

# BJT Characteristics (H.1)

20170109

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# References

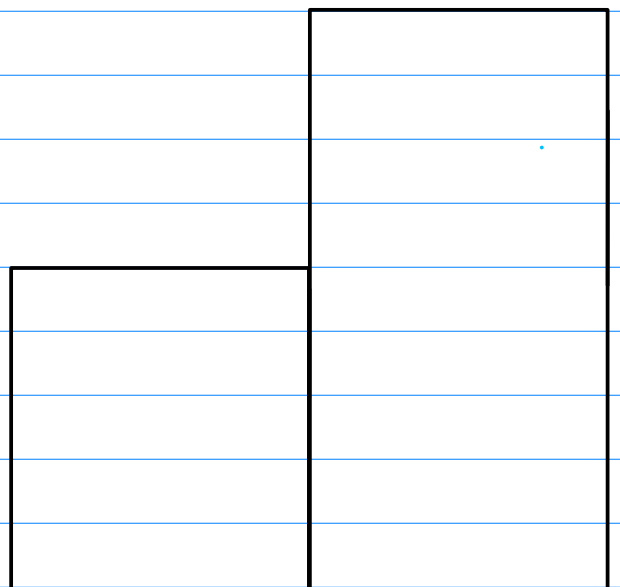
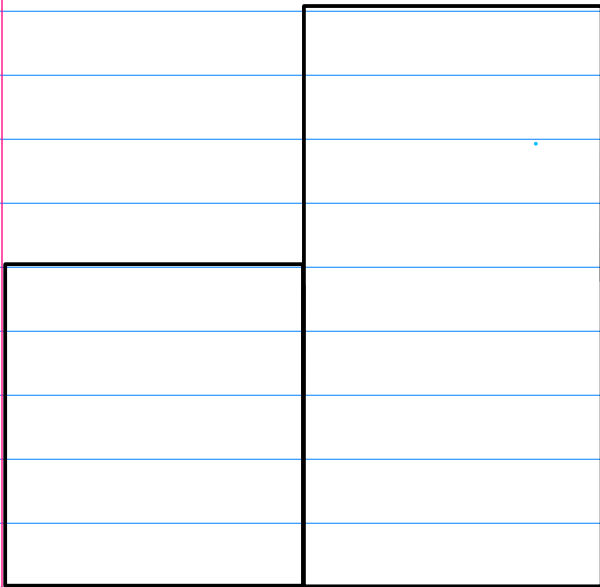
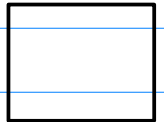
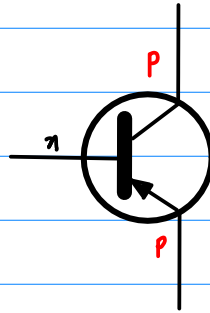
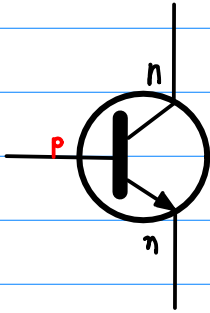
Based

