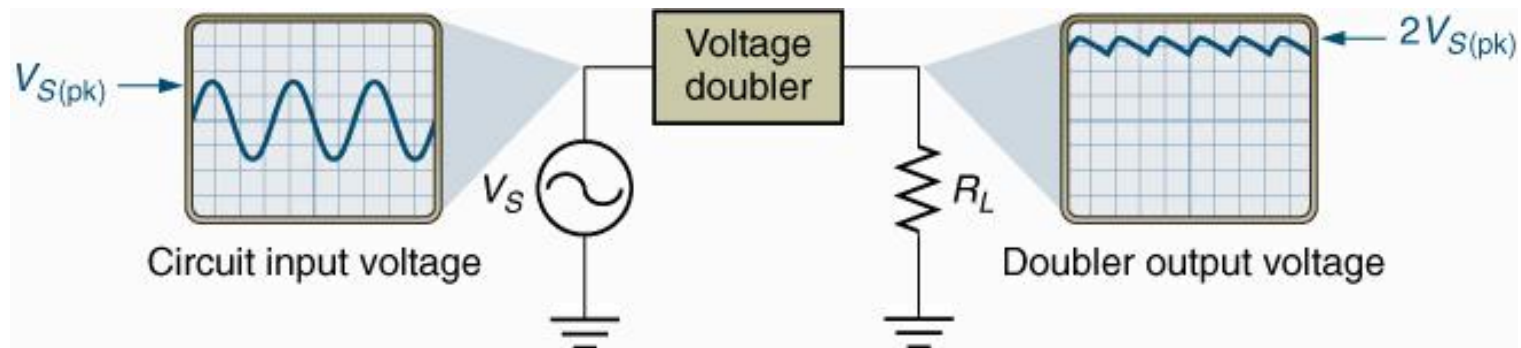


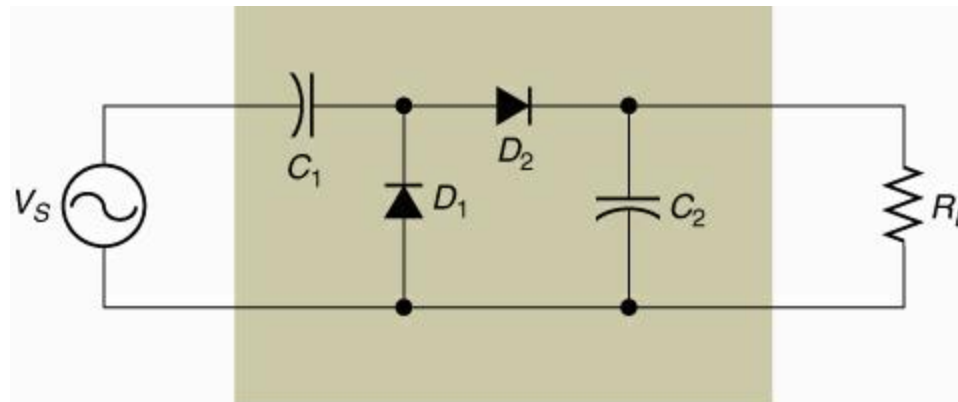
# Voltage Doublers

- A voltage doubler provides an output that is twice its peak input voltage.



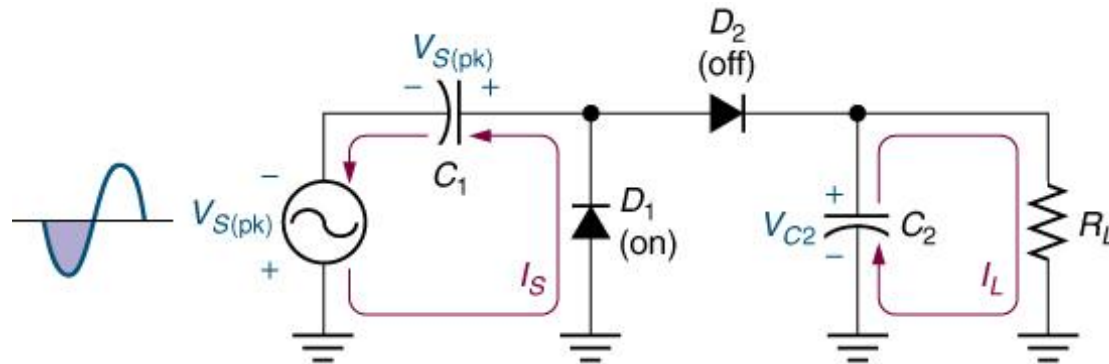
# Half-Wave Voltage Doubler

- The term “half-wave” reflects the fact that the output capacitor ( $C_2$ ) is charged during one alternation of each input cycle and discharges during the other.

