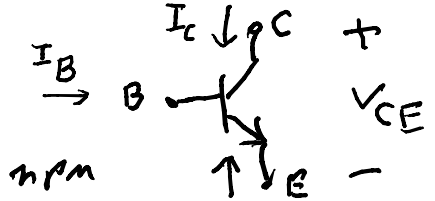
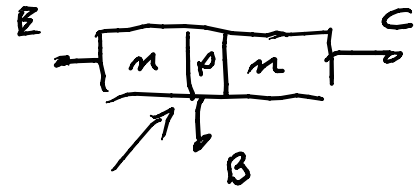
EE303H
09/06/11

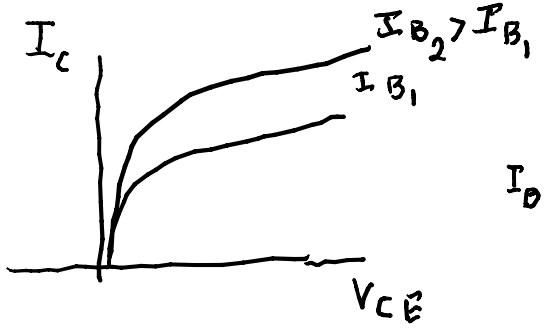
Note Title 9/5/2011

Look at chapter 6 on BJT, p. 375 = npn curves

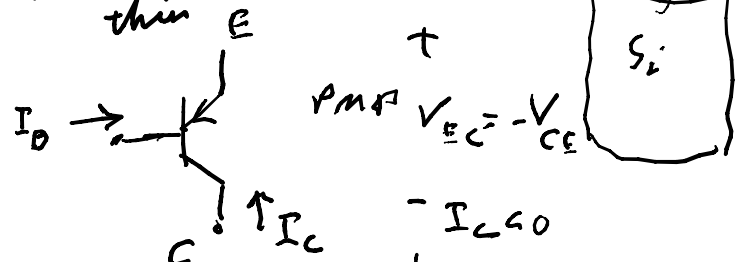




very thin

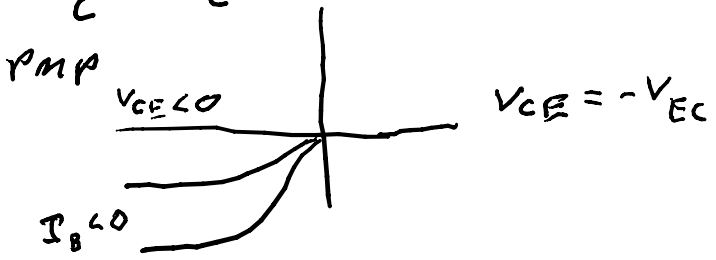


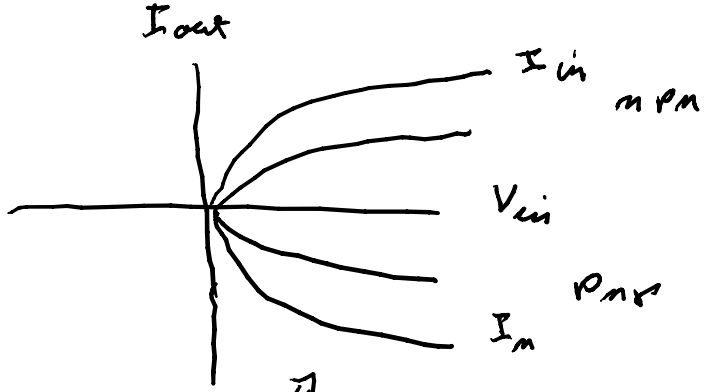
DC sum

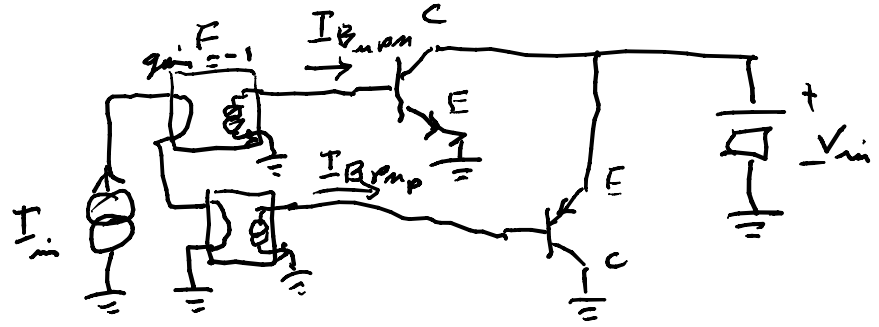


$-I_C < 0$

pnp



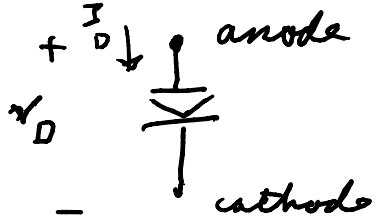




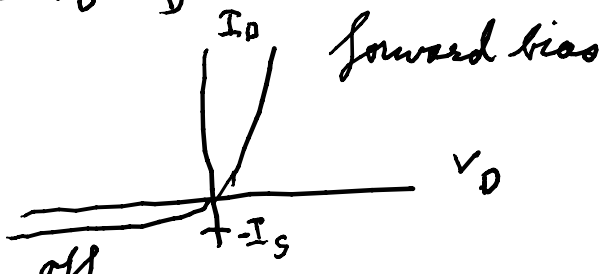
F = current controlled current source

to get to PSpice https://sslvpn.ece.umd.edu/ece
load a project

Diodes p. 150 = diode equation, solid state diode



Power in = $V_D \times I_D$



eq. (3.40) p. 150

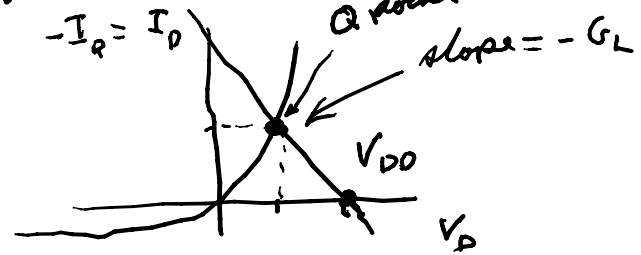
$$I_D = I_S\left(e^{V_D/V_T} - 1\right)$$

V_T = thermal voltage = $\frac{kT}{|q|}$, T = temperature

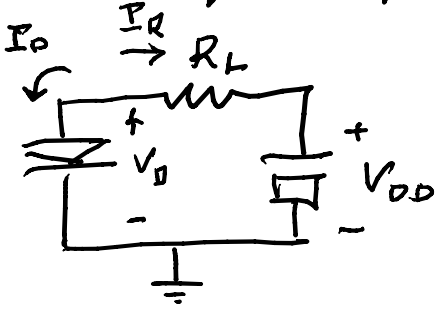
k = Boltzmann's constant

q = charge of an electron

p. 180 ⇒ load line



Q = quiescent



$I_R = -I_D$

$V_D = R_L I_R + V_{DD}$

$\downarrow$

$I_R = \frac{1}{R_L}(V_D - V_{DD})$

$= -I_D$

$$I_R = G_L(V_D - V_{DD}) \Rightarrow -I_R = -G_L V_D + G_L V_{DD}$$

$$I_D = I_S\left(e^{V_D/V_T} - 1\right) = -G_L\left(V_D - V_{DD}\right)$$

Q point is $(V_D, I_D)_Q$ which solve this equation