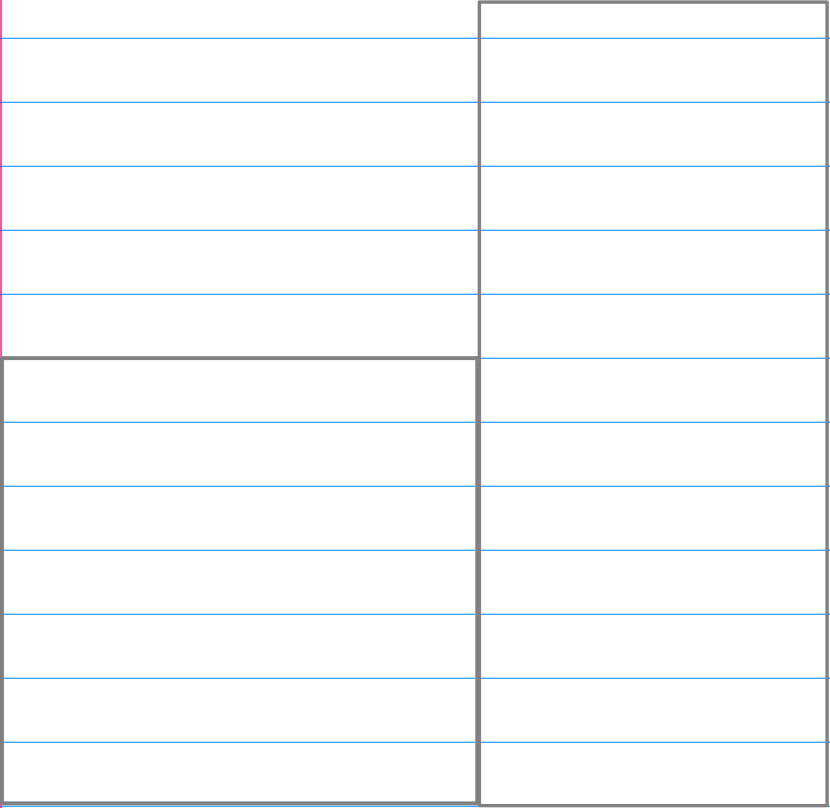
[1] Floyd, Electronic Devices 7th ed

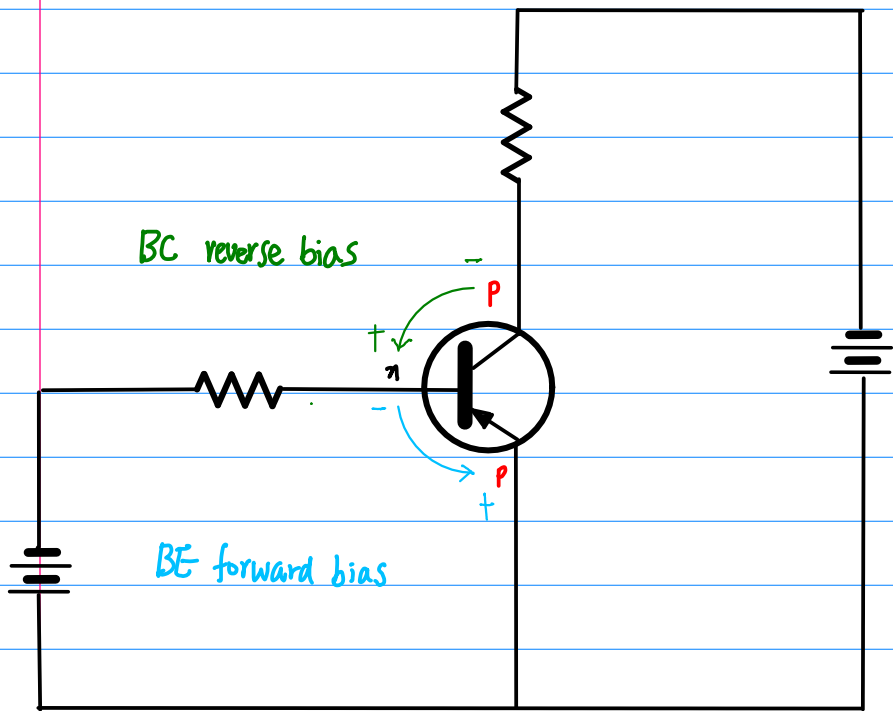
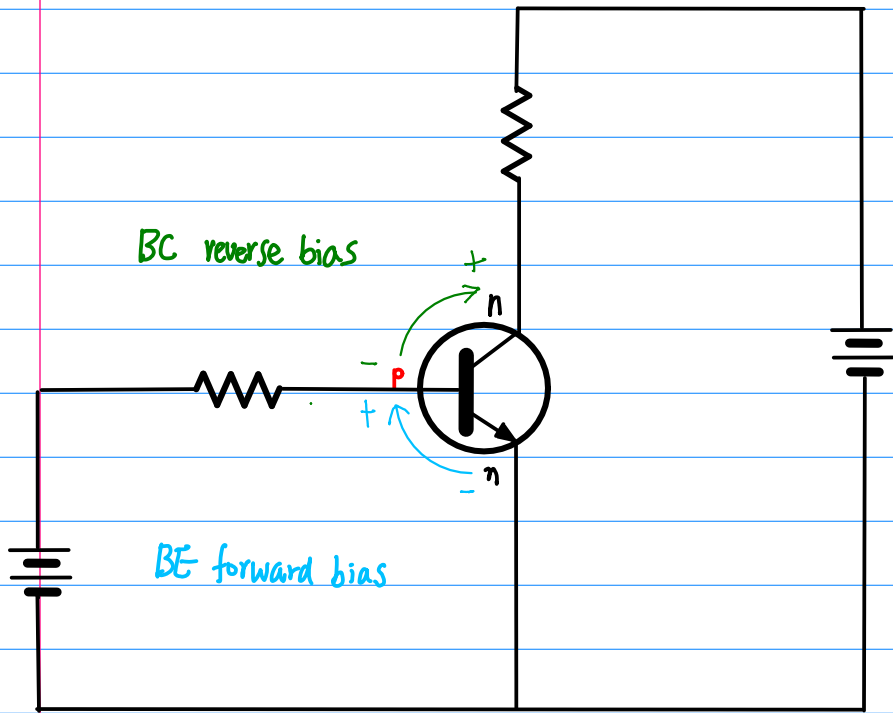
[2] Cook,

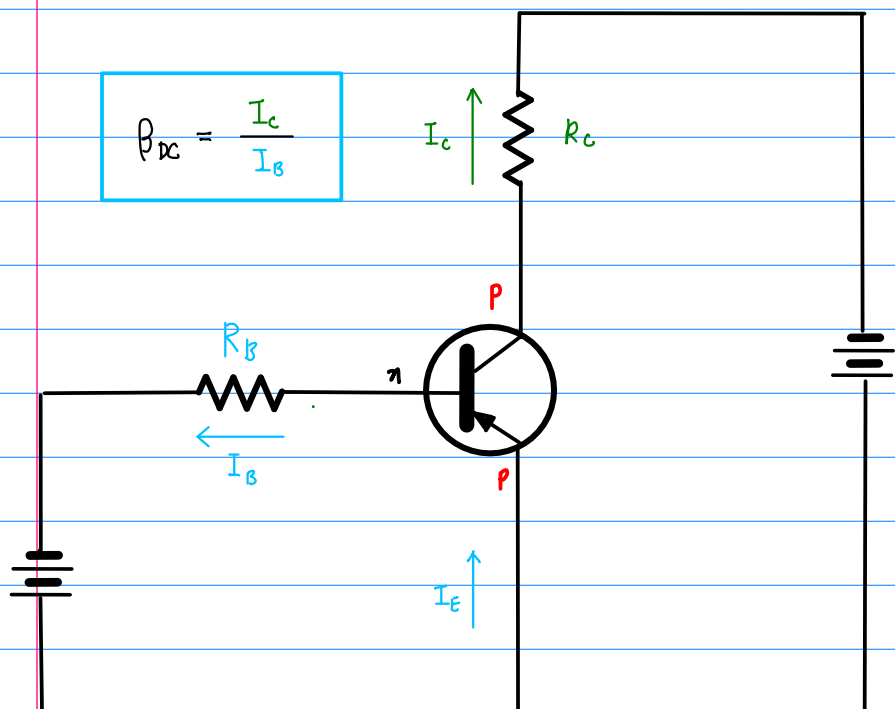
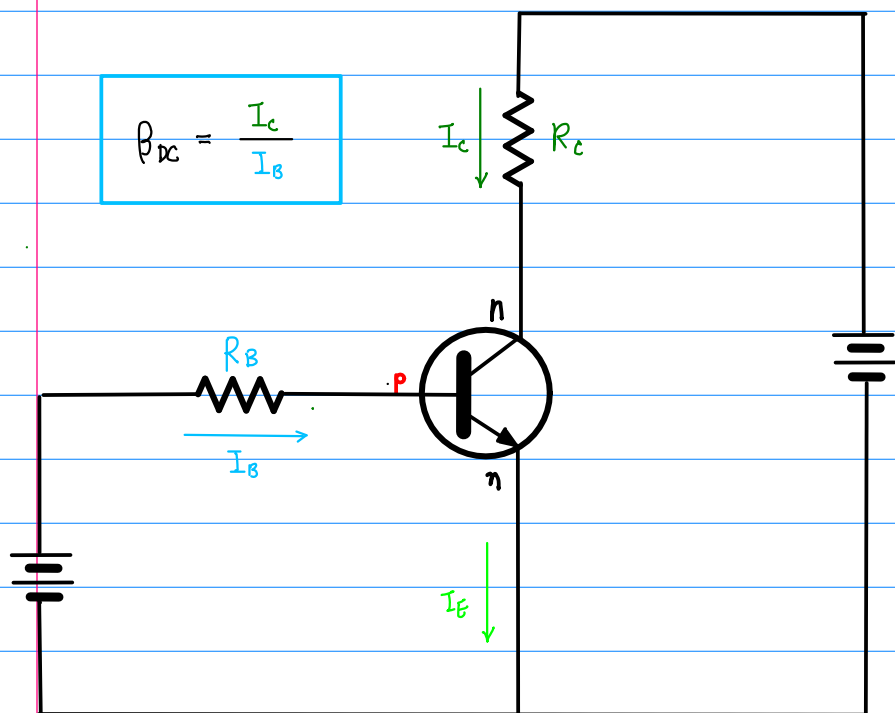
[2] [en.wikipedia.org](http://en.wikipedia.org)











