = 0$
7.4	$AB = BA$
7.5	$A(BC) = (AB)C = ABC$
7.6	$A\bar{A} = 0$
7.7	$\overline{\bar{A}} = A$
7.8	$(A+B)+C = A+(B+C) = A+B+C$
7.9	$A(B+C) = AB+AC$
7.10	$A+0 = A$
7.11	$A+1 = 1$
7.12	$A+\bar{A} = 1$
7.13	$A+A = A$
7.19	$\overline{ABC} = \overline{\bar{A} + \bar{B} + \bar{C}}$
7.20	$\overline{(A+B+C)} = \overline{\bar{A}\bar{B}\bar{C}}$