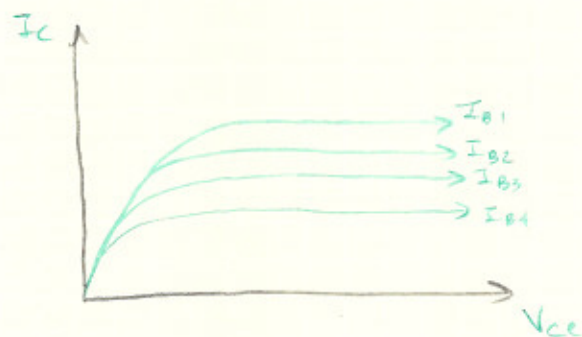
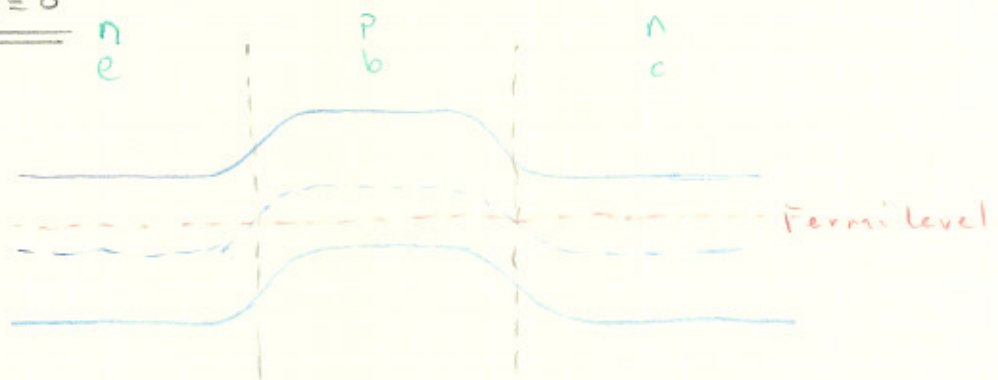


$$V_{ce} = V_{cc} - I_c R_c$$

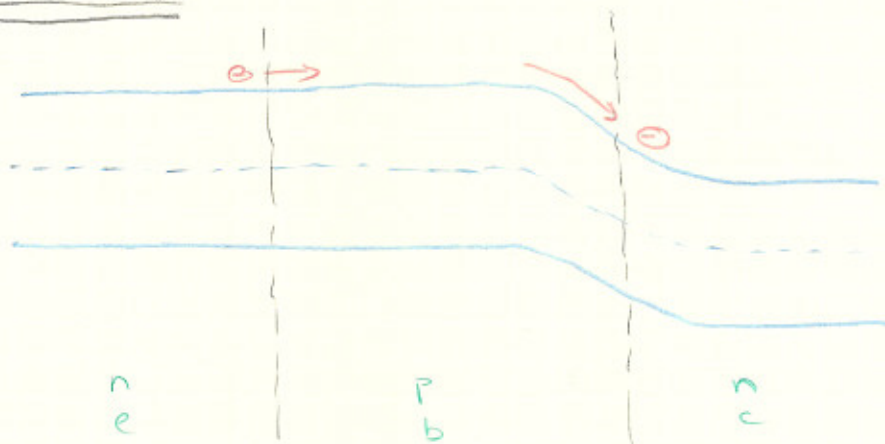
when

$$V_{be} \uparrow \rightarrow I_E \uparrow \rightarrow I_c \uparrow \rightarrow V_{ce} \downarrow$$

