Chapter 5

5.4 0.0167, 0.667, 3.00, 0.909, 49.0, 0.9950, 0.9990, 5000

5.5 2 fA; 1.01 fA, −0.115 V

5.6 0.374 μA, -149.6 μA, +150 μA, 0.591 V

5.9 2.02 fA

5.11 5.34 mA; −5.34 mA

5.14 25 μA, -100 μA, +75 μA, 65.7, 1/3, 0, 0.599 V

5.17 1.77 μA, -33.2 μA, +35 μA, 0.623 V

5.20 723 μA

5.24 0.990, 0.333, 2.02 fA, 6.00 fA

5.26 83.3, 87.5, 100

5.33 39.6 mV/dec, 49.5 mV/dec, 59.4 mV/dec, 69.3 mV/dec

5.34 6 V, 50 V, 6 V

5.35 2.31 mA; 388 μA; 0

5.36 65.7 V

5.40 Cutoff

5.42 saturation, forward-active region, reverse-active region, cutoff

5.46 13.3 aA, 0.263 fA, 0.25 fA

5.47 I_C = 16.3 pA, I_E = 17.1 pA, I_B = 0.857 pA, forward-active region; although I_C, I_E, I_B are all very small, the Transport model still yields $I_C \cong \beta_F I_B$

5.48 65.7, 6.81 fA

5.49 62.5, 1.73 fA

5.50 55.3 μA, 0.683 μA, 54.6 μA

5.51 6.67 MHz

5.53 0.875, 24.2 aA

5.55 -19.9 μA, 26.5 μA, -46.4 μA

5.58 17.3 mV, 0.251 mV

5.60 1.81 A, 10.1 A

5.62 0.803 V, 0.714 V, 27.5 mV

5.65 23.2 μA

5.66 4.0 fF; 0.4 pF; 40 pF

5.68 750 MHz, 3.75 MHz

5.71 0.147 μm

5.72 71.7, 43.1 V

5.74 72.9, 37.6 V

5.75 100 μA, 4.52 μA, 95.5 μA, 0.589 V, 0.593

5.77 (c) 38.7 mS

5.78 0.388 pF at 1 mA

5.82 (80.9 μA, 3.80 V) ; (405 μA, 3.80 V)

5.86 (42.2 μA, 4.39 V)

5.92 (7.5 mA, 4.3 V)

5.94 (5.0 mA, 1.3 V)

5.96 30 kΩ, 620 kΩ; 24.2 μA, 0.770 V

5.98 5.28 V

5.100 3.21 Ω

5.103 616 μA, 867 μA, 3.90 V, 5.83 V

5.107 4.4 percent; 70 percent

5.109 The minimum I_C case, (109 μA, 7.36 V). For the maximum I_C case, the transistor is saturated.