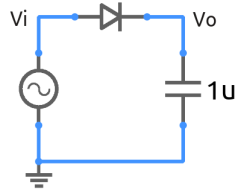


ee101_diode_circuit_5.sqproj



In the circuit shown in the figure, the diode allows charging of the capacitor, but blocks discharging. In the beginning, suppose the capacitor is uncharged. As the source voltage rises, the capacitor gets charged. The time constant for this process is negligibly small owing to the very small resistance of the diode while conducting. As a result, the charging process may be considered instantaneous, with the capacitor voltage simply following the source voltage.

When the source voltage has reached its peak and is now decreasing, the capacitor cannot discharge, it holds its charge, and therefore the output voltage remains constant (equal to the peak of the source voltage).

Exercise Set

1. Simulate the circuit using $V_{on} = 0\text{ V}$ for the diode, and plot V_o and V_i together.
2. What would you expect if $V_{on} = 0.7\text{ V}$ for the diode? Verify with simulation.