Lab extra assignment

Zener Diode and BJT Transistor

A- Clipper

- A circuit that removes the peak of a waveform is known as a *clipper*. During the positive half cycle of the 5 V peak input, the diode is reversed-biased. The diode does not conduct.
- do transient analysis and choose the input and output.
- Record the output form and mention your own comments
- Run the simulation figures below.

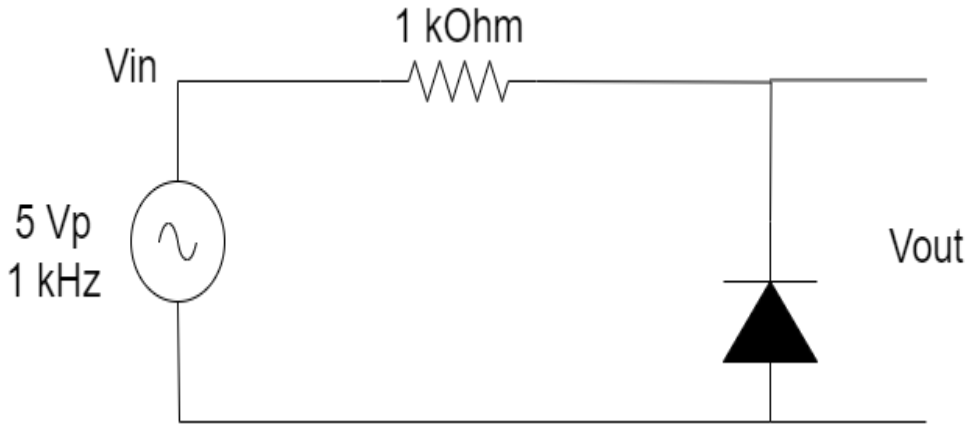


Figure 1

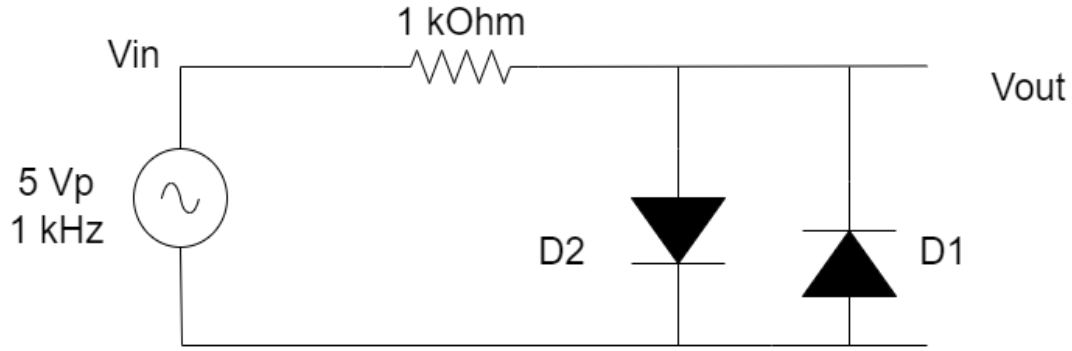


Figure 2

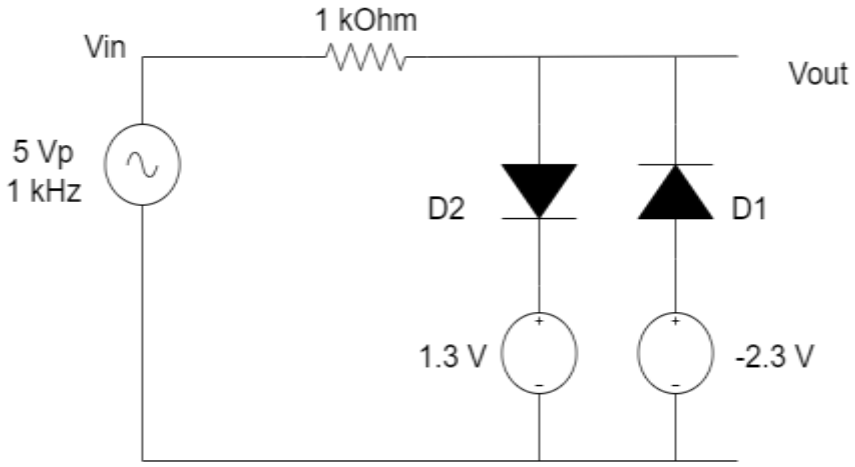
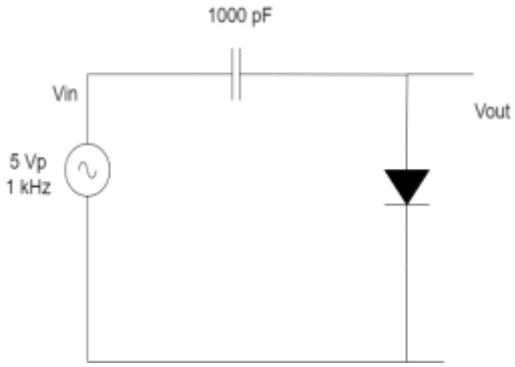


Figure 3

B- Clamper

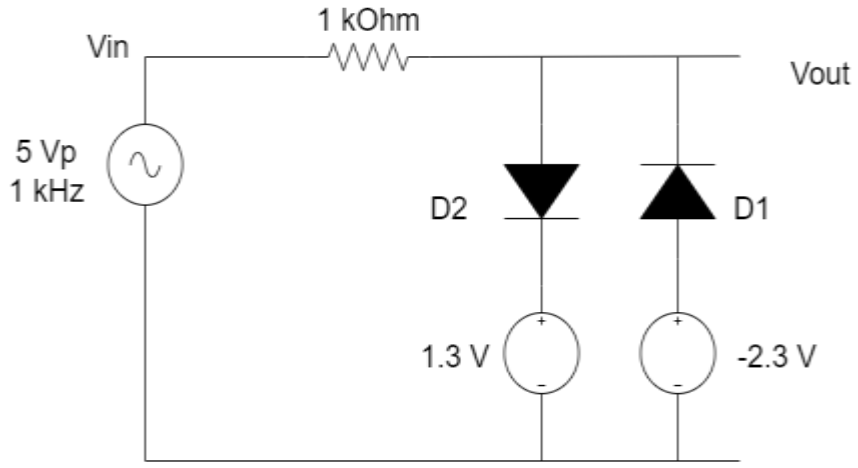
These circuits clamp a peak of a waveform to a specific DC level compared with a capacitively coupled signal which swings about its average DC level (usually 0V). If the diode is removed from the clamper, it defaults to a simple coupling capacitor– no clamping.

- do transient analysis and choose the input and output.
- Record the output form and mention your own comments
- Run the simulation figure below.



-In the clipping circuit below, you are required to shift the output by constant DC voltage equals:

- 5 volts.
- 10 volts.



Requirements:

- Draw the schematic.
- Explain the theory behind the upward shifting.
  Adding clamper to the circuit to do the shifting (you are required to put variable value for VDC)
- Plot the input signal, clipper output, and the final output (shifted signal).
  Hint: You are required to do parametric analysis to get upward shifting for the final output with different DC voltages.
- You are required to mention the different values of the added VDC corresponding to required vertical shifts.