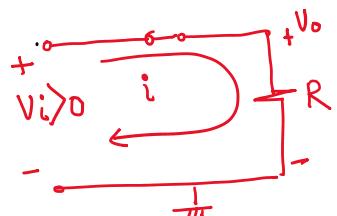
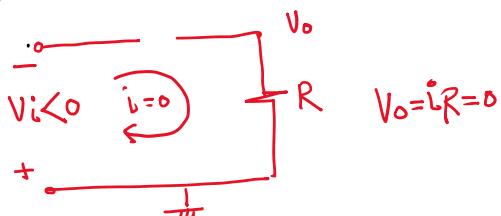


$$0 < t < \frac{T}{2}, V_i > 0, +Ve H.C$$

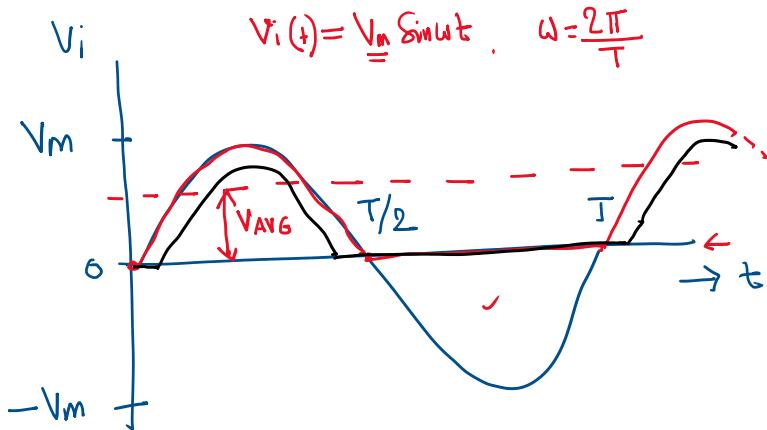
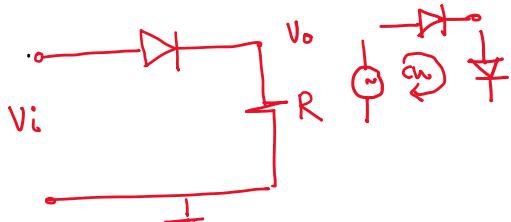
$$\underline{V_o} = \underline{V_i}$$