$$\beta_{DC} = \frac{I_c}{I_B}$$

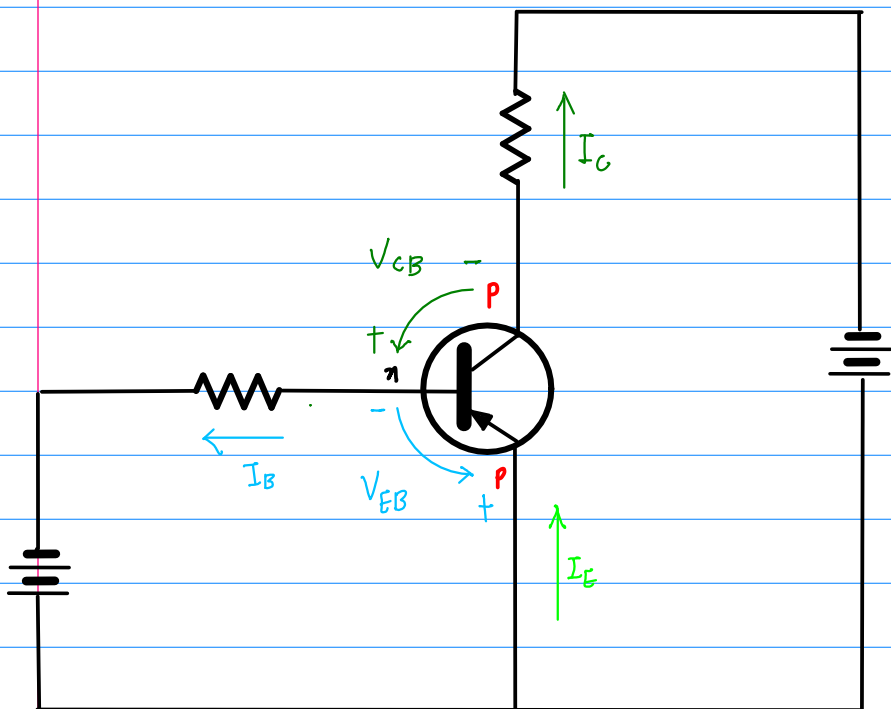
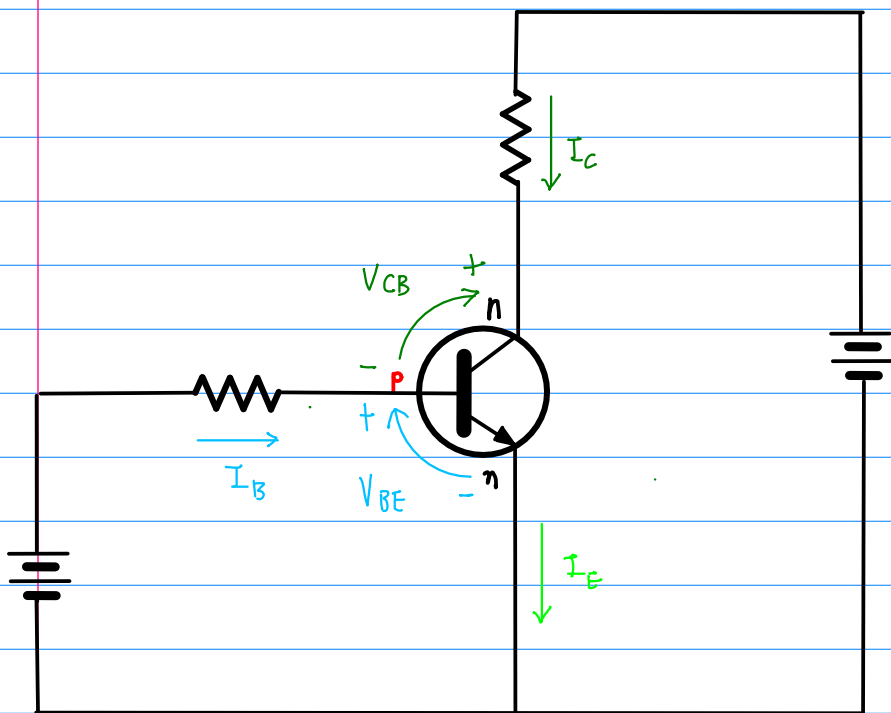
20 ~ 200

