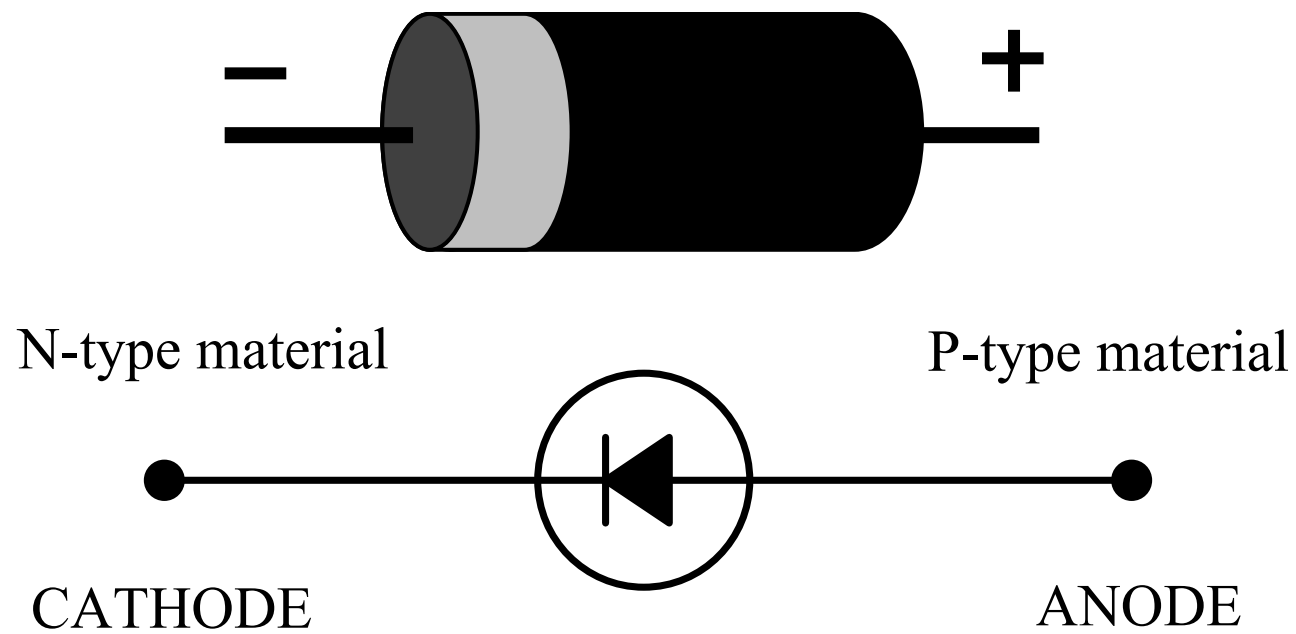
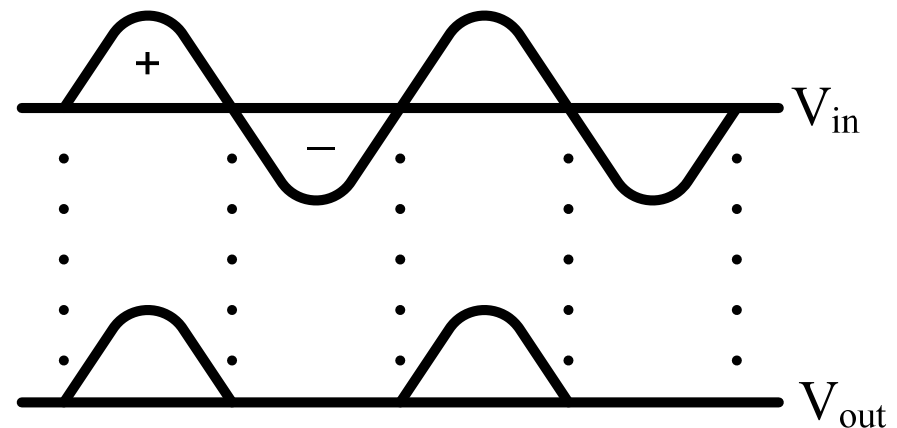
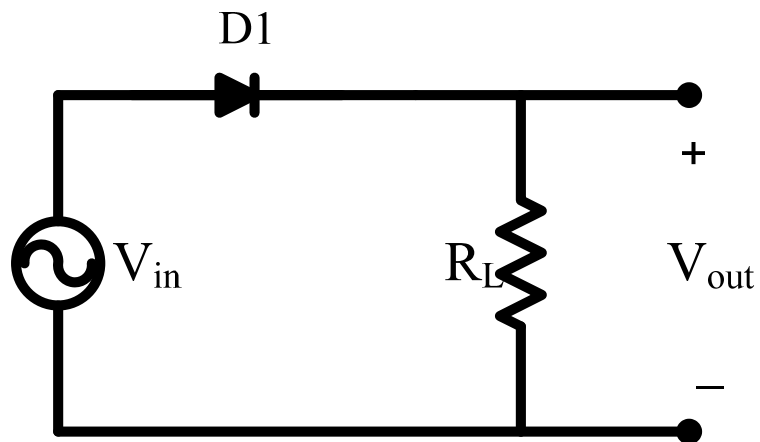


