

Chapter 4

- 4.3 $10.5 \times 10^{-9} \text{ F/cm}^2$
- 4.4 $34.5 \mu\text{A/V}^2, 86.3 \mu\text{A/V}^2, 173 \mu\text{A/V}^2, 345 \mu\text{A/V}^2$
- 4.9 (a) 4.00 mA/V^2 (b) $4.00 \text{ mA/V}^2, 8.00 \text{ mA/V}^2$
- 4.11 $840 \mu\text{A}; -880 \mu\text{A}$
- 4.15 $23.0 \Omega; 35.7 \Omega$
- 4.18 $125 \mu\text{A/V}^2; 1.5 \text{ V};$ enhancement mode; 1.25/1
- 4.20 $0 \text{ A}, 0 \text{ A}, 1.88 \text{ mA}, 7.50 \text{ mA}, 3.75 \text{ mA/V}^2$
- 4.22 (a) $460 \mu\text{A}$, triode region; 1.56 mA , saturation region; 0 A , cutoff
- 4.23 saturation; cutoff; saturation; triode; triode; saturation
- 4.27 $6.50 \text{ mS}, 13.0 \text{ mS}$
- 4.30 $2.48 \text{ mA}; 2.25 \text{ mA}$
- 4.33 $9.03 \text{ mA}, 18.1 \text{ mA}, 10.8 \text{ mA}$
- 4.37 Triode region
- 4.38 $1.13 \text{ mA}; 1.29 \text{ mA}$
- 4.39 $99.5 \mu\text{A}; 199 \mu\text{A}; 99.5 \mu\text{A}; 99.5 \mu\text{A}$
- 4.43 $202 \mu\text{A}; 184 \mu\text{A}$
- 4.44 5.17 V
- 4.49 $40.0 \mu\text{A}; 72.0 \mu\text{A}; 4.41 \mu\text{A}; 32.8 \mu\text{A}$
- 4.50 $5810/1; 2330/1$
- 4.54 $235 \Omega; 235 \Omega$
- 4.55 0.629 A/V^2
- 4.57 $400 \mu\text{A}$
- 4.64 $14\lambda \times 18\lambda; 7.9\%$
- 4.71 $3.45 \times 10^{-8} \text{ F/cm}^2; 17.3 \text{ fF}$
- 4.81 ($350 \mu\text{A}, 1.7 \text{ V}$); triode region
- 4.84 ($390 \mu\text{A}, 4.1 \text{ V}$); saturation region
- 4.86 ($778 \mu\text{A}, 9.20 \text{ V}$)
- 4.94 ($134 \mu\text{A}, 4.64 \text{ V}$) ; ($116 \mu\text{A}, 5.36 \text{ V}$)
- 4.97 $510 \text{ k}\Omega, 470 \text{ k}\Omega, 12 \text{ k}\Omega, 12 \text{ k}\Omega, 5/1$
- 4.100 ($124 \mu\text{A}, 2.36 \text{ V}$)
- 4.103 (a) ($33.3 \mu\text{A}, 1.01 \text{ V}$)
- 4.106 ($23.5 \mu\text{A}, 0.967 \text{ V}$)
- 4.109 ($73.1 \mu\text{A}, 9.37 \text{ V}$)
- 4.116 $2.25 \text{ mA}; 16.0 \text{ mA}; 1.61 \text{ mA}$
- 4.119 $18.1 \text{ mA}; 45.2 \text{ mA}; 13.0 \text{ mA}$
- 4.122 $1/3.57$
- 4.123 ($153 \mu\text{A}, -3.53 \text{ V}$) ; ($195 \mu\text{A}, -0.347 \text{ V}$)

- 4.125** 4.04 V, 10.8 mA, 43.2 mA
- 4.126** 14.4 mA; 27.1 mA; 10.4 mA
- 4.129** (59.8 μA , -5.47 V) , $\leq 130 \text{ k}\Omega$
- 4.131** (55.3 μA , -7.09 V) , $\leq 164 \text{ k}\Omega$
- 4.134** 40.1 $\text{k}\Omega \rightarrow$ (138 μA , -5 V)
- 4.138** One possible design: 220 $\text{k}\Omega$, 200 $\text{k}\Omega$, 5.1 $\text{k}\Omega$, 4.7 $\text{k}\Omega$
- 4.141** (260 μA , -12.4 V)
- 4.144** (36.1 μA , 80.6 mV); (32.4 μA , -1.32 V); (28.8 μA , -2.49 V)
- 4.146** 34.5 fF, 17.3 fF
- 4.148** 6.37 GHz, 2.55 GHz; 637 GHz, 255 GHz
- 4.149** 690 μA , 86.3 μA
- 4.150** 10^{-22} A , 10^{-15} A