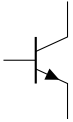


OFF

$$\begin{cases} I_D = 0 \\ V_u < V_\gamma \end{cases}$$

ON

$$\begin{cases} I_D > 0 \\ V_u = V_\gamma \end{cases}$$



OFF

$$\begin{cases} I_B = I_C = 0 \\ V_{BE} < V_\gamma \end{cases}$$

AD

$$\begin{cases} I_B > 0 \\ I_C = \beta I_B > 0 \\ V_{BE} = V_\gamma \\ V_{CE} > V_{CE_{SAT}} \end{cases}$$

SAT

$$\begin{cases} V_{BE} = V_\gamma \\ V_{CE} = V_{CE_{SAT}} \\ I_C < \beta I_B \end{cases}$$