Diode

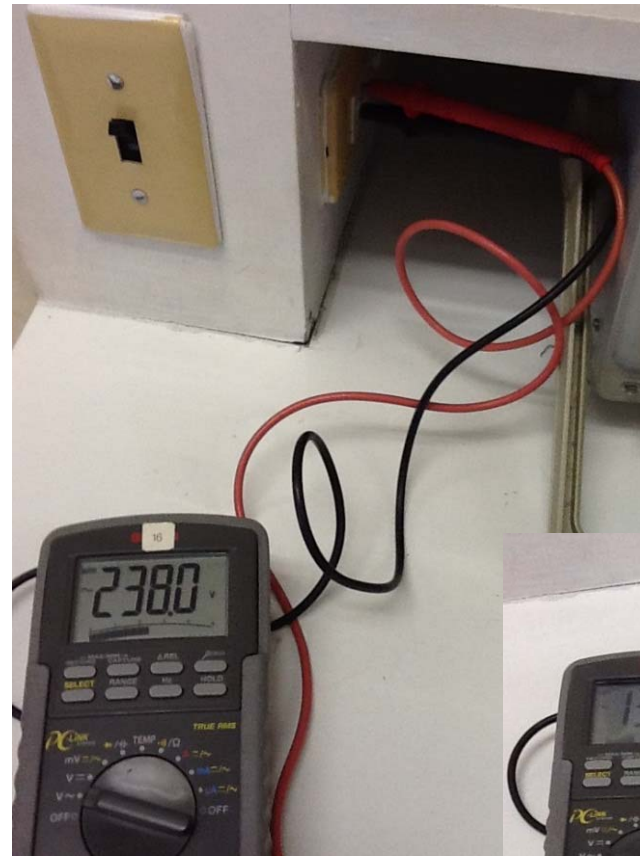


Unidirectional current characteristics

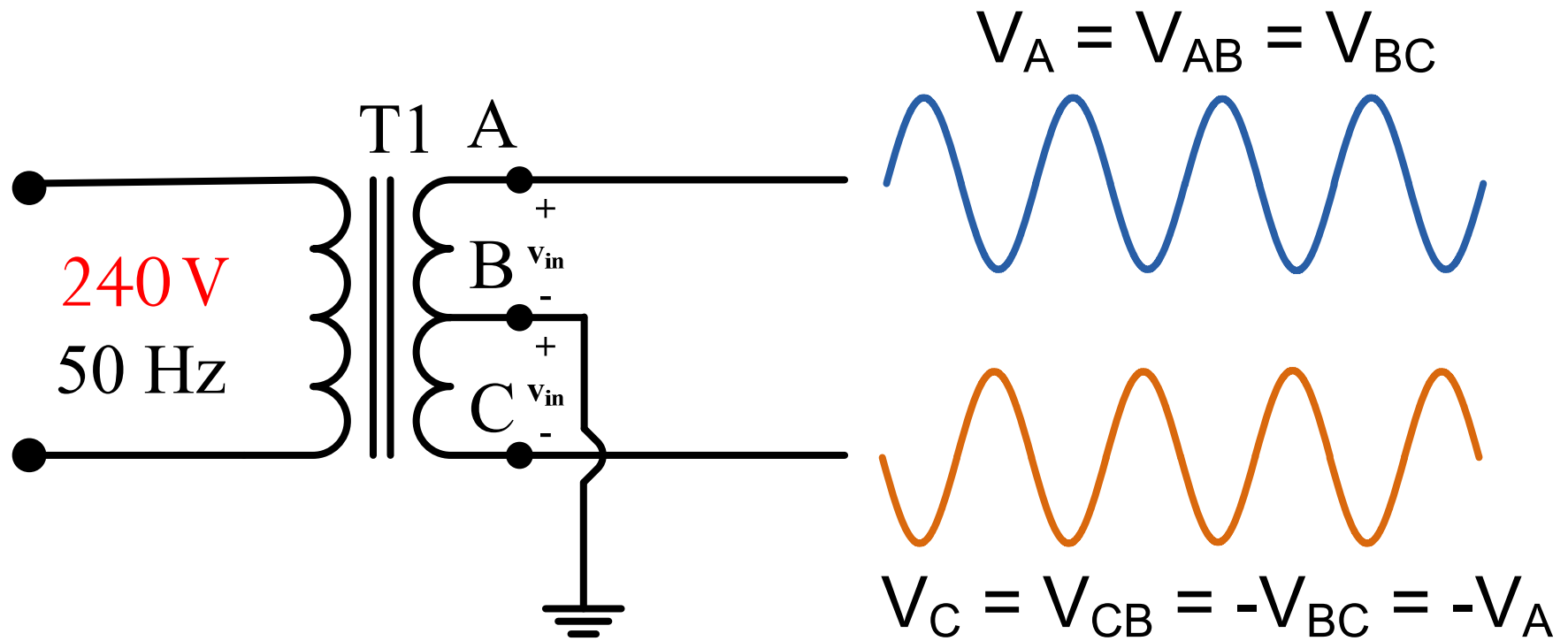
- Permit current to flow through in one direction (when **forward-biased**), but not the other (**reverse-biased**).