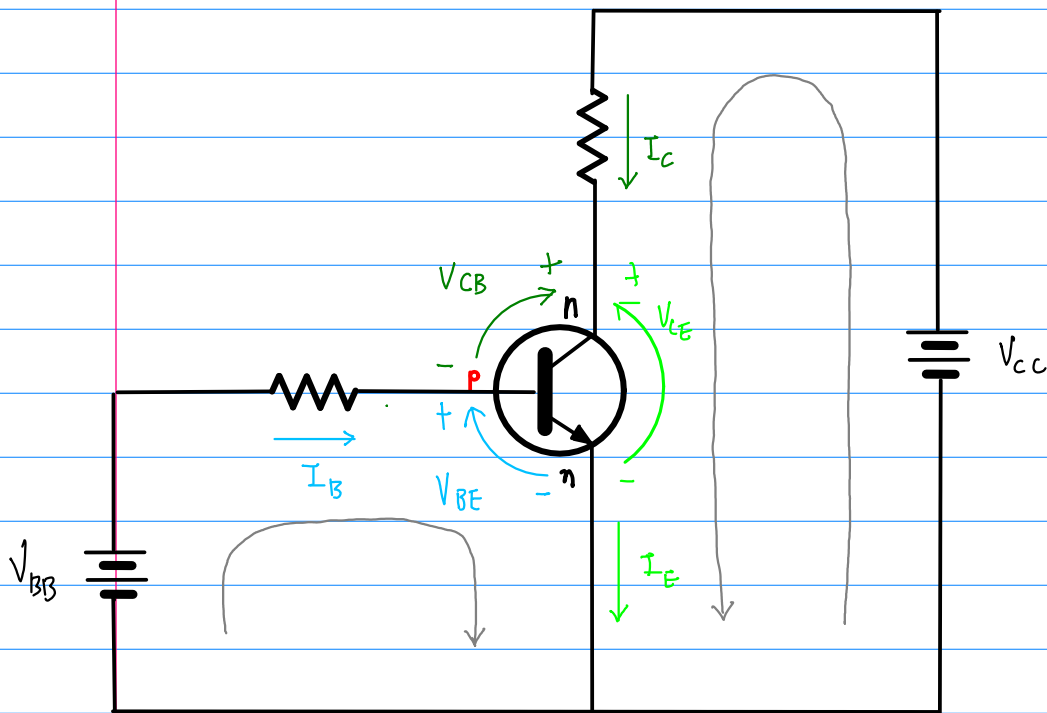
$$h_{FE} = \beta_{DC}$$

$$\alpha_{DC} = \frac{I_c}{I_E}$$

0.95 ~ 0.99







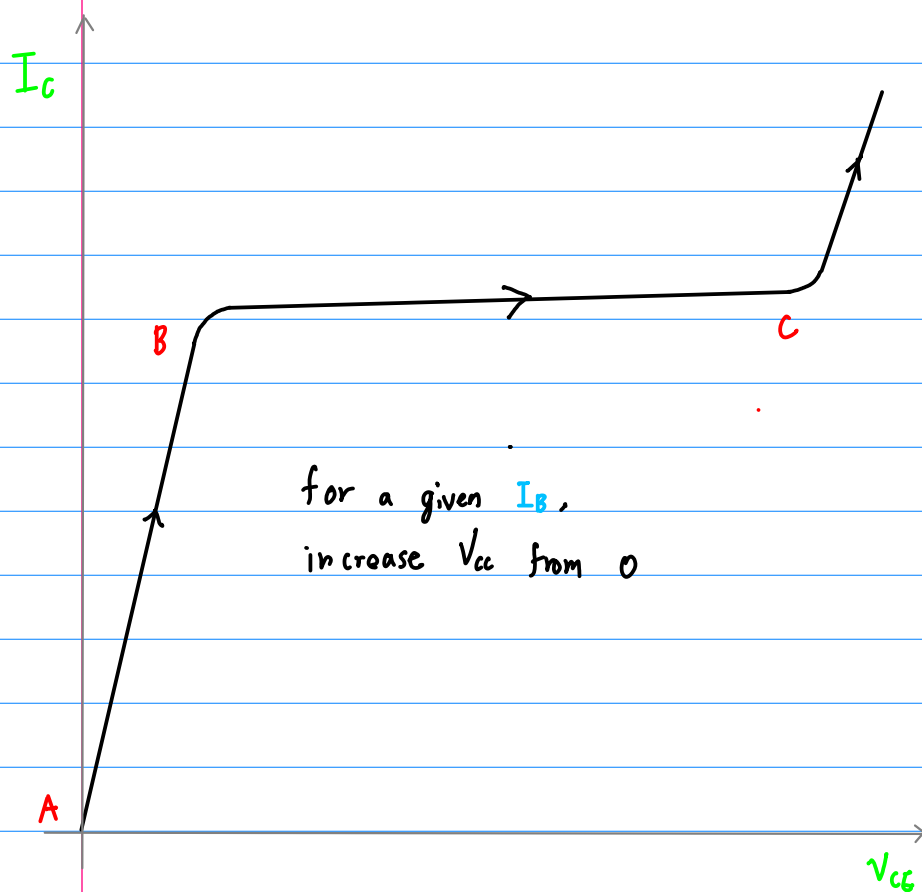
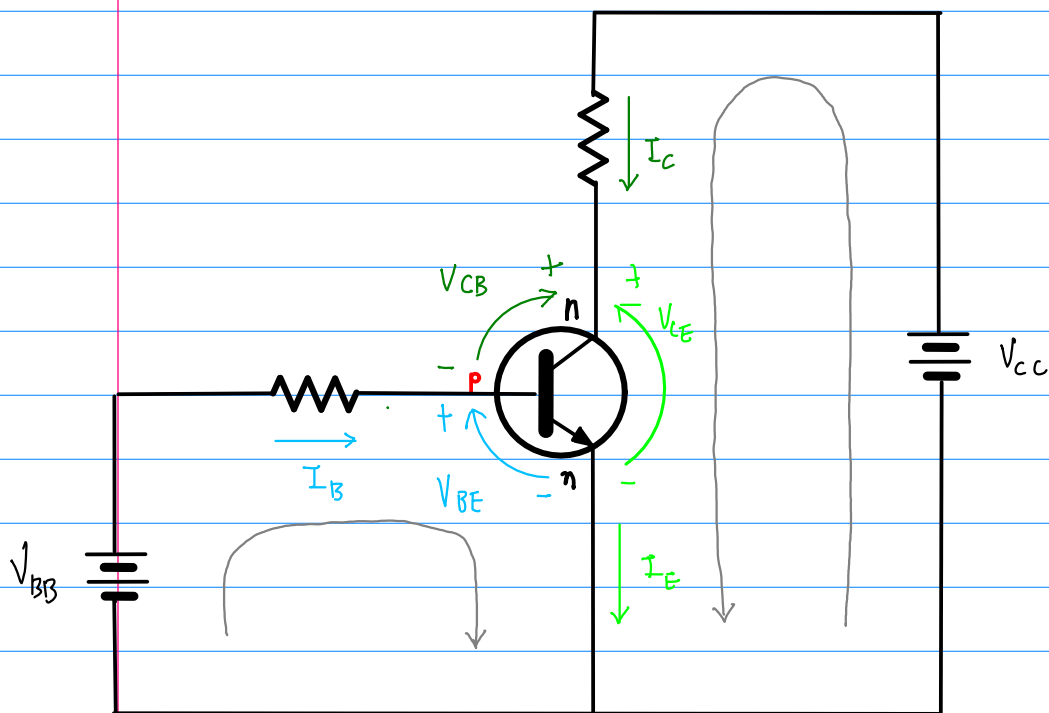
$$V_{BB} = I_B R_B + V_{BE}$$

