

Zero Crossing Detector using Im_741 Circuit Simulation

done by:

Dave Andrew. A, Student

Guided by:

Ms. S. Shiny, Assistant Professor

Department of EEE

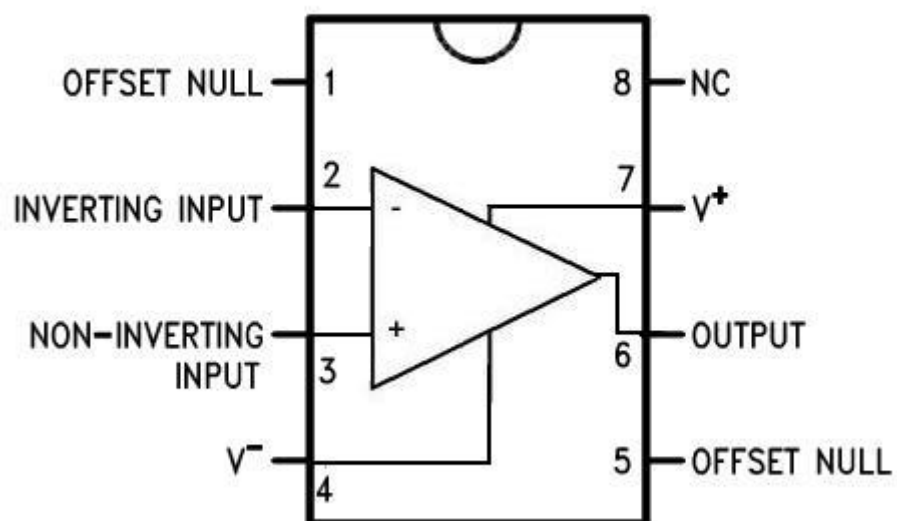
St. Xavier's Catholic College of Engineering

Theory:

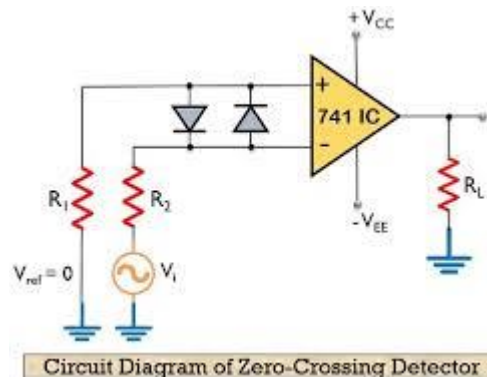
Zero Crossing Detector is a comparator which switches from OFF to ON when input crosses zero reference voltage. An inverting comparator used as zero crossing detector is shown in the graph, that is driven into negative saturation when the input signal passes through zero in positive direction. Conversely, when input signal passes through zero in the negative direction, the output switches and saturates positively. This circuit can be used as an easy technique to check whether the op-amp is in good condition.

Pin Diagram:

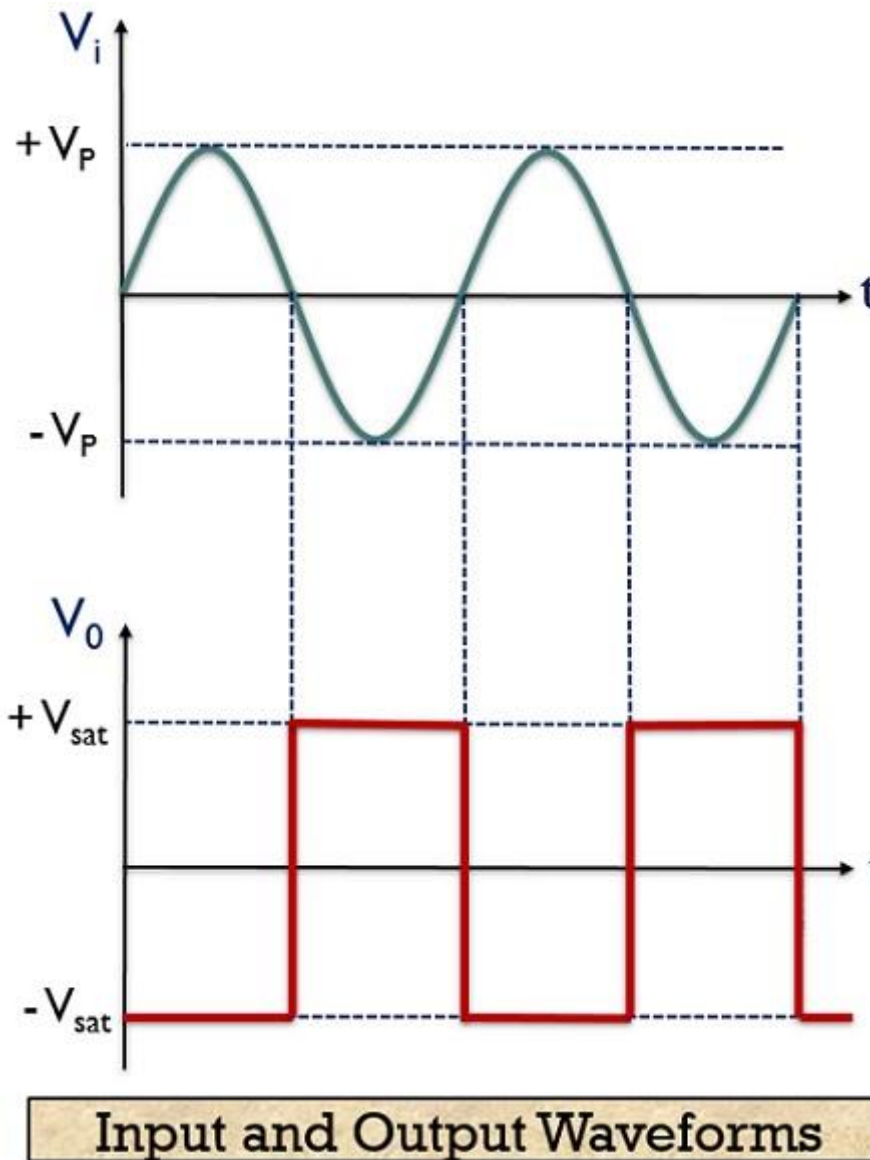
LM741 Pinout Diagram



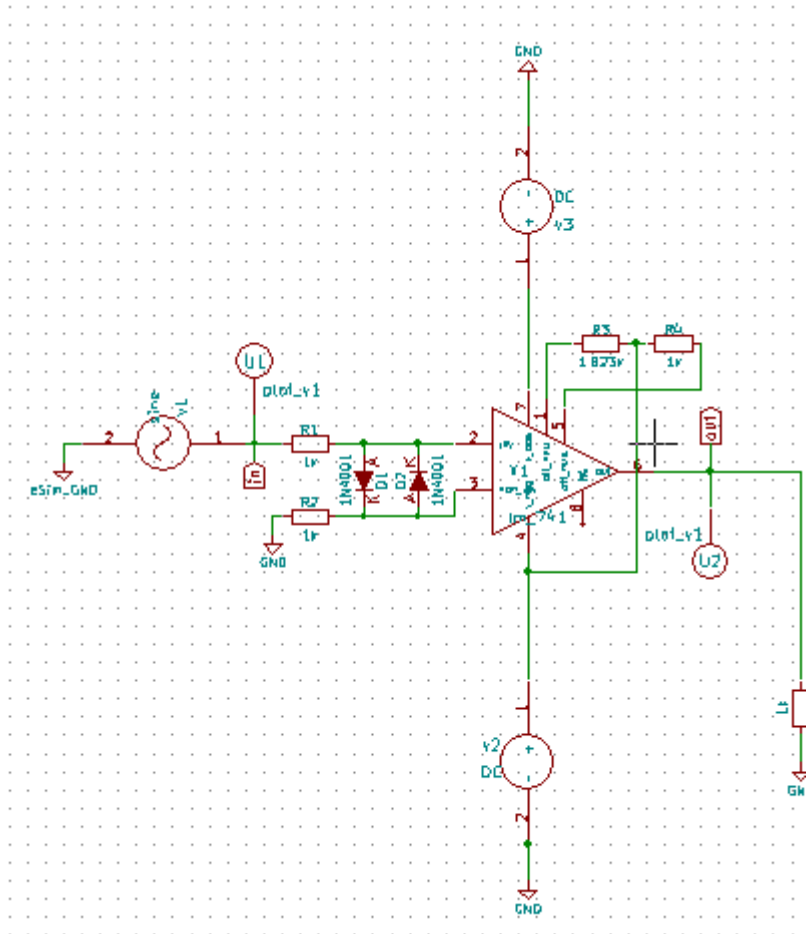
Circuit Diagram:



Wave Forms:

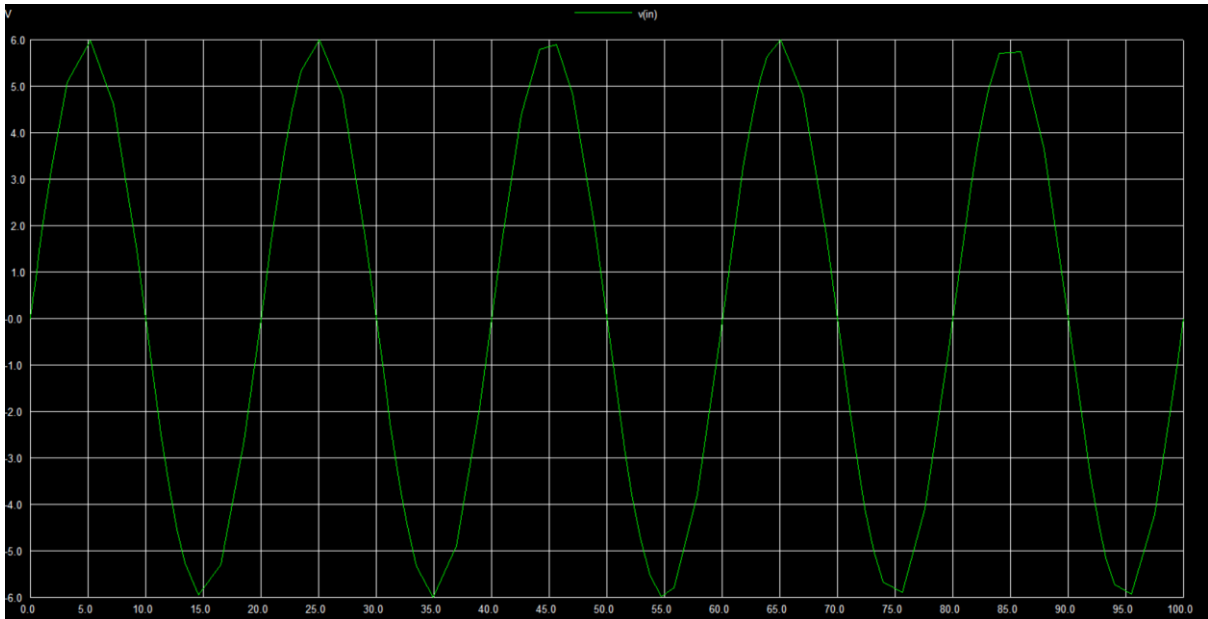


Schematic Diagram:

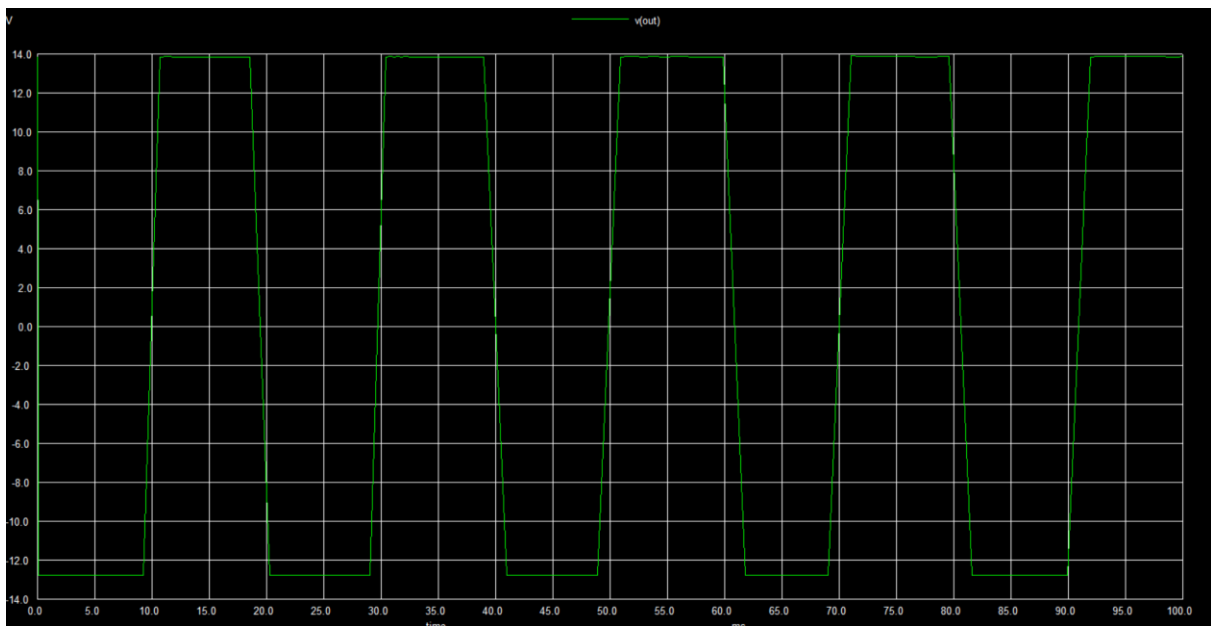


Schematic diagram of Zero Crossing Detector

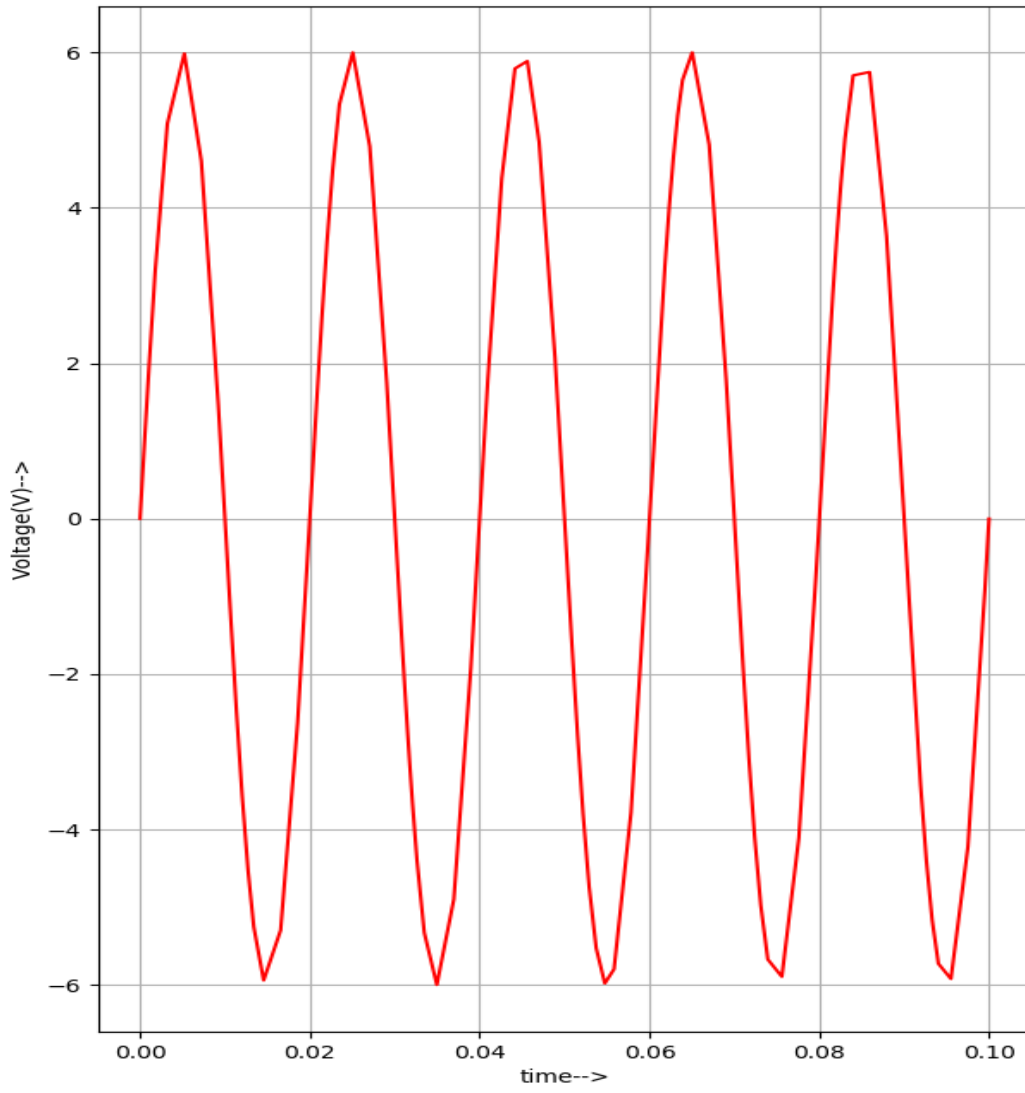
Simulation:



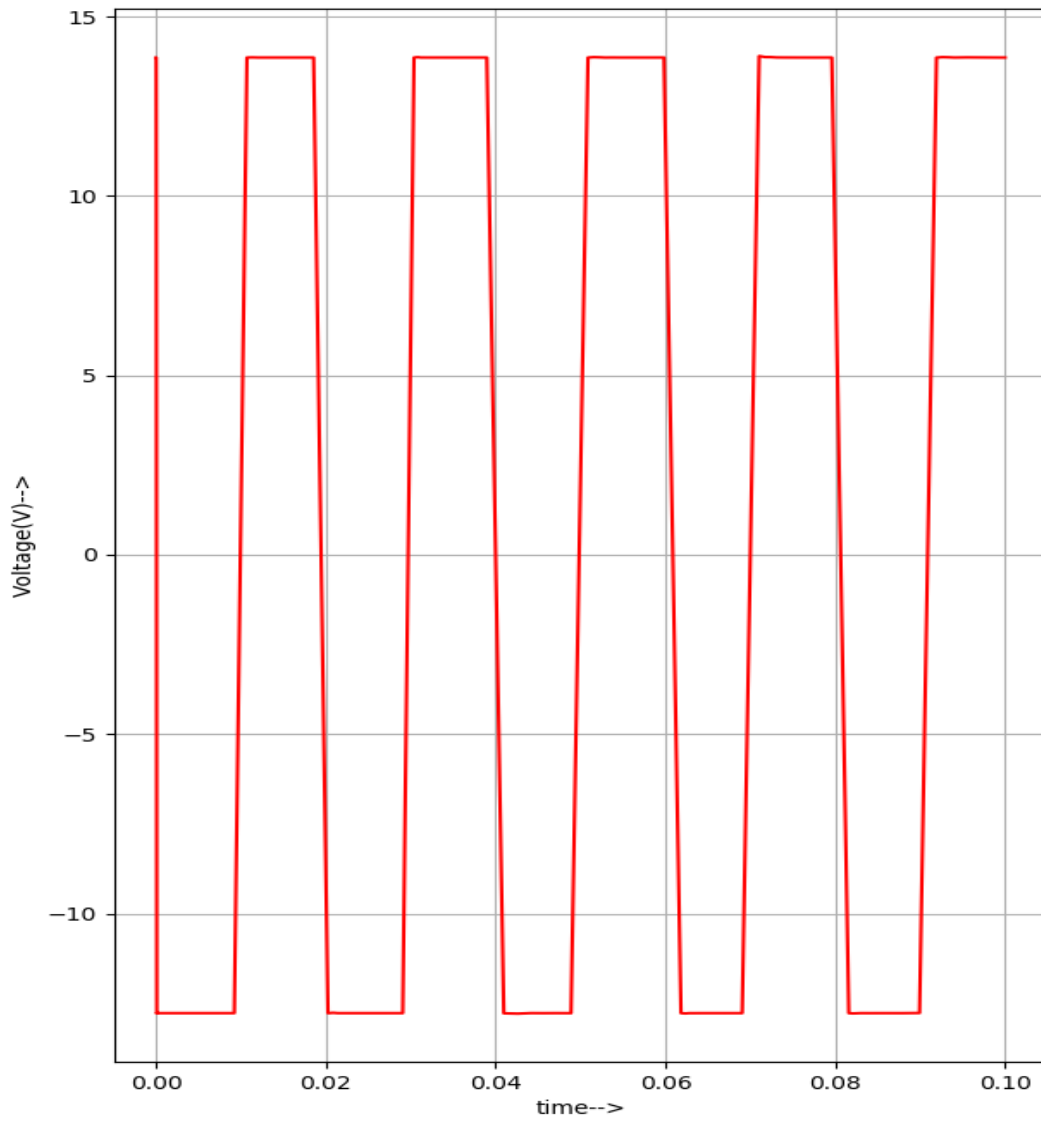
Ngspice Plot of input Wave



Ngspice Plot of output Wave



Python Plot of Input Wave



Python Plot for Output Wave

Reference:

<https://electronicscoach.com/zero-crossing-detector.html>