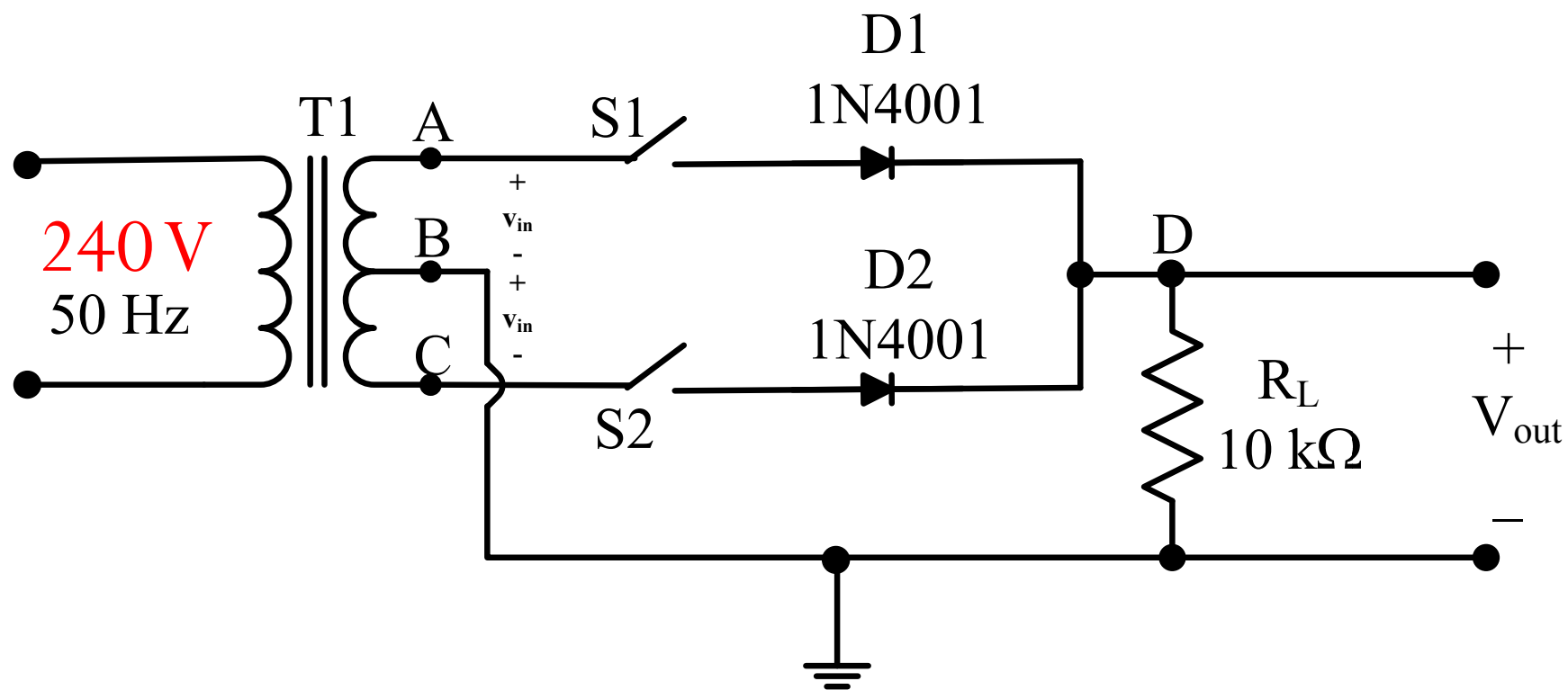
Transformer