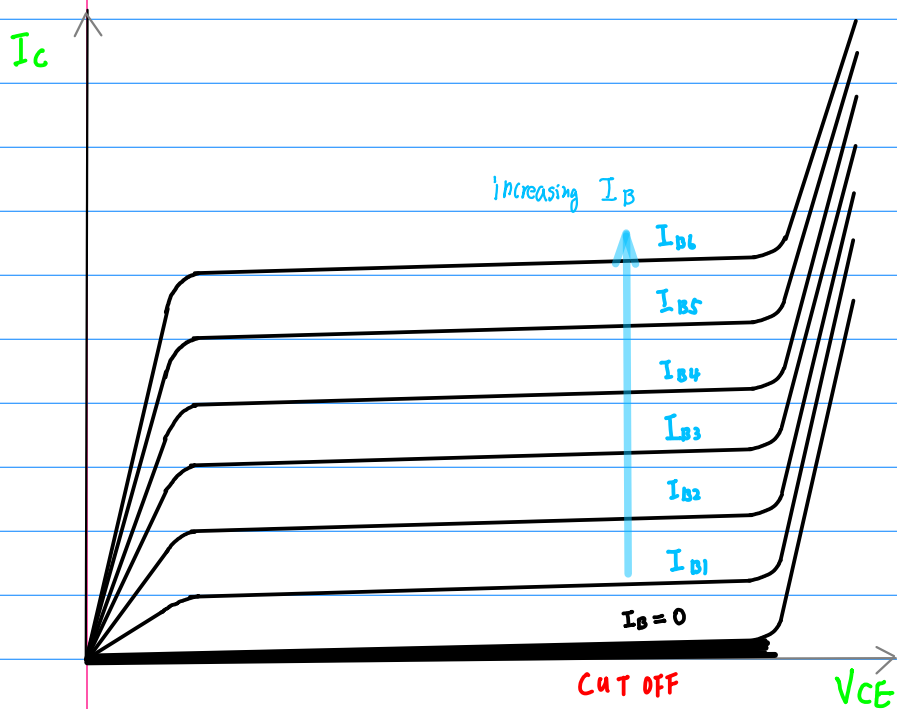
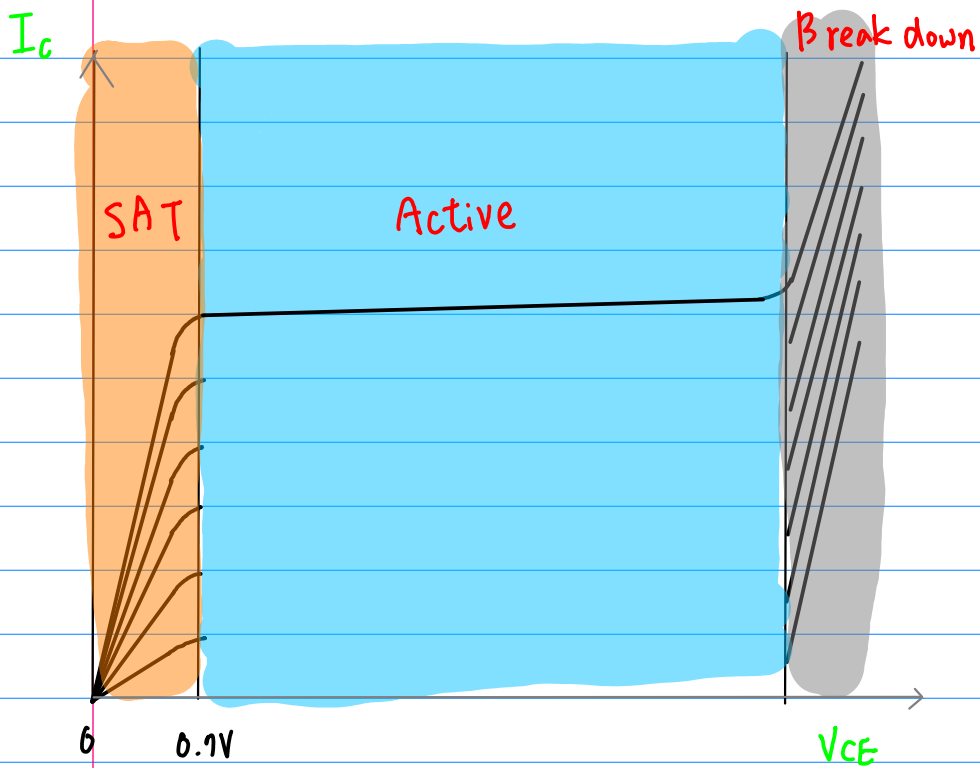
$$V_{CC} = I_C R_C + V_{CE}$$

