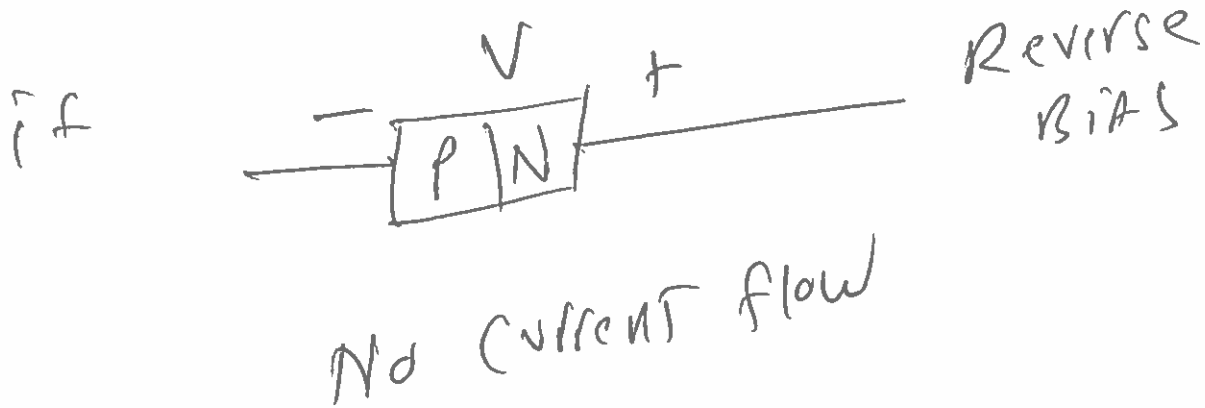
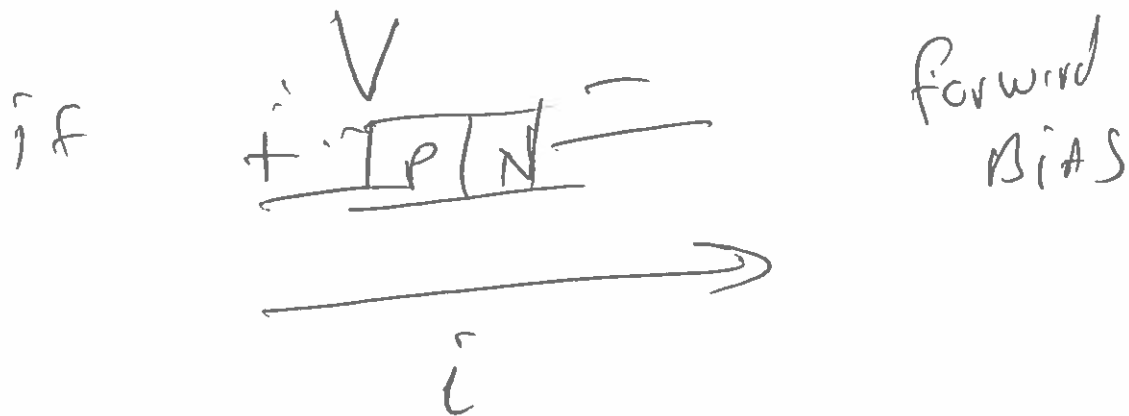


