Microelectronic Circuit Design
4th Edition Errata - Updated 4/4/14

Chapter Text

Inside back cover: Triode region equation should not be squared! $i_D = K_n\left(v_{GS} - V_{TN} - \frac{v_{DS}}{2}\right)v_{DS}$

Page 49, first exercise, second answer: -1.35 x 10^6 cm/s

Page 58, last exercise, last answer: 0.46 Ω-cm → 2.16 Ω-cm

Page 80, second exercise: 798 kV/cm, 5.16x10^{-4} μm, 0.0258 μm.

Page 83, exercise: 25.8 mV → 25.9 mV

Page 89, exercise: … from Eq. (2.1).

Page 172, exercise: (b) 3x10^{-15} A (c) 3 μA

Page 185: The fifth exercise: (99.5 μA, 5.94 V).
The sixth exercise should refer to Fig. 4.27 & (99.2 μA, 6.03 V).

Page 198, both exercises: … of BETA, VTO and LAMBDA for …

Page 200: Fourth exercise: (1.25 mA, 7.00 V)
(b) part of fifth exercise: 0.680 V, -2.22 V, (1.54 mA, 7.36 V);

Page 238, exercise: … 5.5 if resistor R is changed …

Page 242, exercise: … 5.22 if resistor R is changed …

Page 256, exercise: 1.39 fA

Page 295, Table 6.2: The inverter definition should be $Z = \overline{A}$ and the column data 1 0 1 0

Page 314, bottom: NM_H calculation error: 0.33 → 0.43

Page 324: Table 6.6, Saturated Load NM_H 0.33 → 0.43

Page 327, Fig. 6.32(a): Gate voltage error 5 V → 2.5 V two times

Page 837: Under CAD: Q-point: (257 μA, 4.54 V)
Last exercise: λ = 0.02/V

Page 343, exercise: 2.20 ns → 2.19 ns

Page 344: The second equation on the τ_{PLH} line should be t_r = …

Microelectronic Circuit Design
4th Edition Errata - Updated 4/4/14

Page 347, exercise: Assume a pseudo NMOS gate. Answer: 1.62 ps

Page 349, exercise: 189/1 → 190/1

Page 400, last exercise: … versus 594 times.

Page 426, exercise: W/L = 5 V → WL = 5 V

Page 428, exercise: W/L = 5 V → WL = 5 V

Page 431, first exercise, second answer: 1.34 ns

Page 483, third exercise: -0.1 V, -0.8 V, -1.5 V, -2.8 V;
Last exercise: -0.2 V, -0.9 V, -1.6 V, -2.8 V

Page 501, exercise: 9.22 mA → 9.16 mA

Page 541, exercise: the last answer should just be 262 Ω

Page 546, Eq. 10.26: $A = \frac{10-0}{1.5-0.5} = +10$

Page 555, last paragraph: VCVC should be VCVS and VS should be VI two times.

Page 557, Fig. 10.21: I_i should be i_i

Page 577, last exercise: Remove the comma in 50,100. It must be 50100

Page 581, Eq. 10.97: $A_v(s) = -\frac{Z_2}{Z_1} = -\frac{R_2}{R_1}\frac{sCR_1}{sCR_1+1} = -\frac{R_2}{R_1}\frac{s}{s+\omega_L} = \frac{A_o}{1+\frac{\omega_L}{s}}$

Page 582: Fig. 10.34 (a) $v_o(t) = v_o(0) - \frac{1}{RC}\int_0^t v_i(\tau)d\tau$

Page 605, first exercise: v_s → v_i ; second exercise, last two answers: -9.89 V, -98.9 μV

Page 609, third exercise: 44.1, 36.3, 4.20 (10.5%), -3.70 (-9.3%)

Page 613 exercise: 100 μA → 99.5 μA

Page 622: 10.1; 24.5 MΩ; 1.57 Ω

Page 626, Ex. 11.6: Problem statement: Find T and …

Page 628: The second exercise should refer to Ex. 11.6.
Answers: 2140, -91.0 kΩ, 9.21 Ω, 0.646 Ω

Page 632: Missing minus sign in equation for v_{th}: … = $-9090v_{id}$

Page 6.34, above Eq. (11.71) … inpdependent source i_i must be …

Page 637 exercise: …for the shunt-series feedback …

Page 638 exercise: …for the shunt-series feedback …

Page 639, Eq. 11.86: $i_2 = \frac{v_x - \left(-Av_x\right)}{R_B} = v_x \frac{1+A}{R_B}$

Page 640, near bottom of page: $R_A = 10k\Omega \| \left(R_{id} + R_I\right) =$ ...

