

Shunt Clipper Circuit

Electronic devices are very sensitive to voltage. If a large amplitude voltage is applied, it may permanently destroy the device. So, it is essential to protect the electronics devices. The protection of the electronic devices can be achieved by using the clipper circuits. A clipper is a device that removes either the positive half (top half) or negative half (bottom half), or both positive and negative halves of the input AC signal. In other words, a clipper is a device that limits the positive amplitude or negative amplitude or both positive and negative amplitudes of the input AC signal. In some cases, a clipper removes a small portion of the positive half cycle or negative half cycle or both positive and negative half cycles.

Shunt negative clipper

In shunt negative clipper, during the positive half cycle the diode is reverse biased and hence the entire positive half cycle appears at the output. On the other hand, during the negative half cycle the diode is forward biased and hence no output signal is generated.

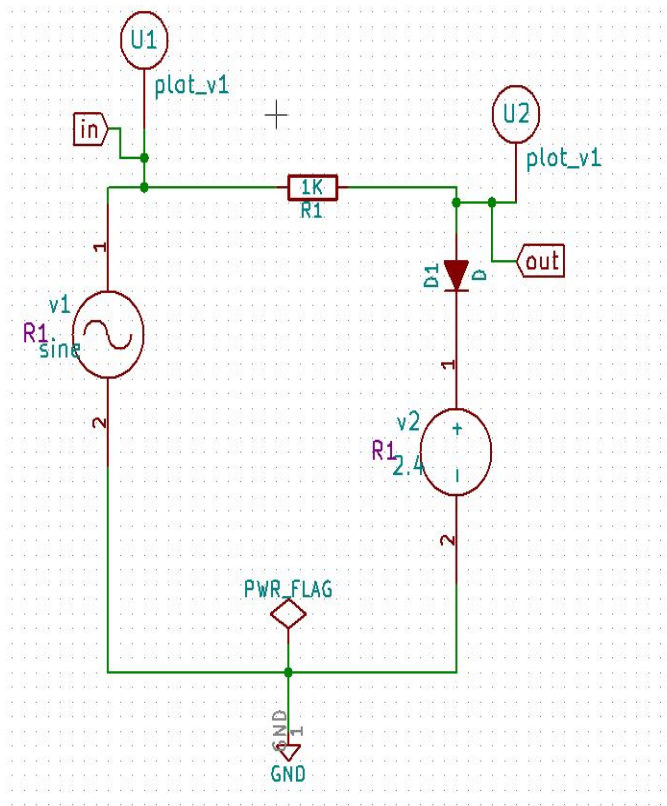


Fig1: Clipper circuit

2. Simulation Result

Ngspice plot

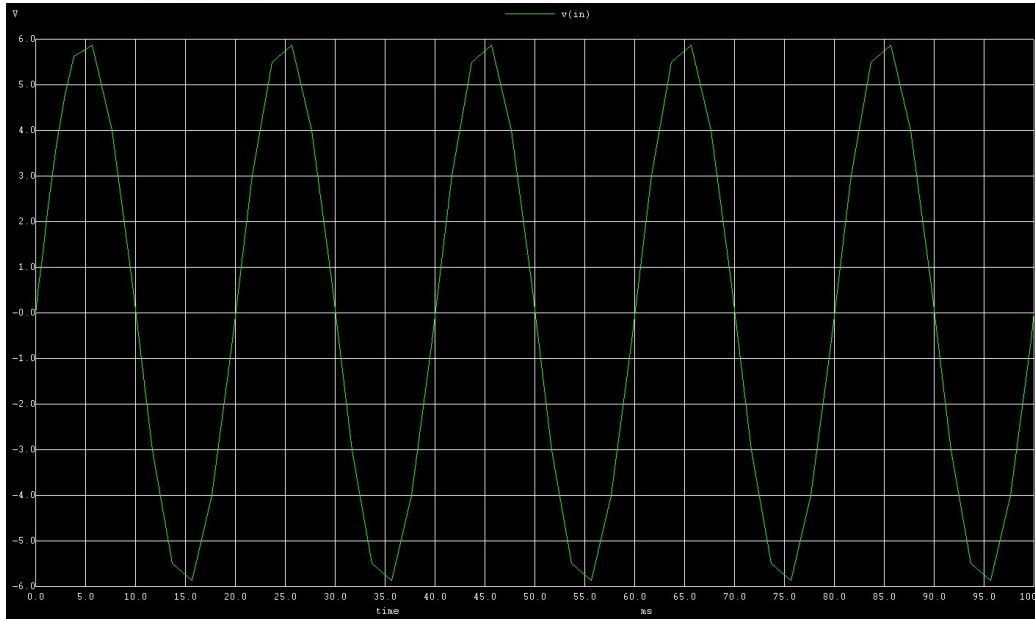


Fig2: Input

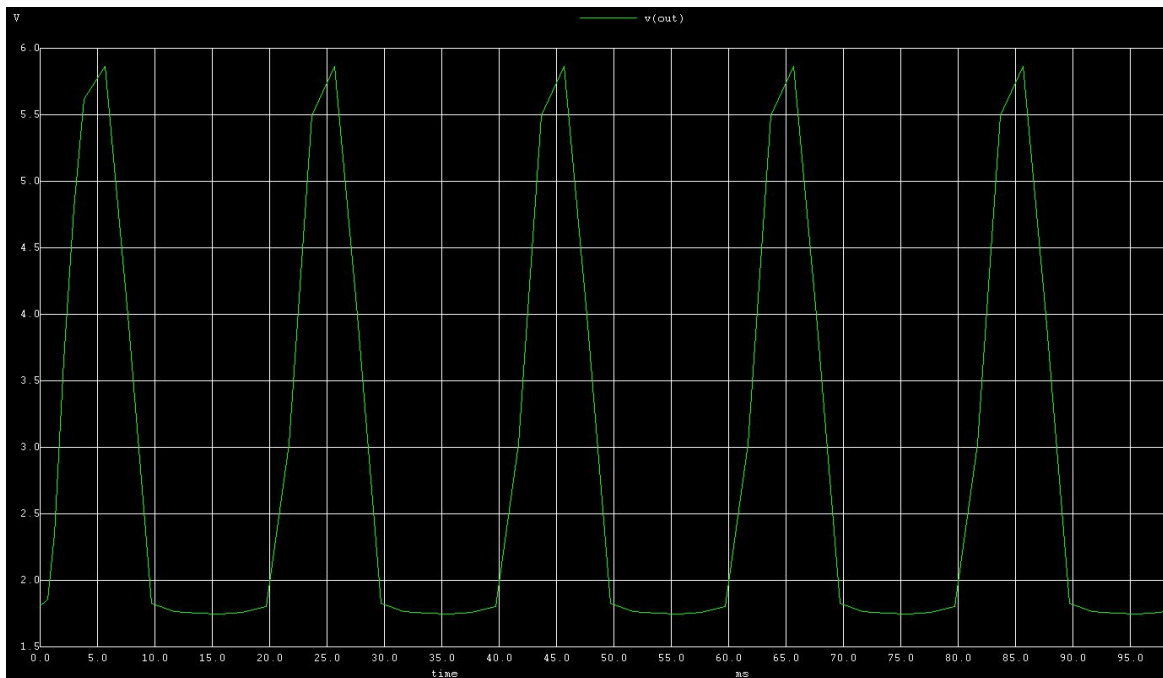


Fig3: Output

Python plot

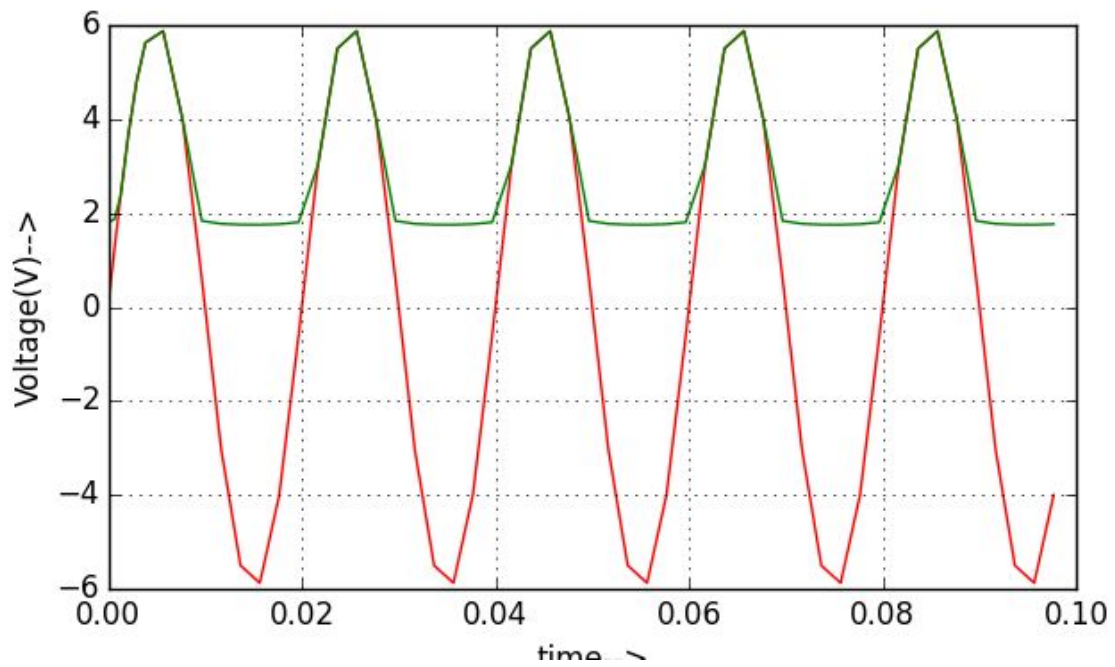


Fig1: Python plot

References

1. <http://www.physics-and-radio-electronics.com/electronic-devices-and-circuits/rectifier/clippers/circuit-seriesclippersandshuntclippers.html> on 20/12/2017
2. <http://www.daenotes.com/electronics/digital-electronics/clipper-circuits>