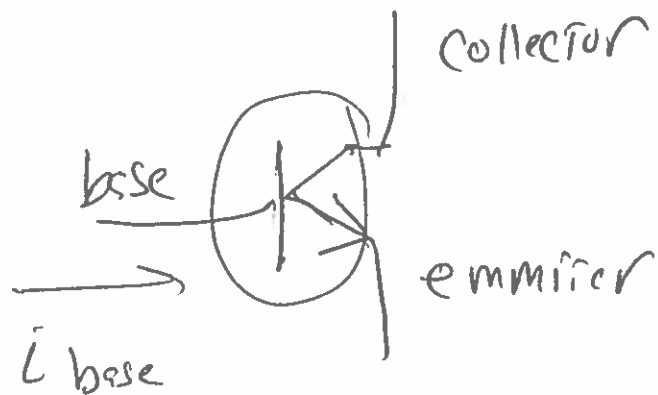
Transistor Aside



P type or Positive semiconductor
N type or Negative semiconductor

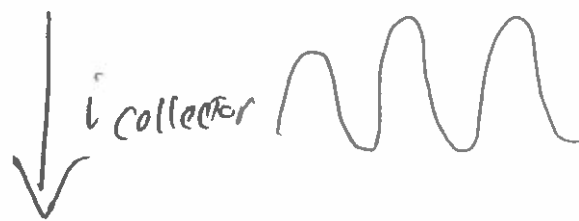


Transistor is either NPN device
or PNP device

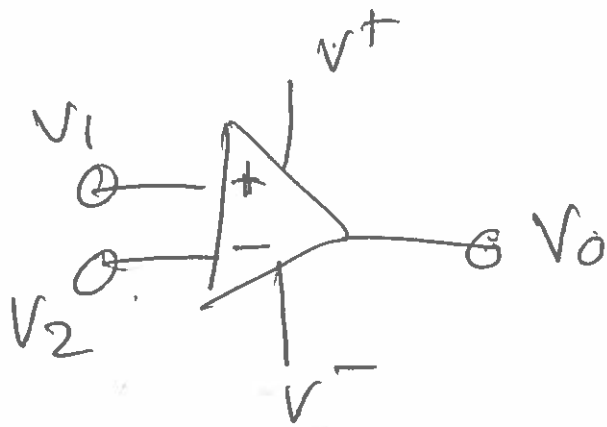


if i_{base} is small

Collector is connected
to emitter



if $i_{base} = 0$ collector is not connected
to emitter

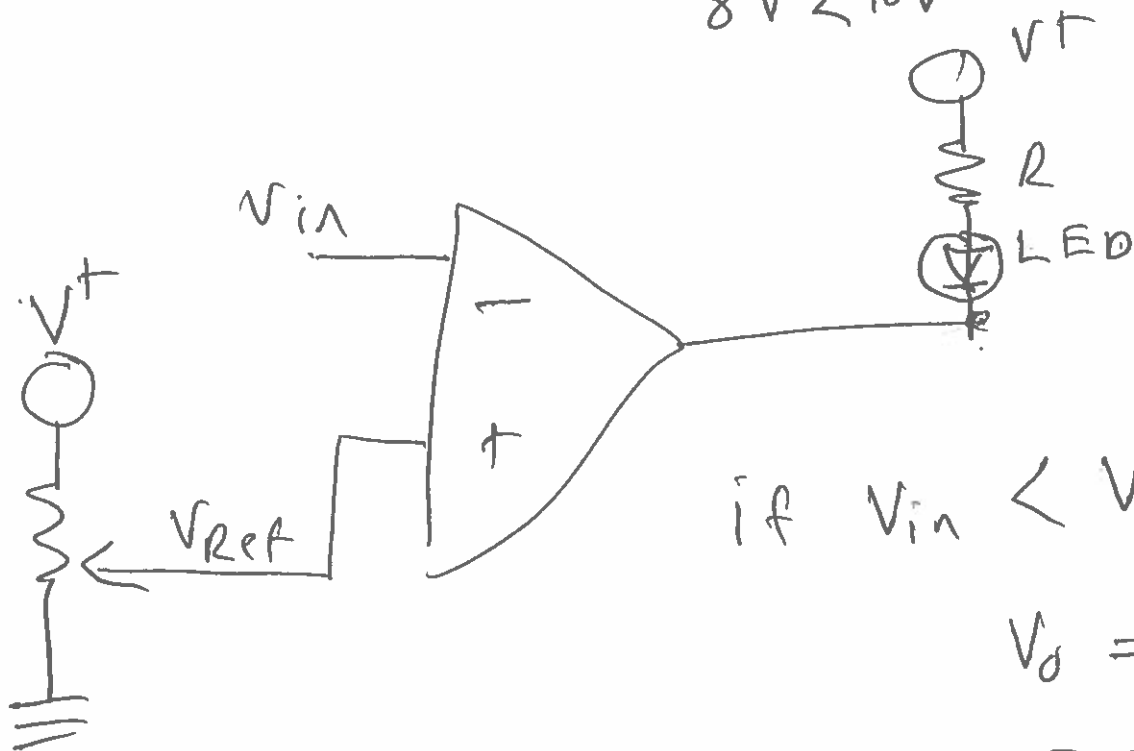


$V_0 = ?$ if $V_1 > V_2$ $V_0 = +12V$ V^+

$10V > 8V$

if $V_1 < V_2$ $V_0 = -12V$ V^-

$8V < 10V$



if $V_{in} < V_{ref}$

$V_0 = V^+$

LED is OFF

if $V_{in} > V_{ref}$ $V_0 = V^-$

LED LITS.