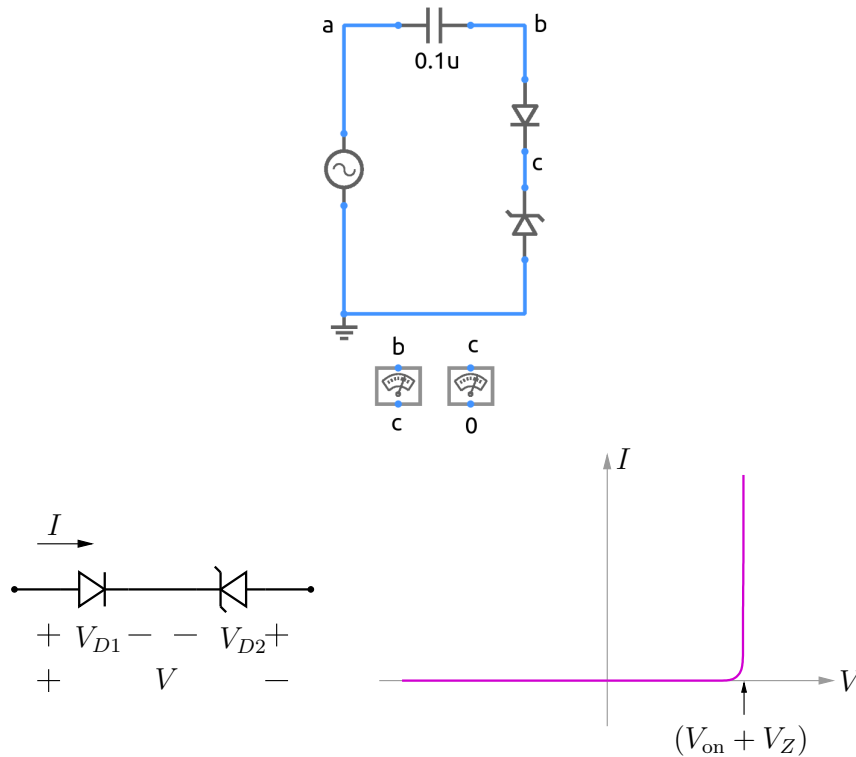


# ee101\_diode\_circuit\_11.sqproj



The circuit shown in the figure is a level shifter. In order to understand its operation, let us take a look at the  $I$ - $V$  relationship of the series connection of the two diodes. Assuming that the breakdown voltage of D1 is large, conduction is not possible in the reverse direction (i.e., for  $I < 0$ ). In the forward direction, conduction is possible if D1 is in the forward conduction mode, and D2 is in the reverse conduction (zener breakdown) mode, as shown in the figure. (Note that  $V_Z$  is taken as a positive voltage here.)

## Exercise Set

1. If the capacitor is initially uncharged, plot  $V_C = V_{ab}$  versus time for the first two cycles.
2. Using  $V_o = V_s - V_{ab}$ , plot  $V_o$  versus time.
3. Compare your plots with the simulation results.
4. How will  $V_o(t)$  change if the diodes are reversed? Verify with simulation.