$$\frac{T}{2} < t < T, V_i < 0V, -Ve H.C, \boxed{V_o = 0}$$



$$S_1, V_D = 0.7V \quad [F.B]$$

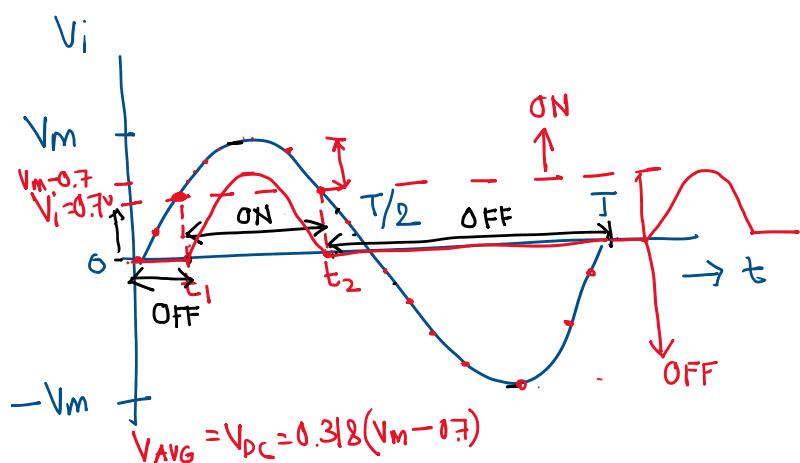


AC \rightarrow DC . Half-Wave Rectification

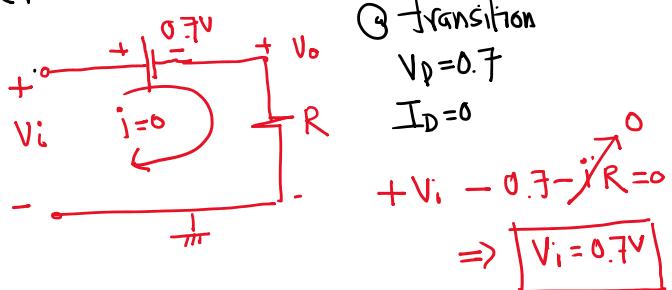
$$V_{AVG} = V_{DC} = 0.318 V_m$$

$$V_i > 0.7V : \text{ON}$$

$$V_i < 0.7V : \text{OFF}$$



Step 1: determine the transition state voltage



Step 2: draw the TSV line on the circuit

$$i = 0 \quad \text{OFF}$$

$$V_D = 0.7V \quad i \neq 0 \quad \text{ON}$$

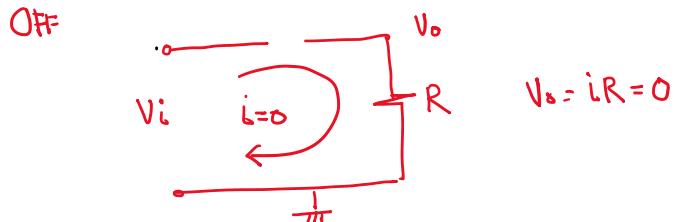
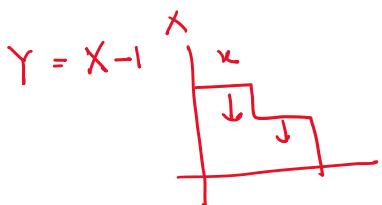
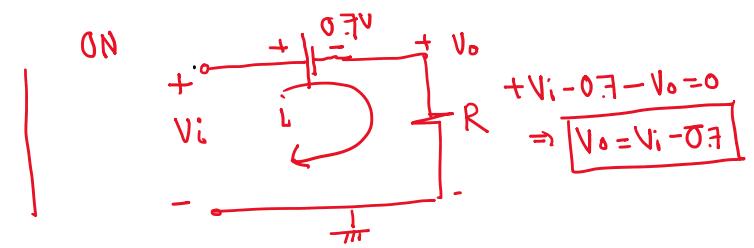
$$T.S.V \quad V_D = 0.7V \quad i \neq 0$$

Step 2: draw the TSV line on the Signal

$$0 < t < t_1, V_i < 0.7V \Rightarrow \text{OFF} : V_o = 0V$$

$$t_1 < t < t_2, V_i > 0.7V \Rightarrow \text{ON} \quad V_o = V_i - 0.7$$

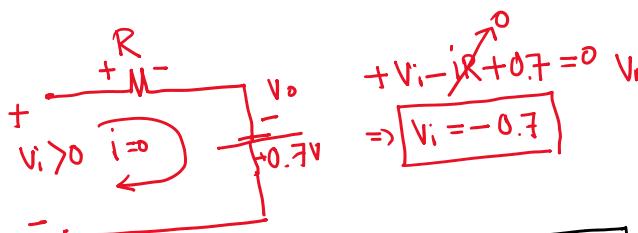
$$t_2 < t < T, V_i < 0.7V \Rightarrow \text{OFF} \quad V_o = 0V$$



