
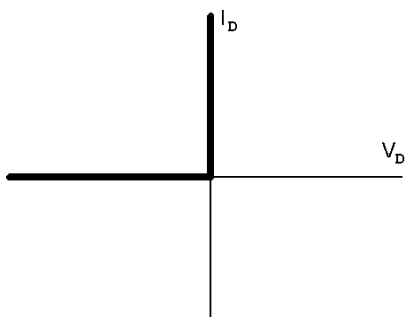
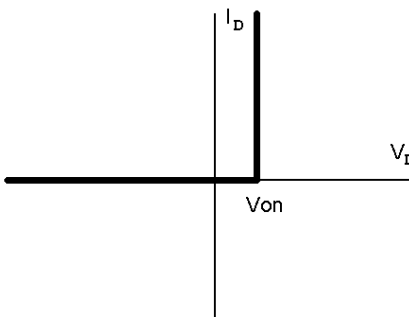
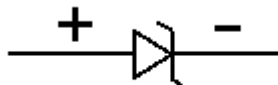
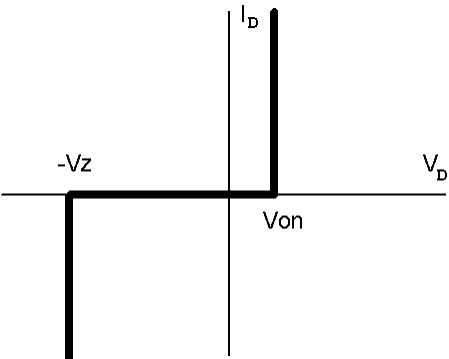
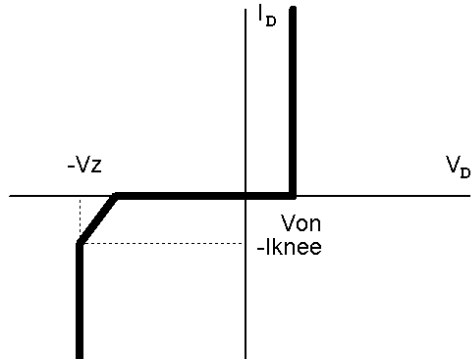
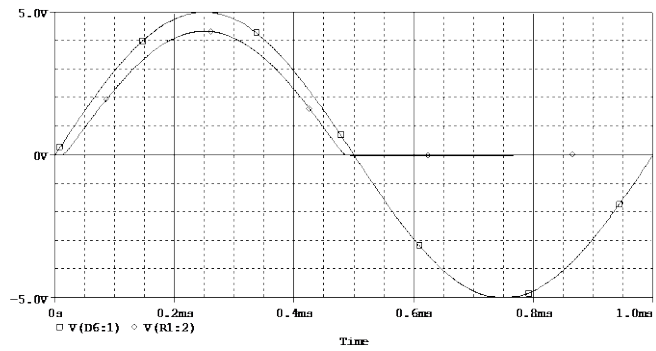
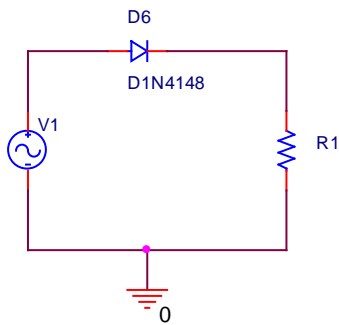


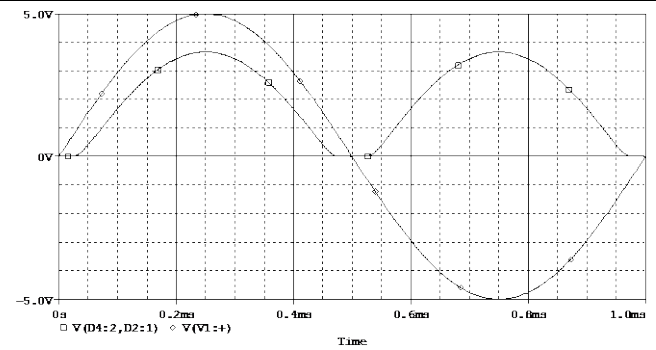
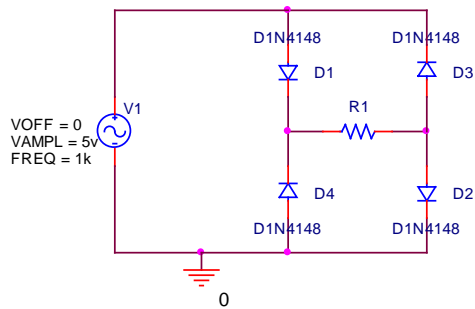
Diodes	
$I_D = I_S \left(e^{\frac{V_D}{nV_T}} - 1 \right)$ I_S : Saturation current, $V_T = 25.9mV$, $n \approx 1 - 2$	
4148 silicon diode: $V_{on} = 0.7$ Volts	
<p>Ideal Diode</p> 	<p>V_{on} Model</p> 
$\begin{cases} \text{On: } & V_D = 0 & I_D > 0 \\ \text{Off: } & V_D < 0 & I_D = 0 \end{cases}$	$\begin{cases} \text{On: } & V_D = V_{on} & I_D > 0 \\ \text{Off: } & V_D < V_{on} & I_D = 0 \end{cases}$
Zener Diodes	
750 Zener diode: $V_{on} = 0.7V$ $V_z = 4.7V$ 751 Zener diode: $V_{on} = 0.7V$ $V_z = 5.3V$	
<p>Zener Diode</p> 	<p>Zener Diode, with knee current</p> 
$\begin{cases} \text{On: } & V_D = V_{on} & I_D > 0 \\ \text{Off: } & -V_z < V_D < V_{on} & I_D = 0 \\ \text{Zener: } & V_D = -V_z & I_D < 0 \end{cases}$	$\begin{cases} \text{On: } & V_D = V_{on} & I_D > 0 \\ \text{Off: } & -V_z < V_D < V_{on} & I_D = 0 \\ \text{Zener: } & V_D = -V_z & I_D < -I_{knee} \end{cases}$

Diode Circuits

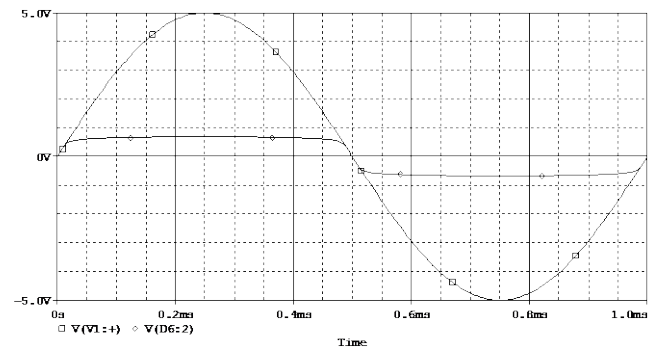
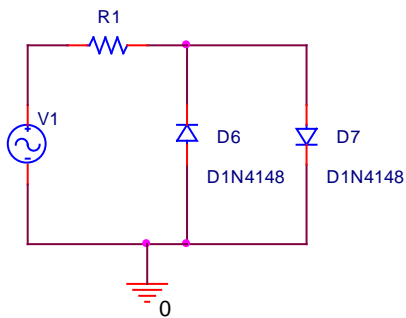
Half-Wave Rectifier



Full-Wave Rectifier



Limiter



Zener Limiter