Page 652 equation for V_{CM}: V_{CM} = ..… = 5.0 V; 4.5 → 5.0 in next line of text, and the CMRR calculation needs to be corrected: CMRR ≥ 3.65×10^4

Page 658, above last figure:P (assuming $I_+ = 0 = I_-$)

Page 672, Eqn. (11.149): $T\left(s\right) = \frac{A_o\omega_o}{s+\omega_o}\beta = \frac{T_o\omega_o}{s+\omega_o}$

Page 673, Eqn. (11.152): $T\left(0\right) = T_o = A_o\beta$

Page 675 (iii) Under damped $\zeta < 1$ (…

Page 677, second exercise: 2.69 MHz → 428 kHz

Page 705, second exercise, last answer: 3450 Hz

Page 711, Section 12.2, first paragraph: The reference to Fig. 12.3 should be Fig. 10.25.

Page 719, first exercise: $\frac{K}{3-K}\angle 90^o$

Page 724, in Ex. 12.7: $R_1 = \frac{R_2}{\left|A_v\left(j\omega_o\right)\right|}$

Page 727, third exercise: ... , S_C^Q and S_C^{BW} for the ... ; the sixth answer is $+\frac{1}{2}$

Page 728 exercise: 0.707 → 0.471 two times.

Page 731 last paragraph: v_S → v_I

Microelectronic Circuit Design
4th Edition Errata - Updated 4/4/14

Page 732 exercise: 16.0 → – 8.0

Page 738 exercise answers: 26 kΩ; 511 kΩ

Page 740 exercise answers: 511 pF; 31 pF; 6200 μm^2

Page 758: The exercise should refer to Fig. 12.50.
Answers: 15.9 kHz; 3.00 V
SPICE Answers: 15.90 kHz, 3.33 V

Page 760 exercise: v_S should be v_I twice

Page 762 exercise: v_S should be v_I twice

Page 791 exercise: (1.45 mA, 3.57 V); 2.89 V

Page 814: First exercise: … was only -159.
Answer: -176; Approximately 10 percent of the input signal …
Second exercise: (a) -162; (b) -143, -175; (c) 2.34 V, -177

Page 821 exercise: 0.24 V → 0.253 V

Page 822, Table 13.3: JFET transconductance eqn.: $\dfrac{2I_D}{V_{GS} - V_P} \cong \dfrac{2}{|V_P|}\sqrt{I_D I_{DSS}}$

Page 827: Known Information: Q-point is (0.241 mA, 3.81 V)

Page 832 - End of first: "at coupling capacitor C_2."

Page 840, first exercise: 0.833 mW, 3.26 mW;

Page 860 exercise answers: 3.64 V → 3.39 V; 219 kΩ → 218 kΩ; 2150 → 2140

Page 875, second exercise: What are the values of R_{ic} and R_{out} …
Answers: 5.17 MΩ < 6.28 MΩ; 21.9 kΩ << 6.28 MΩ

Page 877: … in Ex. 14.1 … Answers: -16.0, 12 kΩ; Second exercise 0.425 fA

Page 884, last two exercises: -16.0, -6.02, 12 kΩ, 11 kΩ; -1.36, -1.29, -1.38, -1.50

Page 885 exercises: 0.430 fA
-176, -6.00; -9.05, -9.00; 5.72 < 6.00; 4.50 < 9.00

Page 889 exercise: 0.592 V, 1.27 V

Page 896, Eq. 14.80: The numerator should be $g_m R_L$ not $g_m R_I$

Microelectronic Circuit Design
4th Edition Errata - Updated 4/4/14

Page 911, first exercise: r = 0 should be $\eta = 0$

Page 914, first exercise: … one in Fig. P14.1(g).