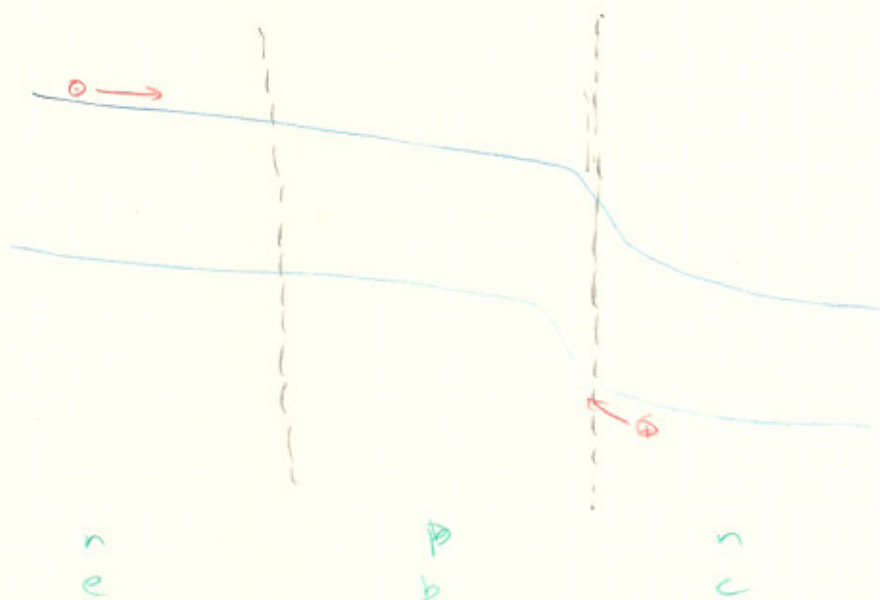
$$\underline{V_{be} = 0}$$



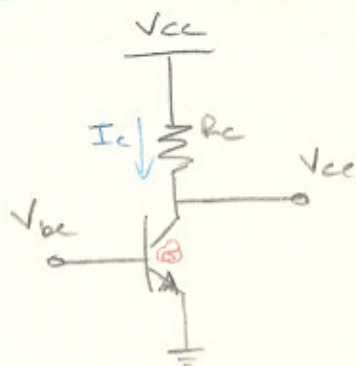
$$\underline{V_{be} > V_{beT}}$$



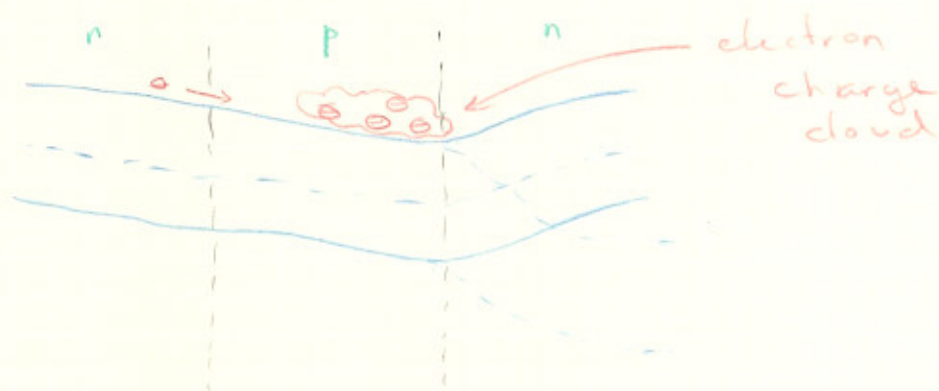
note: In reality when an electric field is placed on the crystal, the energy band diagram is really on a slope.



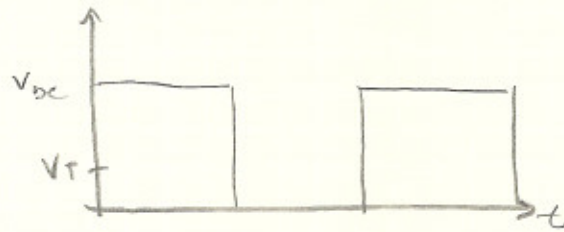
SATURATION MODE



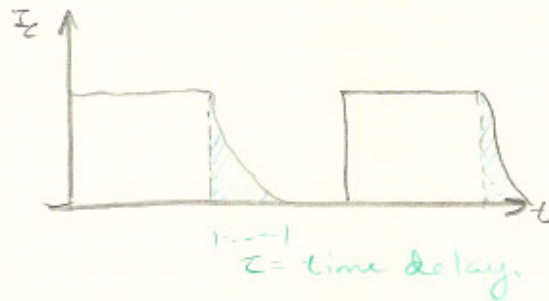
$V_{be} \uparrow \rightarrow I_b \uparrow \rightarrow I_c \uparrow \rightarrow V_{ce} \uparrow \rightarrow I_c \downarrow \rightarrow V_{ce} \downarrow$
saturation mode.



note: In saturation, an increase in I_B does not result in an increase I_C , however a charge cloud forms in the base.



note: It takes time to dissipate the electron cloud,



FUNCTION OF COMMON EMITTER.

- Saturation mode

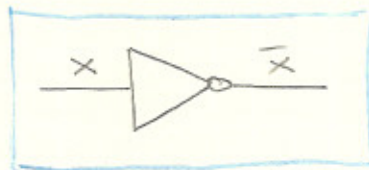
high input \rightarrow low output

- cutoff mode

low input \rightarrow high output.

LOGIC

the common emitter is a good example of an inverter. (NOT)

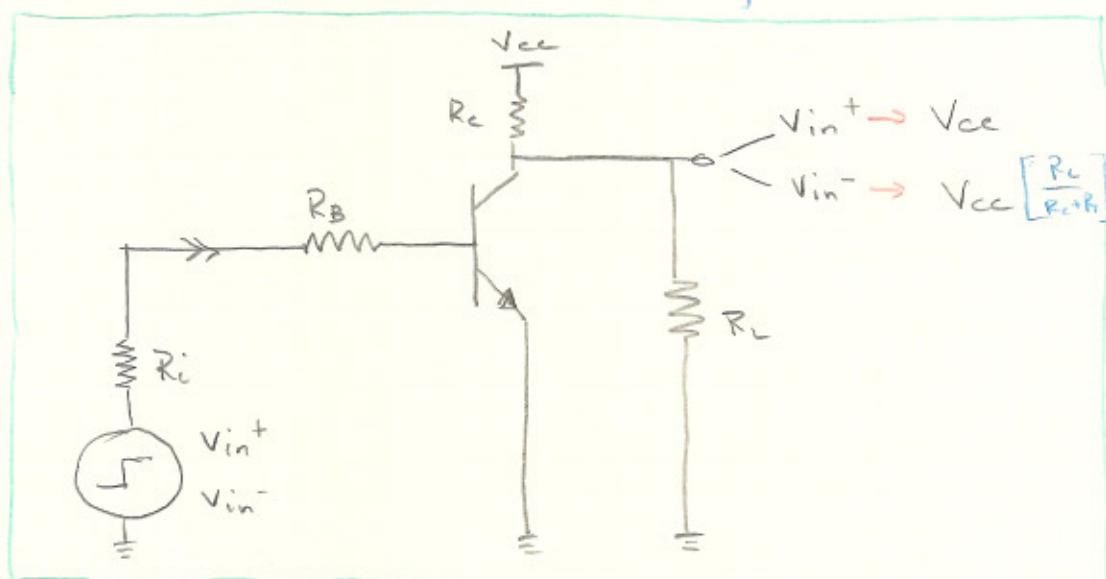


note: Symbols for logic

NOT —
AND .
OR +

	LOGIC	
	Positive	Negative
negative voltages		
positive voltages		

we will focus on this



Given: V_{cc} , β , V_{BE} , V_{out}^+ , V_{ce}