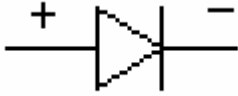
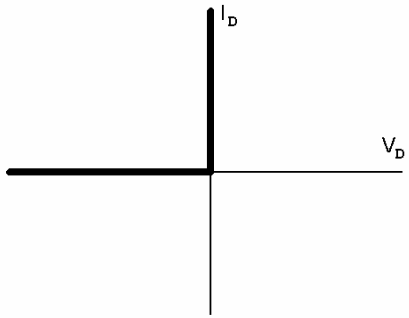
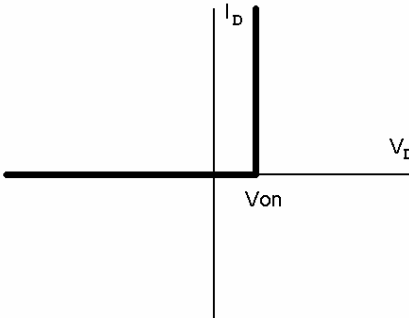
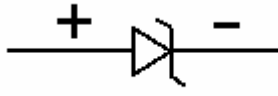
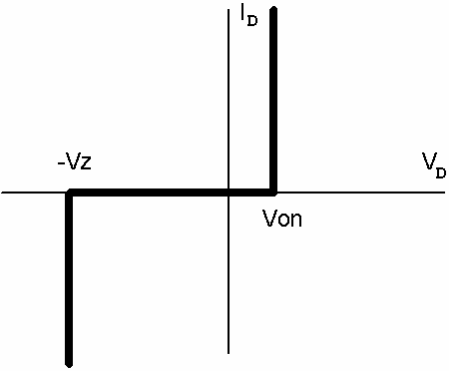
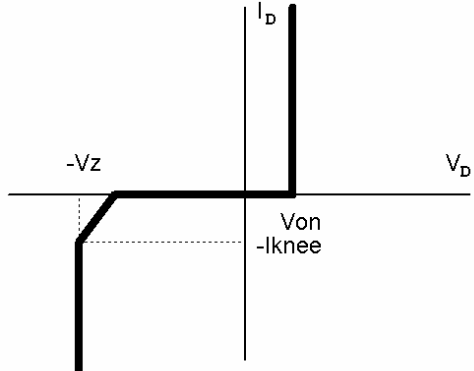
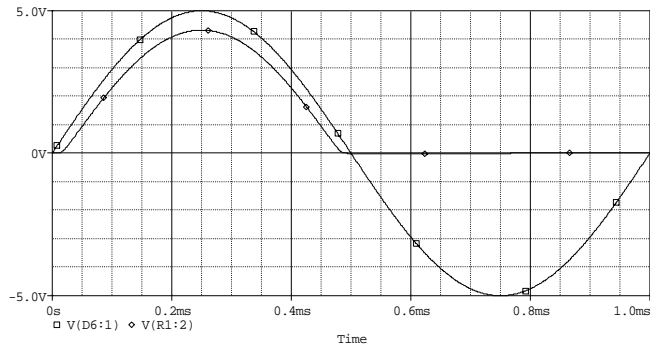
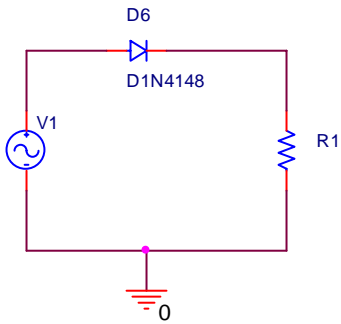


Diodes	
$I_D = I_S \left(e^{\frac{V_D}{nV_T}} - 1 \right)$ I_S : Saturation current, $V_T = 25.9mV$, $n \approx 1-2$	
4148 silicon diode: $V_{on} = 0.7$ Volts	
<p style="text-align: center;">Ideal Diode</p>  <div style="text-align: center; margin-top: 10px;"> $\begin{cases} \text{On: } & V_D = 0 & I_D > 0 \\ \text{Off: } & V_D < 0 & I_D = 0 \end{cases}$ </div>	<p style="text-align: center;">Von Model</p>  <div style="text-align: center; margin-top: 10px;"> $\begin{cases} \text{On: } & V_D = V_{on} & I_D > 0 \\ \text{Off: } & V_D < V_{on} & I_D = 0 \end{cases}$ </div>