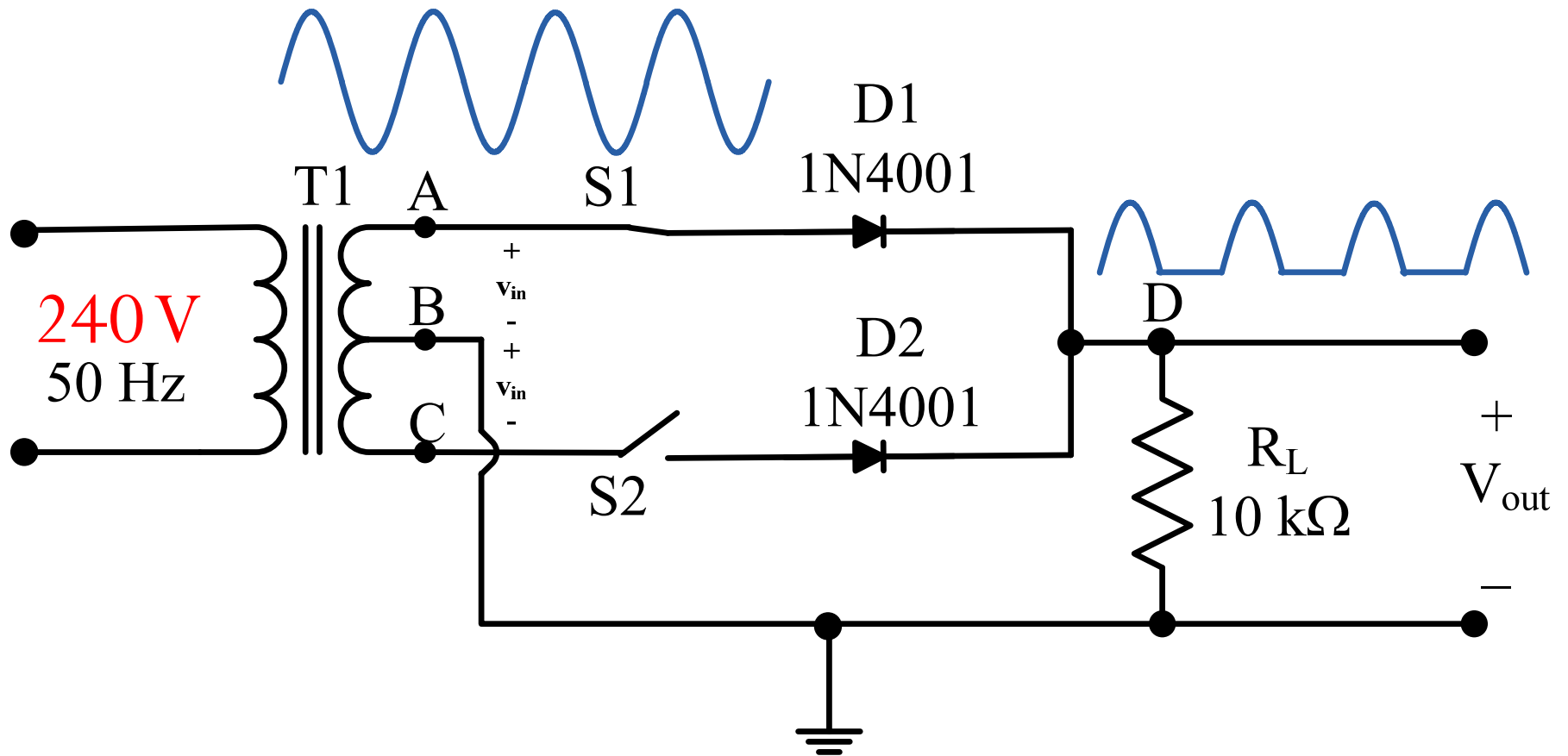
Transformer



Part A

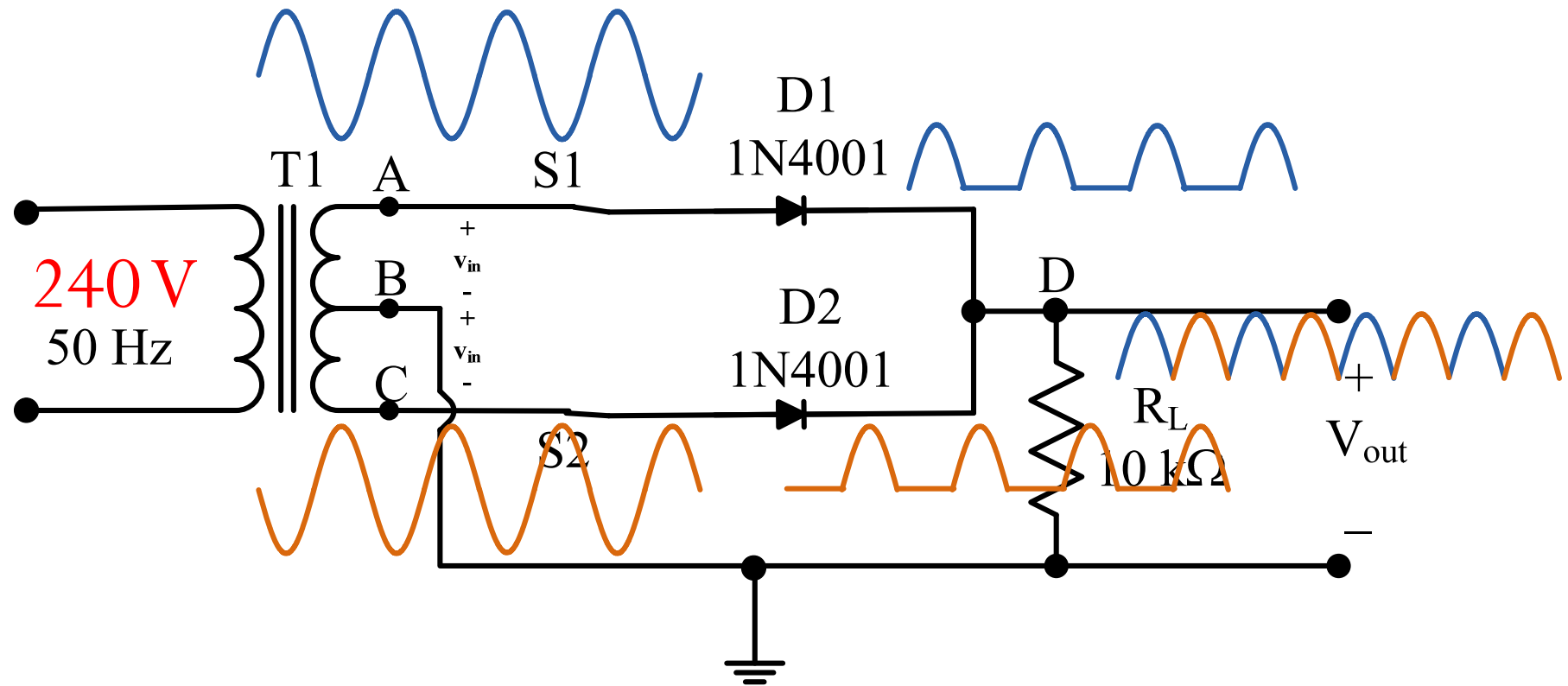