Page 917: Last equation at the bottom - 210 kΩ should be 21.5 kΩ.

Page 929, second exercise: 69.1 Ω, 3.38 V

Page 933 exercises: 75.1 Ω, +50.1; 2.29 V, 0.500 V; 332 μA, 5.52 V, 20.5 kΩ, 8.06 kΩ

Page 993, first exercise: 15.01 → 15.0; $1.90\text{x}10^{-15}$ → $1.87\text{x}10^{-15}$

Page 1005, second exercise: 160/1

Page 1022, Fig. 15.50: R_E and R_S should be 18.4 kΩ; Second exercise: 10.9 MΩ

Page 1077 last exercise: $A_{E4} = 5.58$

Page 1081 exercise: 3.17 kΩ → 3.30 kΩ

Page 1109 first exercise: Q_{16} should be Q_{15}; 3.94 MΩ → 4.06 MΩ; 51 Ω + 27 Ω = 78 Ω

Page 1139 first exercise: … C_3 is reduced …; third exercise: R_S should be R_D and the answers should be 96.2 rad/s, 31.5 Hz.

Page 1158 exercise: -141 → -139

Page 1169: DAC and ADC labels need to be interchanged.

Page 1184: In Eq. 17.153: $r_{\pi\phi} \rightarrow r_{\pi 0}$

Page 1193, second exercise: 23.9 Ω << 1.01 MΩ; 5.08 mΩ << 66.7 Ω; 239 mΩ << 2.69 kΩ

Page 1239 exercise: 85.6 Ω → 86.8 Ω

Page 1240 under Analysis: 20 mA → 2.0 mA

Page 1241 exercise Q-points: $\left(0.5\ mA,\ 4.82\ V\right), \left(0.5\ mA,\ 6.32\ V\right), \left(0.51\ mA,\ 3.37\ V\right), \left(2\ mA,\ 5.0\ V\right)$

Page 1246, second exercise: A_{tr} = - 48.5 kΩ

Page 1247: Equations at bottom of page: $R_{in} = \left(R_F + \frac{1}{g_{m3}}\right)\left(\frac{1}{1+T}\right) \qquad R_{out} = \frac{1}{g_{m3}}\left(\frac{1}{1+T}\right)$

Page 1251 exercise answers: 500 Ω, -204, -306, 334 Ω

Page 1251: Remove notation MbreakN from Fig. 18.11(b)

Page 1265: The equation reference immediately above Eq. (18.25) should be to Eq. (18.24).

Eqn. (18.25) should be: $\omega_Z = \dfrac{1}{\left(\dfrac{1}{g_{m5}} - R_Z\right)C_C}$

Page 1273 exercise: 15.9 MHz, 69.5°

Microelectronic Circuit Design
4th Edition Errata - Updated 4/4/14

Problem Statements

Prob. 4.163 Use V = 6 V.

Fig. P6.31: 1 ns $\rightarrow$0.8 ns

P6.111: Should refer to Fig. 6.29(e).

P7.57: "period of 50 ns."

P7.58: "period of 150 ns."

P7.66 parts (a), (b), (c), (d) "fixed at 0 V." (four times)

P7.95 "What are the worst-case values"

P8.3 "(a)" is missing at the beginning of the problem, and part (a) should end in "and the voltage is 3.3 V."

P8.12 End of first sentence "1-T memory cell?"

P8.15 remove "in the array"

Fig. P8.41: The black dot and first line segment on the upper left connecting W0 and B0 should be removed.