$$I_B = \frac{V_{BB} - V_{BE}}{R_B}$$

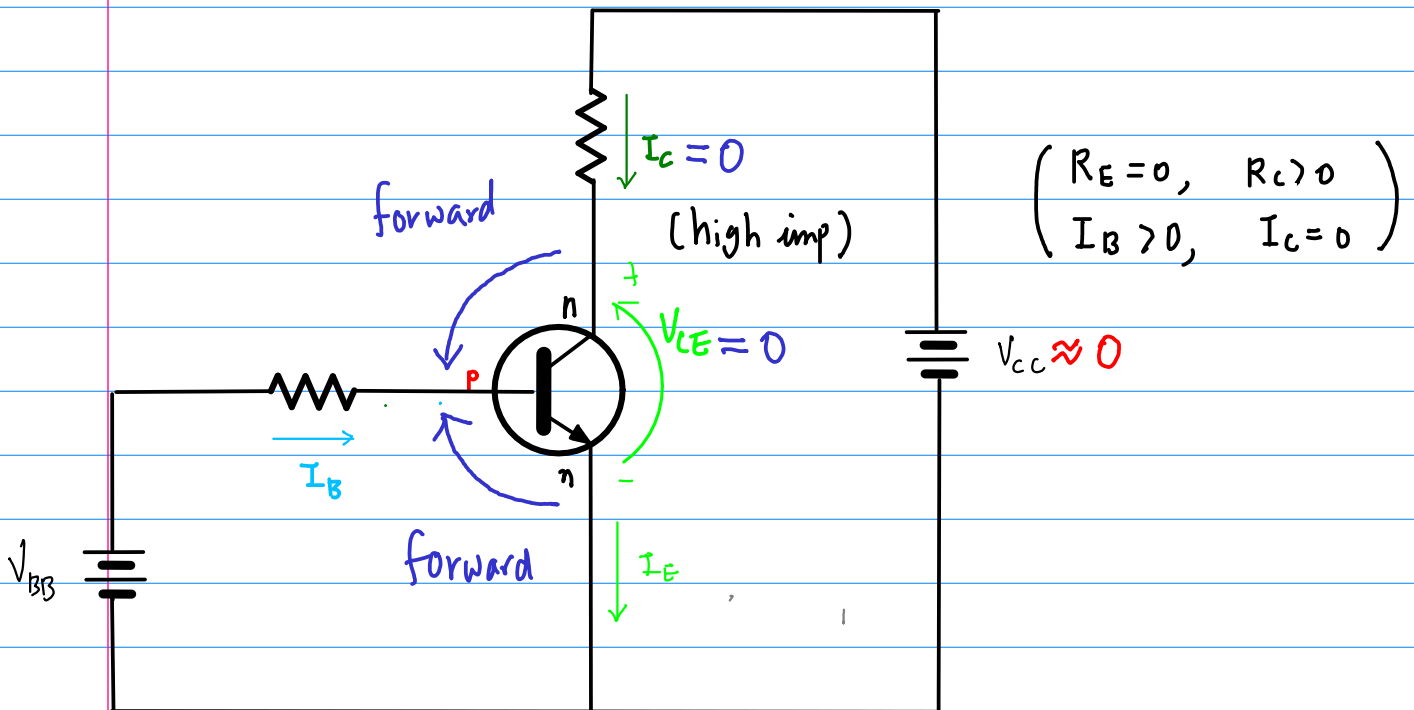
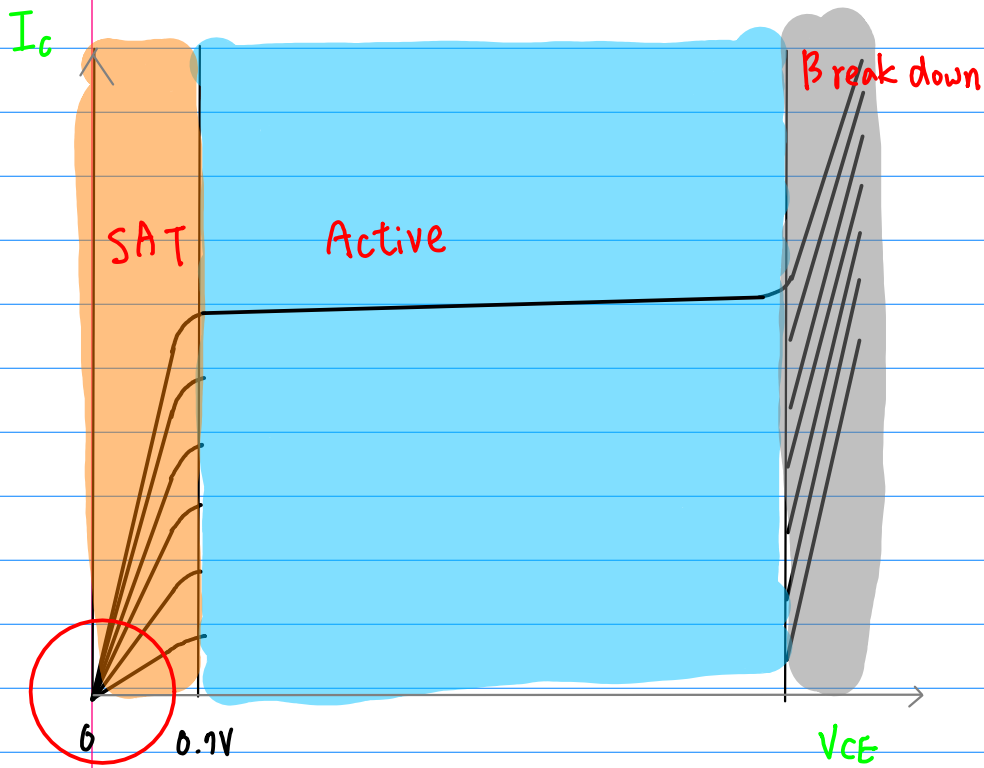
$$I_C = \frac{V_{CC} - V_{CE}}{R_C}$$

$$V_{CE} = V_{CC} - I_C R_C$$





(A)



(A)