Part A: Half-Wave Rectifier (HWR)

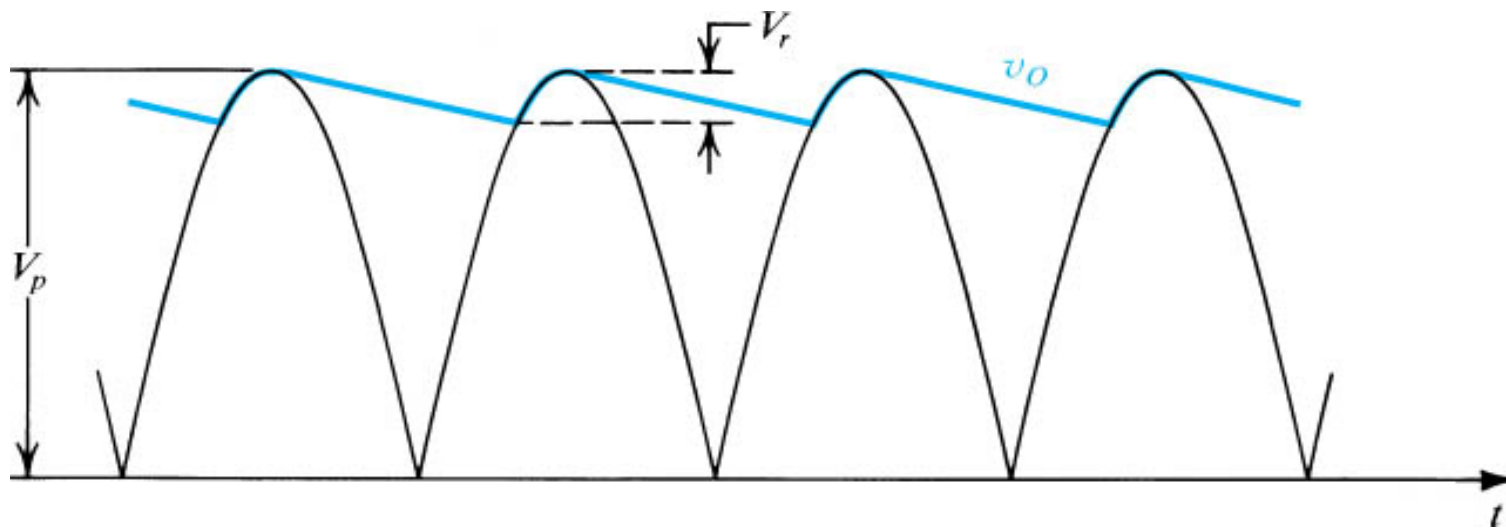
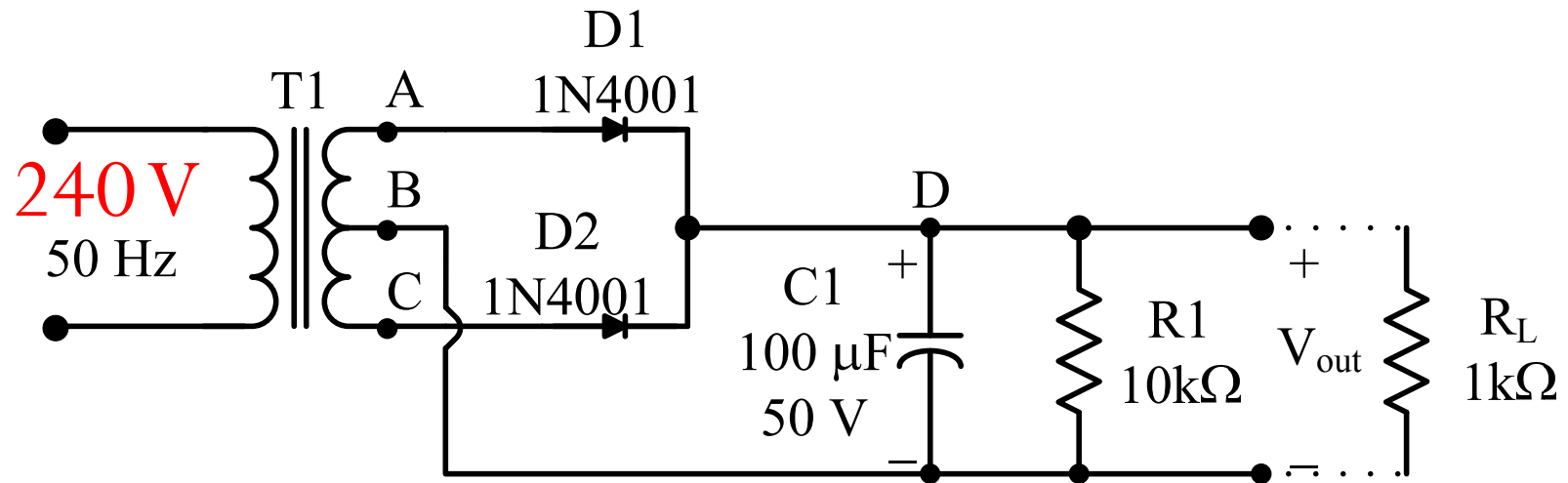


