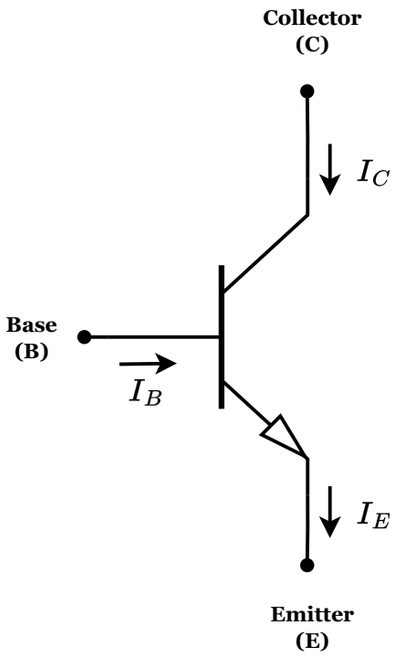

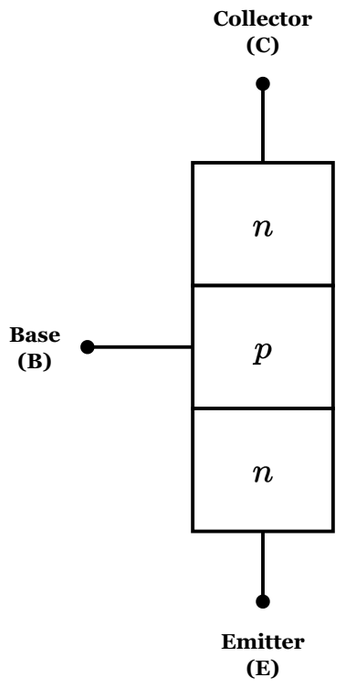

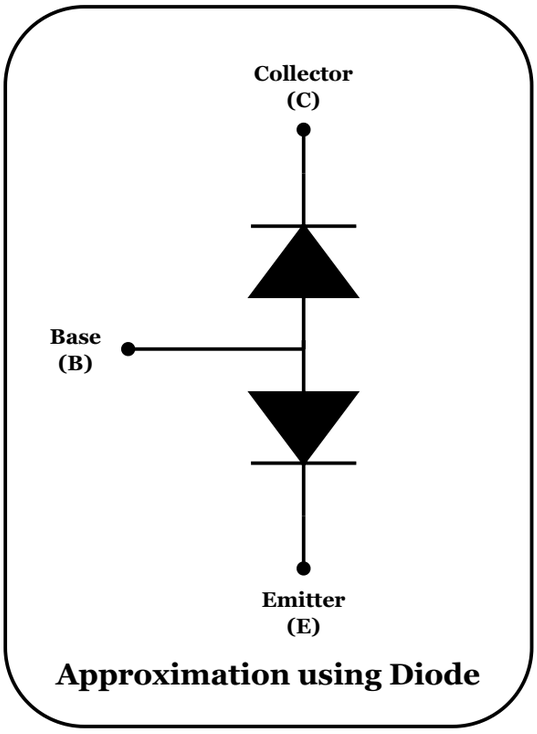

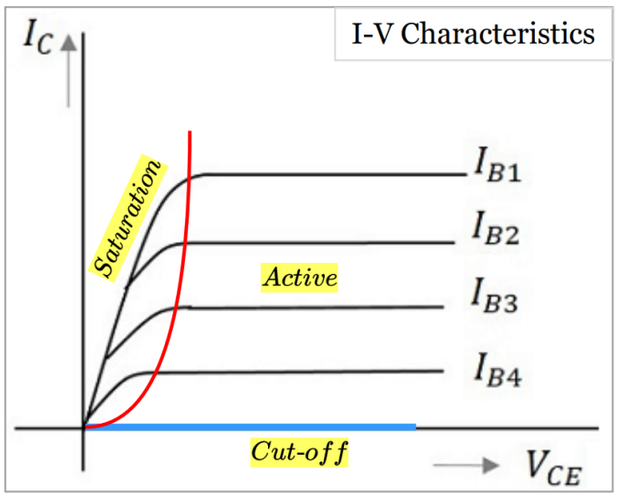

$I_{B1} > I_{B2} > I_{B3} > I_{B4}$

State	Bias	Condition	Equation
Active	BE - Forward Bias BC - Reverse Bias	$I_B, I_C, I_E > 0$ $V_{CE} > 0.2v$	$V_{BE} = 0.7v$ $I_C = \beta I_B$ $\beta = 50 \sim 200$ $\alpha = \frac{\beta}{\beta+1}$
Saturation	BE - Forward Bias BC - Forward Bias	$I_B, I_C, I_E > 0$ $\frac{I_C}{I_B} < \beta$	$V_{BE} = 0.8v$ $V_{CE} = 0.2v$
Cut-off	BE - Reverse Bias BC - Reverse Bias	$V_{BE} \leq 0.7v$ $V_{BC} \leq 0.6v$	$I_B, I_C, I_E = 0$