Chapter 3 Summary
Semiconductor Electronics

diode:

forward biased: $\qquad V_{drop} \approx 0.7V$

reverse biased: $\qquad I = 0$

bipolar junction transistor (BJT):

$$I_E = I_C + I_B$$
$$V_{BE} = V_B - V_E$$
$$V_{CE} = V_C - V_E$$
$$I_C = \beta I_B$$

npn BJT:

$$V_C > V_B > V_E$$

cutoff: $\qquad V_{BE} < 0.7V \quad I_C = 0$

saturation: $\qquad V_{BE} < 0.7V \quad V_{CE} = 0.2V$

n-channel enhancement-mode MOSFET:

$$I_g = 0$$

cutoff: $\qquad V_{gs} < V_t \quad I_d = 0$

saturation: $\qquad V_{gs} > V_t \quad V_{dd} > V_g - V_t \quad I_d > 0$