- A **rectifier** is an electrical device that converts alternating current (AC) to direct current (DC).

Part A: Full-Wave Rectifier (FWR)

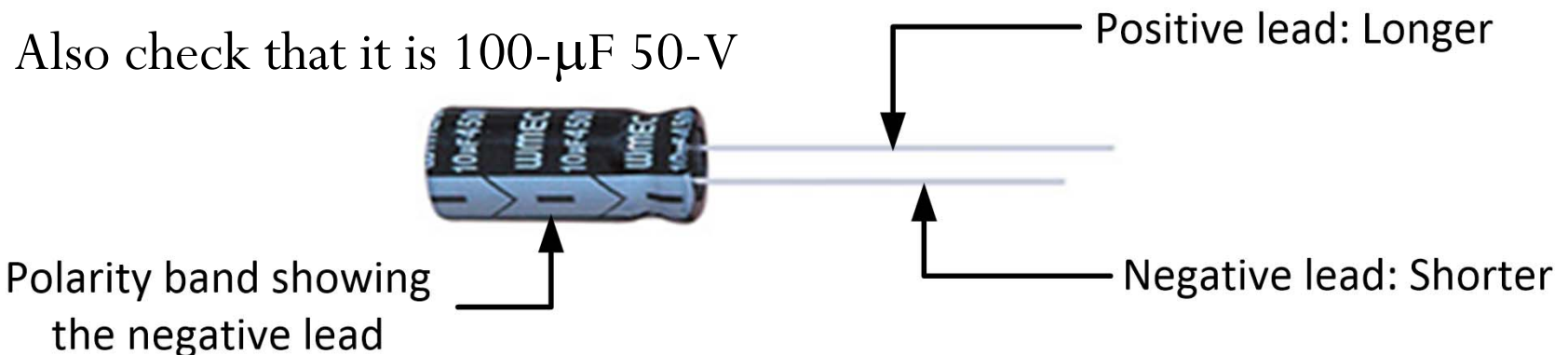


Part B: Filter Capacitor



Electrolytic Capacitor

- The polarity is almost always indicated by a printed band.
 - The lead nearest to that band is the cathode lead (-).
- Additionally, the positive lead is usually longer.
- Hook them up the wrong way and at best, you'll block the signal passing through. At worst (for higher voltage applications) they'll explode.