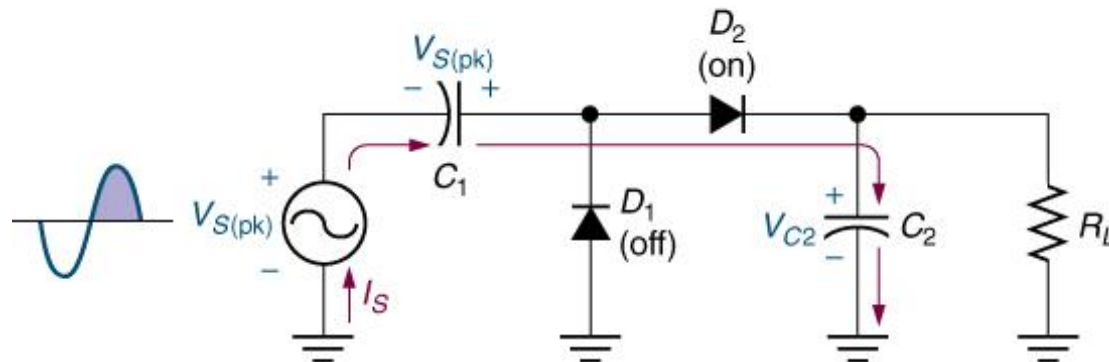


Half-wave voltage doubler

# Half-Wave Voltage Doubler Operation



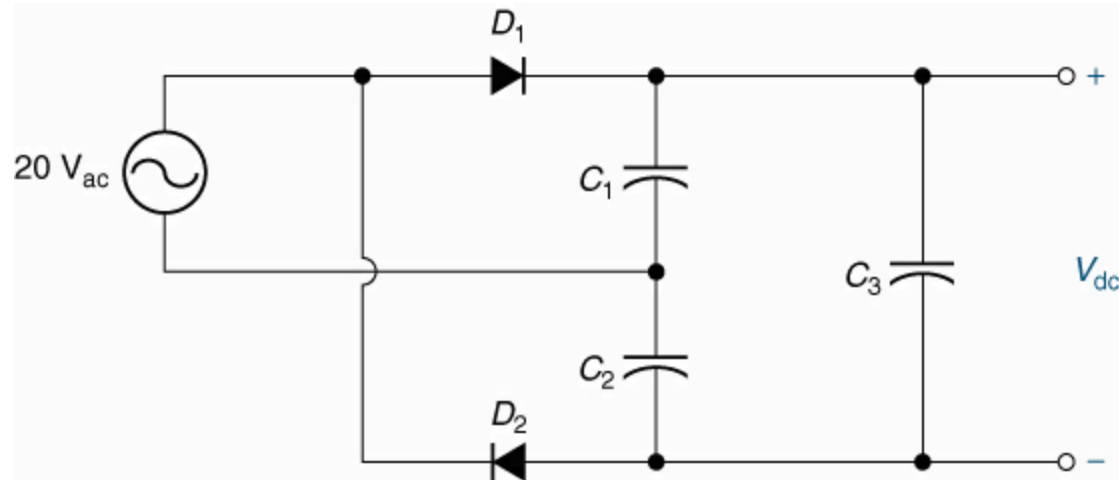
(a)  $C_1$  charges and  $C_2$  discharges during the negative alternation of the input.



(b) The source and  $C_1$  charge  $C_2$  during the positive alternation of the input.

# Full-Wave Voltage Doublers

- The term “full-wave” reflects the fact that the output capacitors are charged during alternate half-cycles of the input signal.



# Voltage Tripler

- A voltage tripler provides a dc output voltage that is approximately three times the peak input voltage.