t	V_i	$V_o = V_i - 0.7$
t_1	0.7	$0.7 - 0.7 = 0$
$T/4$	V_m	$V_m - 0.7$
t_2	0.7	0

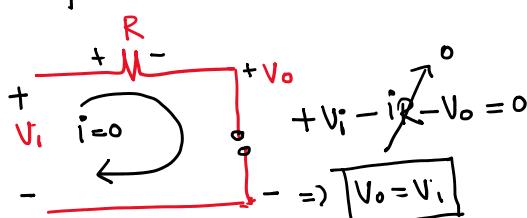
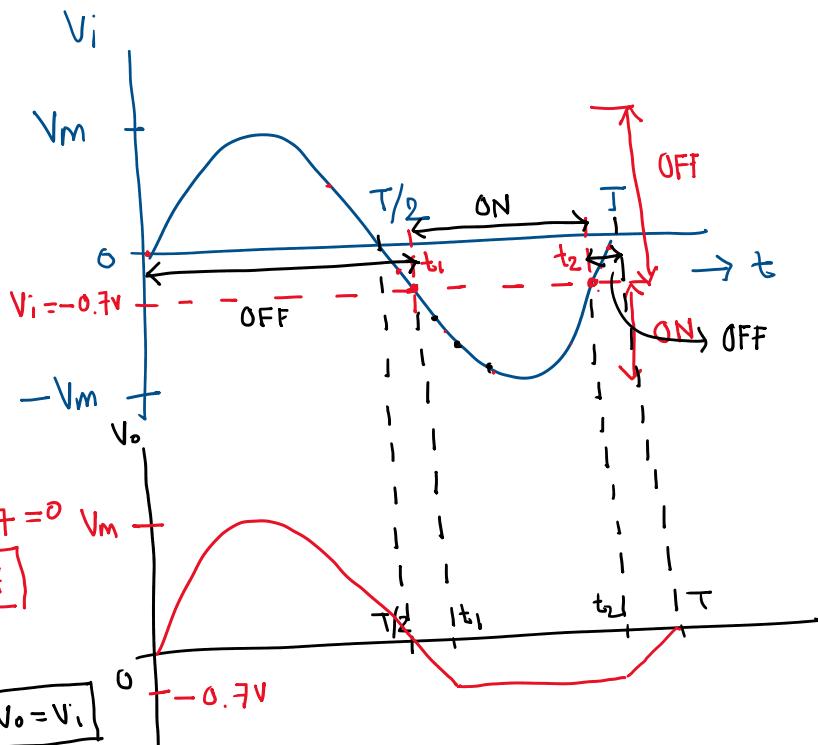
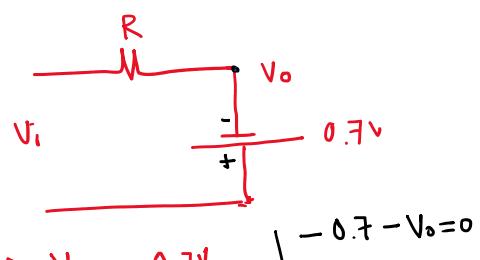


T.S.V.



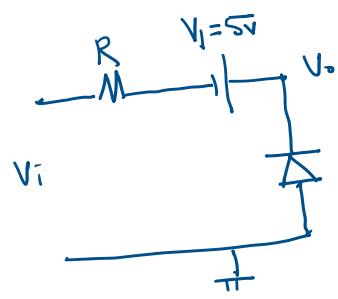
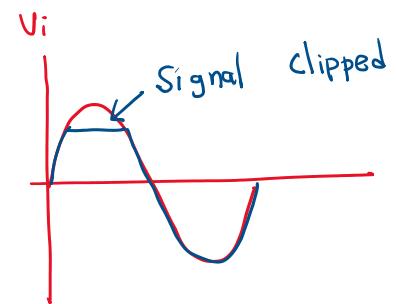
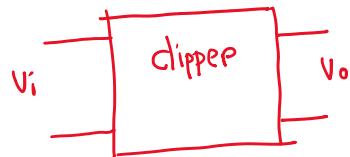
$$0 < t < t_1 \quad \& \quad t_2 < t < T, \quad V_i > -0.7V, \quad \text{OFF} \quad [V_o = V_i]$$

$$t_1 < t < t_2, \quad V_i < -0.7V, \quad \text{ON} \quad V_o = -0.7$$



$$\Rightarrow V_o = -0.7V$$

$$\left. \begin{aligned} & -0.7 - V_o = 0 \\ & \Rightarrow V_o = -0.7 \end{aligned} \right.$$



Full Wave Rectifier