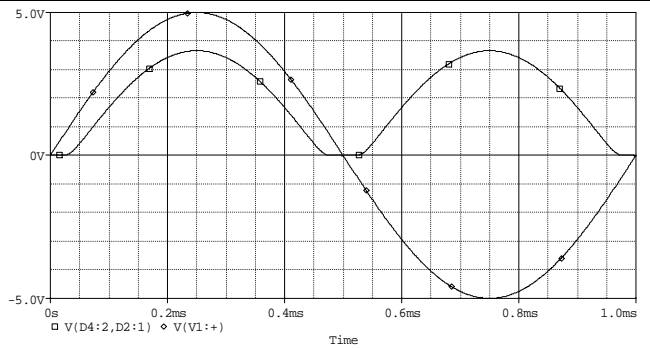
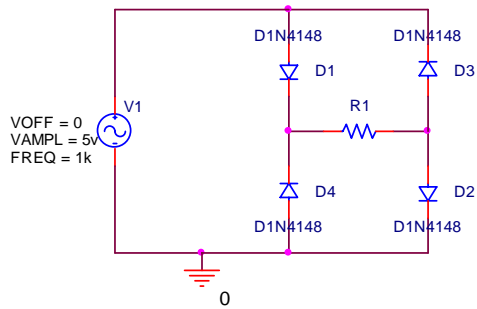
Zener Diodes	
750 Zener diode: $V_{on} = 0.7V$ $V_Z = 4.7V$	
<p style="text-align: center;">Zener Diode</p>  <div style="text-align: center; margin-top: 10px;"> $\begin{cases} \text{On: } & V_D = V_{on} & I_D > 0 \\ \text{Off: } & -V_z < V_D < V_{on} & I_D = 0 \\ \text{Zener: } & V_D = -V_z & I_D < 0 \end{cases}$ </div>	<p style="text-align: center;">Zener Diode, with knee current</p>  <div style="text-align: center; margin-top: 10px;"> $\begin{cases} \text{On: } & V_D = V_{on} & I_D > 0 \\ \text{Off: } & -V_z < V_D < V_{on} & I_D = 0 \\ \text{Zener: } & V_D = -V_z & I_D < -I_{knee} \end{cases}$ </div>

Diode Circuits

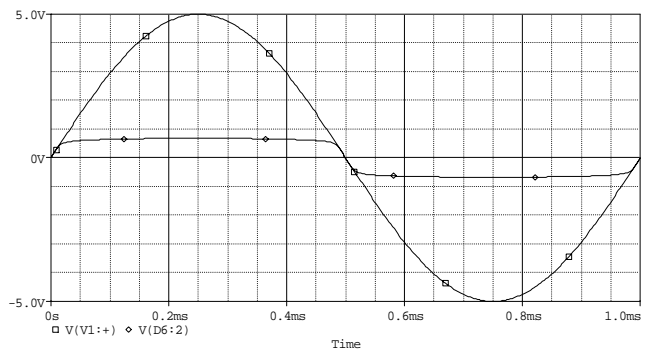
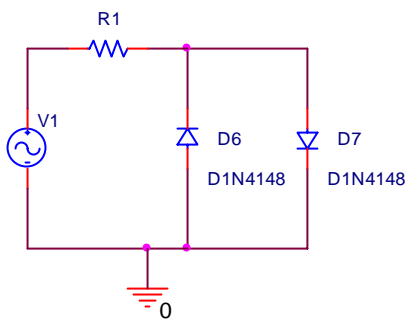
Half-Wave Rectifier



Full-Wave Rectifier



Limiter



Zener Limiter