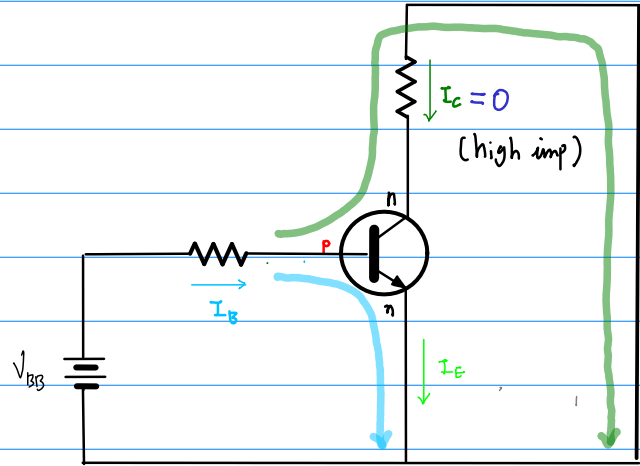
$V_{CC} \approx 0$

2 paths

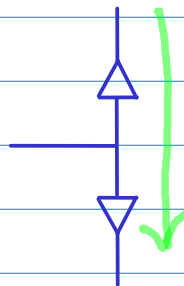
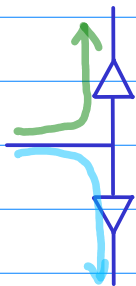
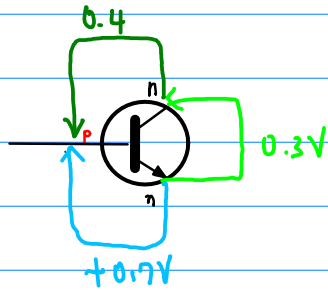
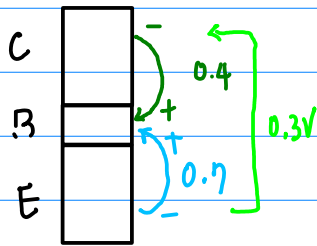
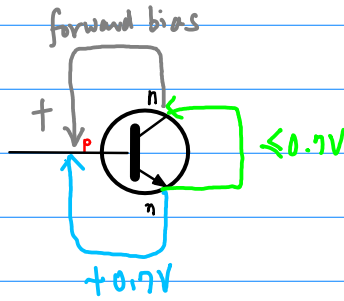
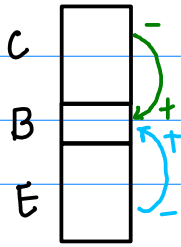
B → E

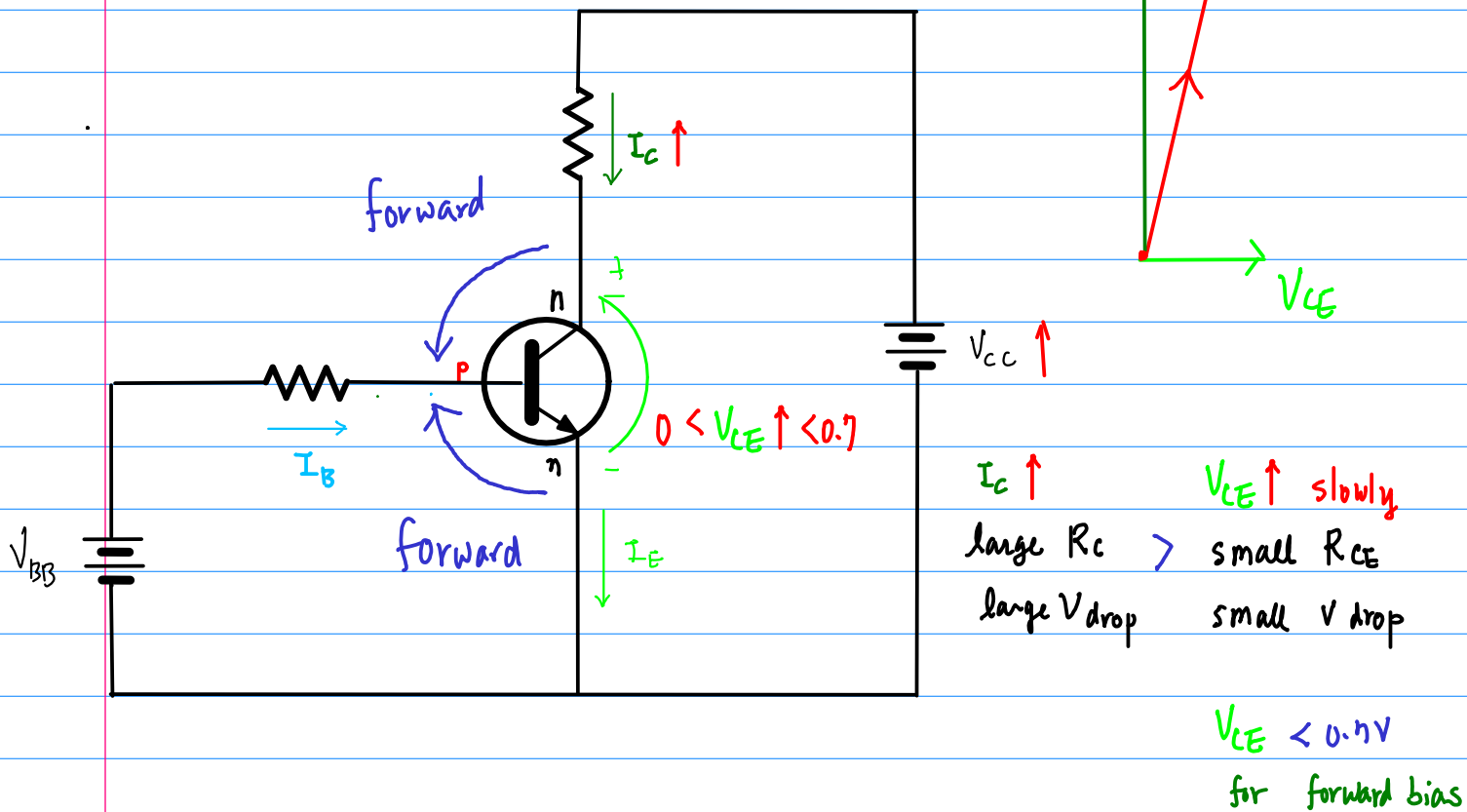
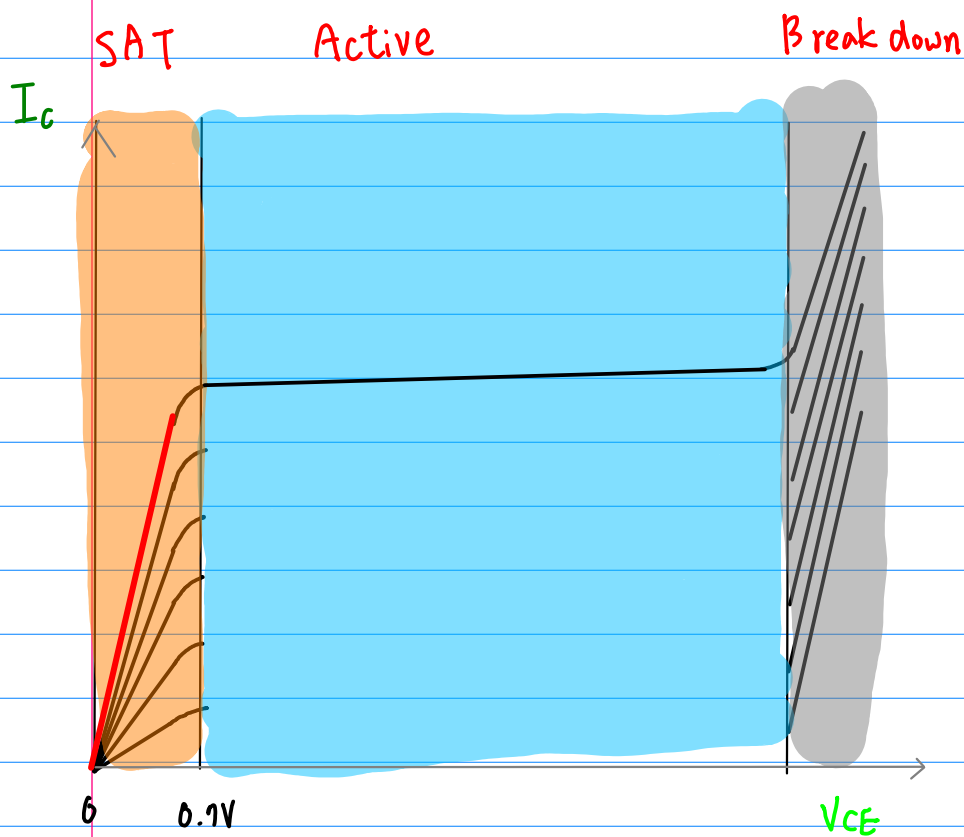
B → C