P9.59 and P9.60: Use $\alpha_F = 0.98$ and $\alpha_R = 0.2$

P9.119 and P9.120: Add "Use $-V_{EE} = -3$ V"

P10.25 $R_S \rightarrow R_I$ x 2

Fig. P10.44 Capital O subscript in i_O and v_O

Fig P10.57 i_{TH} and R_{TH} should be i_N and R_N

P10.58 i_{TH} and R_{TH} should be i_N and R_N

Fig. P10.68(b) The resistor on the right should be 560 Ω

P10.113 and P10.114 should refer to Fig. 10.35 and subscripts should be lower case: V_S should be V_i ; $V_O(s)/V_S(s)$ should be $V_o(s)/V_i(s)$

Figs. P10.119 and P10.120: v_S should be v_I.

P11.55: $R_1 = 2$ kΩ and $R_2 = 20$ kΩ.

Microelectronic Circuit Design
4th Edition Errata - Updated 4/4/14

P11.126 Change the open-loop gain to 94 dB and unity-gain frequency to 2.5 MHz

P13.18 Should refer to Fig. P13.3

Prob. 13.34 Assume $V_{SS} = 0$.   Fig. P13.13: Transistor should be a depletion-mode transistor

Prob. 13.40(b) should refer to Fig. P13.11.

Prob. 13.42(b) should refer to Fig. P13.12.

Prob. 13.46 should refer to Fig. P13.7. (Space missing after problem.)

Prob. 13.65 R_S should be R_I

Prob. 13.80 Remove "(a)"

Fig. P14.5 Labels R_C and R_E need to be interchanged.

Prob. 14.5 … construct a common-collector amplifier.

Prob. 14.6 … construct a common-emitter amplifier

Prob. 14.26 V_{TN} should be V_P; $R_G = 10\ M\Omega$, $R_3 = 36\ k\Omega$

Prob. 14.62 The lower resistor (R_E) in Fig. P14.62 should be 6.2 kΩ instead of 2 kΩ.

Prob. 14.65 Remove "(a)"

Prob. 14.83 $K_n = 400uA/V^2$

Prob. 14.86 R_E should be R_G. Add $R_1 = 10\ k\Omega$. I_{DSO} should be I_{DSS}

Prob. 14.96 C_1 and C_2 (remove reference to C_3).

Prob. 14.98 Remove "(a)"

Prob. 14.99 Remove "(c)" and change text to "Check your design with SPICE."

Prob. 15.4 Change: $R_{EE} = 100\ k\Omega$

Prob. 15.5 Change: $R_C = 240\ k\Omega$

Prob. 15.9 Change: $I_{EE} = 300\ \mu A$

Prob. 15.12 Change: $V_{CC} = 15$ V, $V_{EE} = 15$ V

Microelectronic Circuit Design
4th Edition Errata - Updated 4/4/14

Prob. 15.40 (b) $v_s \rightarrow v_1$

Prob. 15.92 (c) should be (b)

Prob. 15.121 Use the device parameters from Prob. 15.122.

Prob. 15.123 Use the device parameters from Prob. 15.122.

Prob. 16.55 … if the body terminals of M_3 and M_4 are connected to…

Prob. 17.11 Reference to C_2 should be to C_3.

Prob. 17.97 R_L should be R

Prob. 17.100 R_L should be R

Prob. 17.106 … in Fig. 17.105(b) to give … in Fig. 17.105(a).

Prob. 17.114 Should refer to 1196; impedances → admittances

Prob. 17.115 Should refer to 1196; admittances → impedances

Prob. 18.22 … across R_4.

Prob. 18.23 Remove "(without R_L)". Add to end: "Use ±10-V power supplies."

Prob. 18.30 Change the second (c) to (d)

Prob. 18.37 Find the closed-loop transconductance, …

Prob. 18.40 Use $R_{L1} = R_{L2} = R_{L3} = 4\ k\Omega$, $R_{E1} = R_{E2} = 1\ k\Omega$, $R_F = 10\ k\Omega$, and $R_I = 200\ \Omega$.

Prob. 18.65 Change the word "improve" to "change"

Prob. 18.73 M_5 should be Q_5; "the base of Q_6" should be "the emitter of Q_6"; the problem statement should end with a period.

Prob. 18.80 Changes: TF = 505 ps and CJC = 2.32 pF.

Prob. 18.93 At the end: … $2.5mA/V^2$?