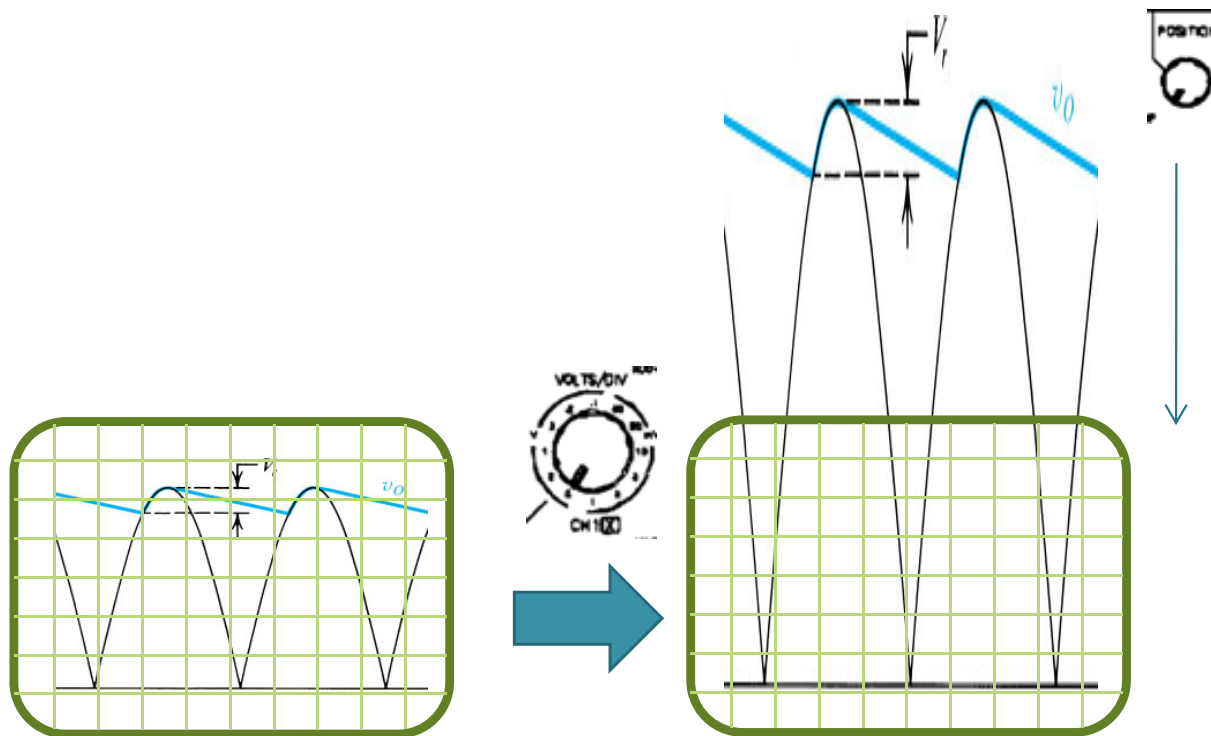


Oscilloscope: DC vs. AC

- Input signal: $v(t)$
- DC mode: Show $v_{DC}(t) = v(t)$
- AC mode: Show $v_{AC}(t) = v(t) - V_{DC}$
 - $v_{AC}(t)$ always have 0 average (theoretically)
- $v_{AC}(t) = v_{DC}(t)$ when $V_{DC} = 0$.



In DC mode...



Not enough to
move the
interesting part
of the waveform
into the screen

Part C: Bridge rectifier