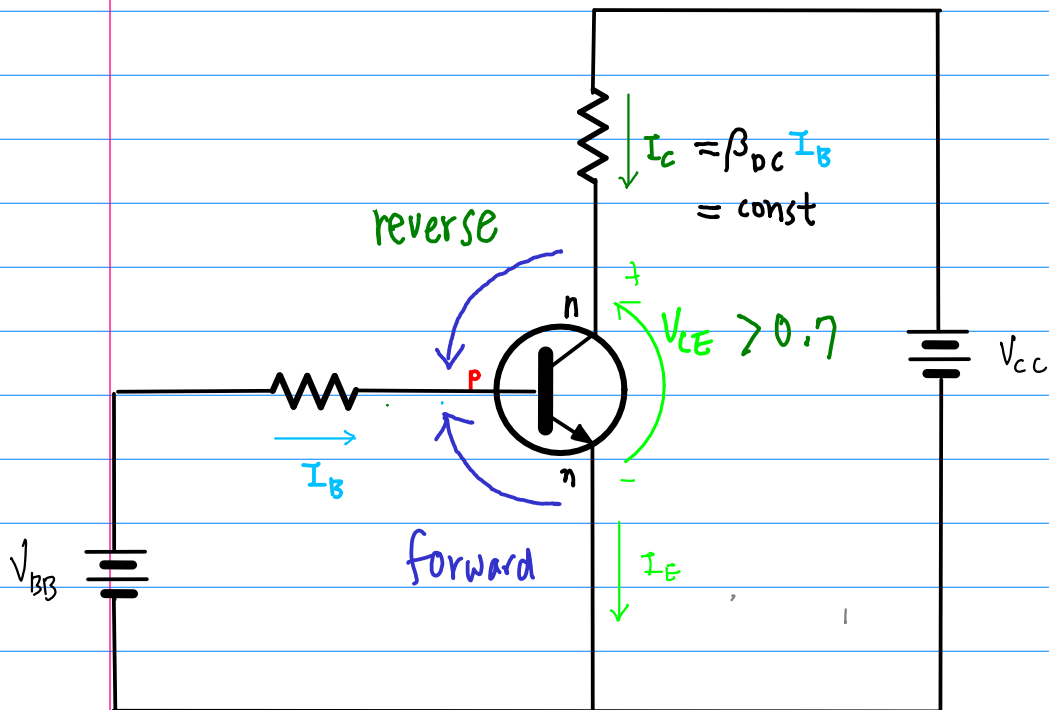
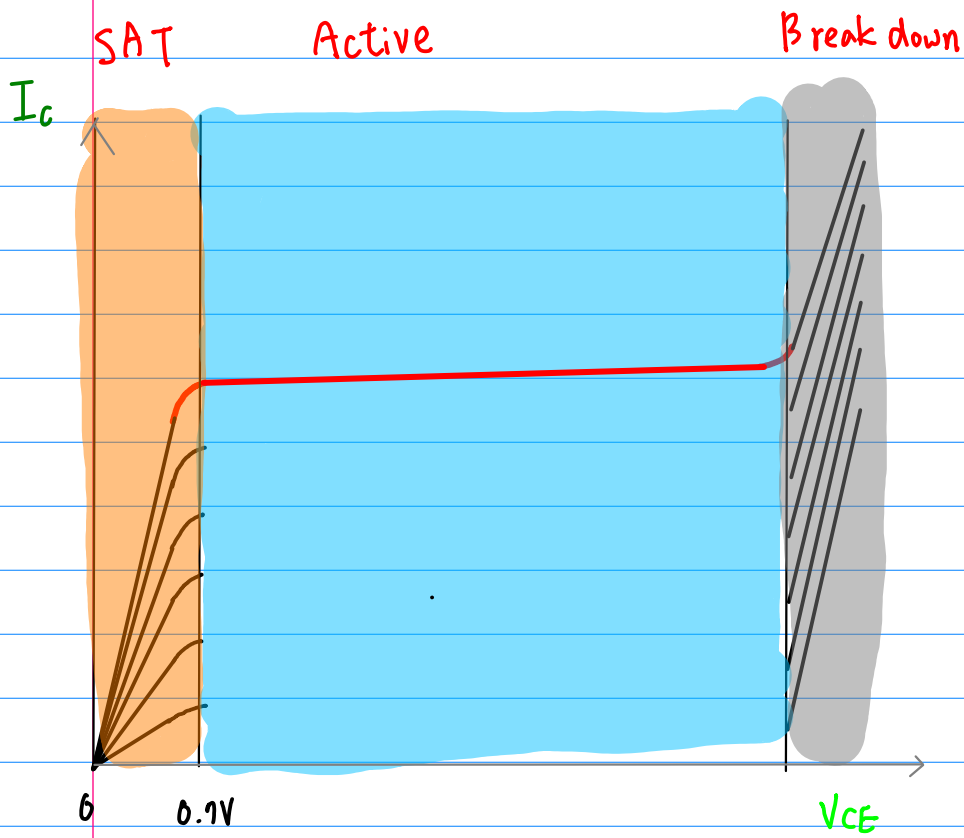
$R_C \rightarrow I_C = 0$



(A)-(B)







$$V_{CE} + V_{Rc} = V_{CC}$$



