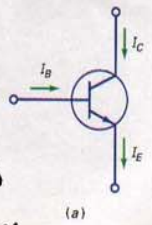


Bias

BE diode: fwd bias
BC diode: reverse bias



KCL

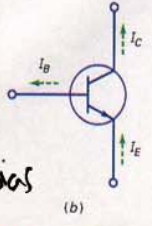
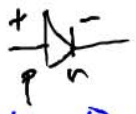
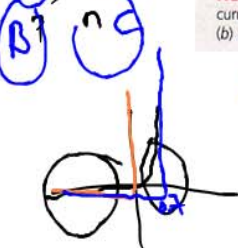


FIGURE 6-6 Three transistor currents. (a) Conventional flow; (b) electron flow.



reverse bias



KCL

$$I_C + I_B = I_E$$

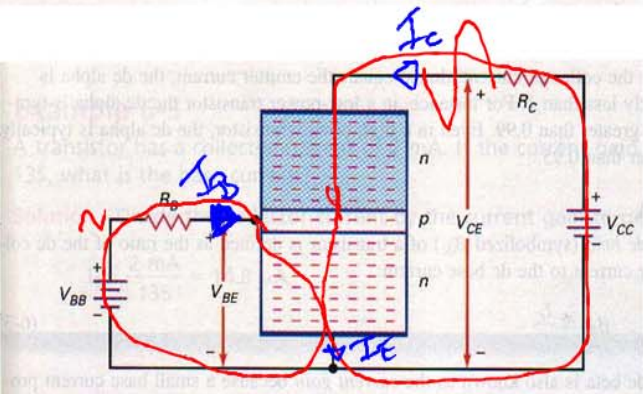


FIGURE 6-5 Free electrons from base flow into collector

$$\alpha \equiv \frac{I_C}{I_E} \approx 0.99995 \approx 0.98$$

$$\beta = \frac{\alpha}{1-\alpha}$$

$$\frac{0.99}{1-0.99} = \frac{0.99}{0.01} = 99$$

$$\frac{0.98}{1-0.98} = \frac{0.98}{0.02} = 49$$

$$\beta \approx \frac{200}{100} = 2$$

$$\beta \approx 100$$