Inverting Schmitt Trigger using 555 timer

Circuit Simulation done by:

Divya.R, Student

Guided by:

Ms. W.Vinil Dani, Assistant Professor

Department of EEE

St.Xavier's Catholic College of Engineering, Nagercoil

Theory:

The normal operation of the 555 timer as a Schmitt trigger is inverting in nature.Here the two internal comparators are tied together and externally biased at Vcc/2 through R1 and R2. When the trigger input, which is same as the external input, falls below the threshold value of 1/3 VCC, the output of the lower comparator goes high and the flip-flop is SET and the output at pin 3 goes high.

Similarly, when the threshold input, which is same as the external input, rises above the threshold value of 2/3 VCC, the output of the upper comparator goes high and the flip-flop is RESET and the output at pin 3 goes low.

Pin Diagram:

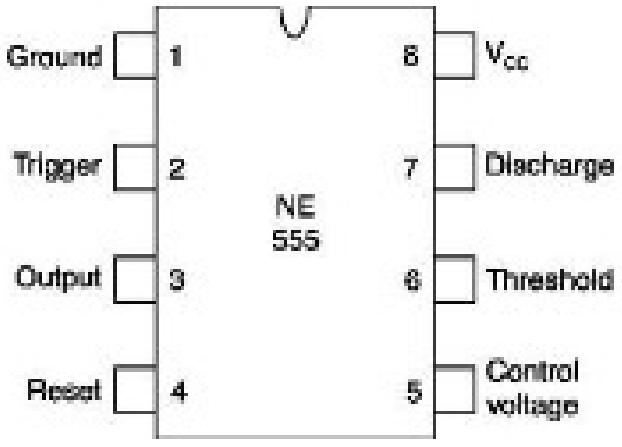

Fig1: Pin Diagram

Circuit Diagram:

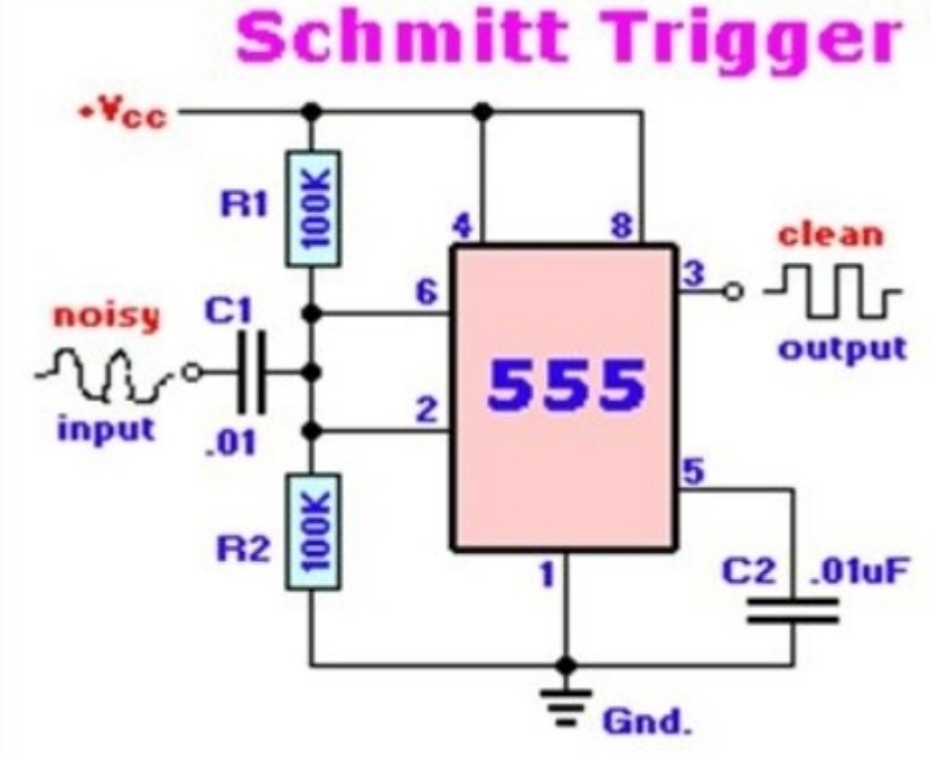

Fig2:Circuit Diagram

Model Graph:

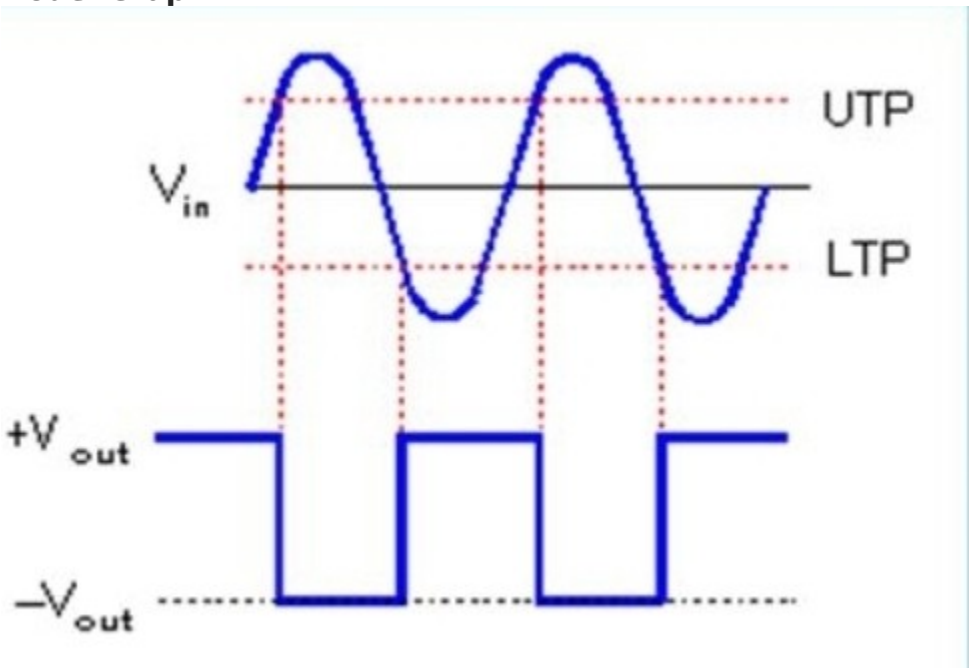

Fig3: Input and Output waveform

Schematic Diagram:

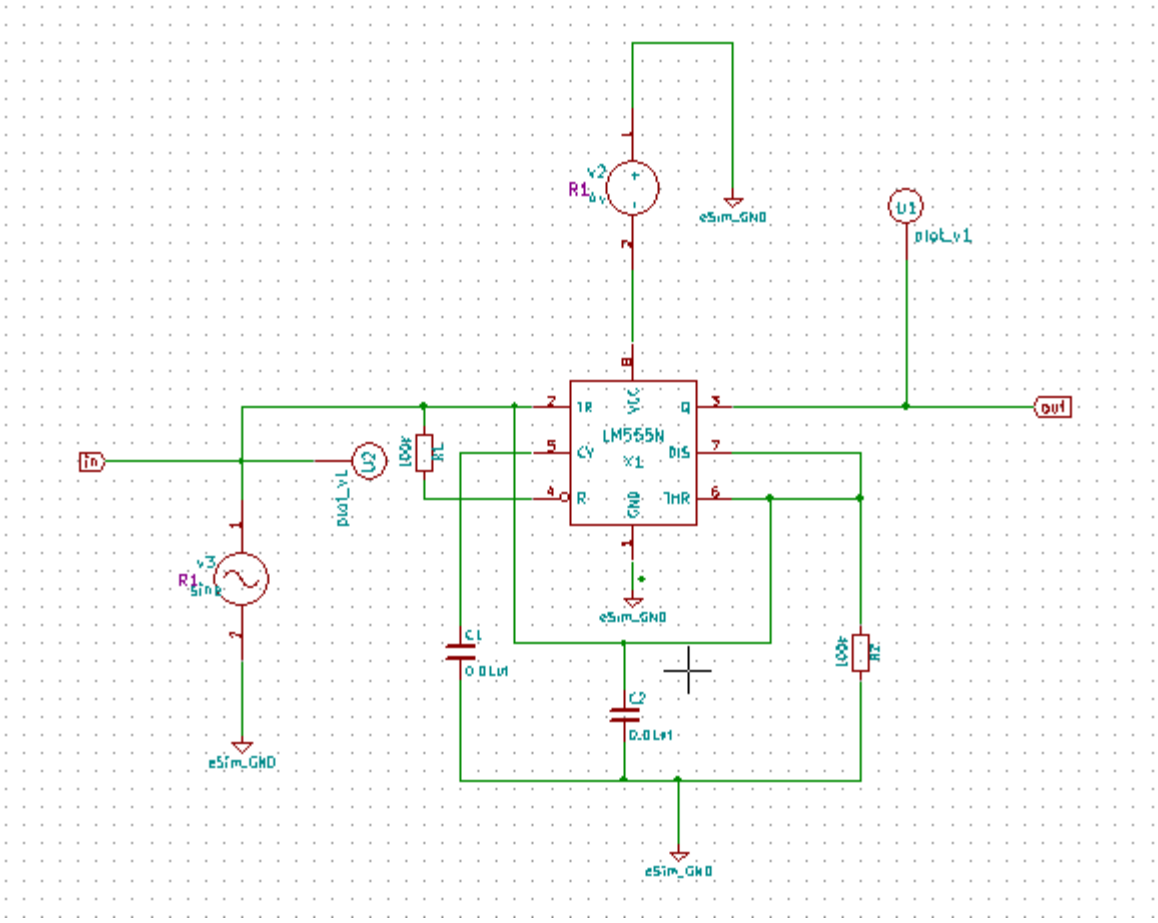

Fig4: Schematic diagram of inverting Schmitt trigger using 555 timer

Simulation:

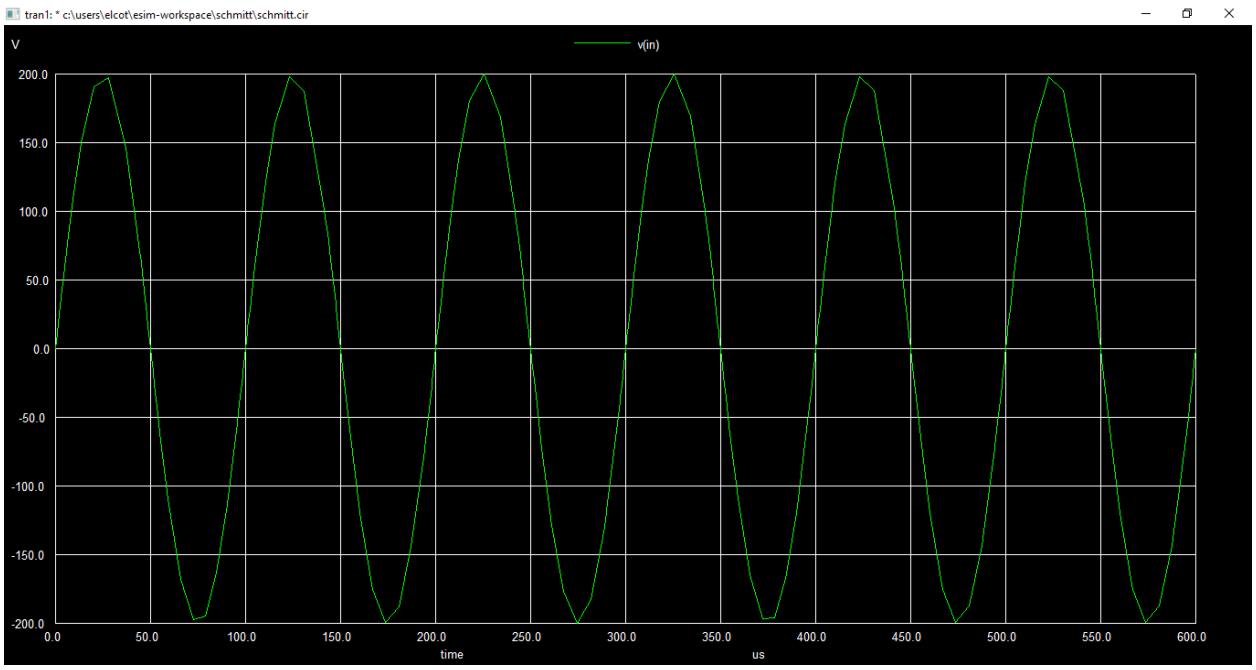

Fig5: Ngspice plot for input waveform

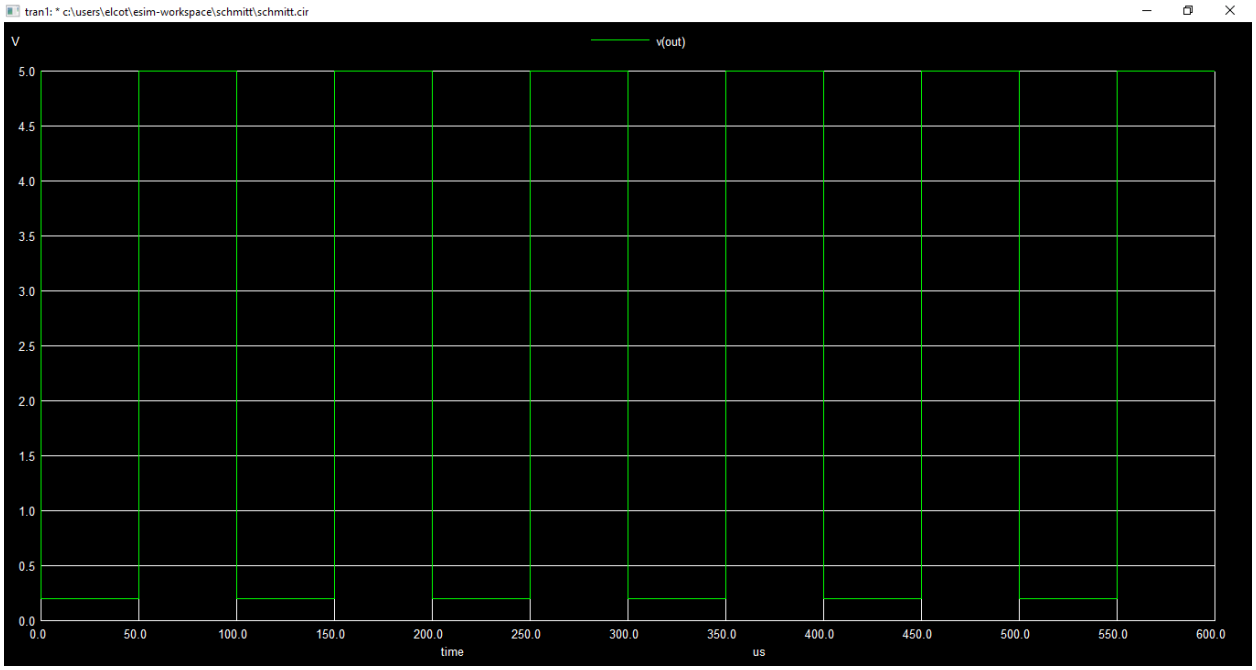

Fig6: Ngspice plot for output waveform

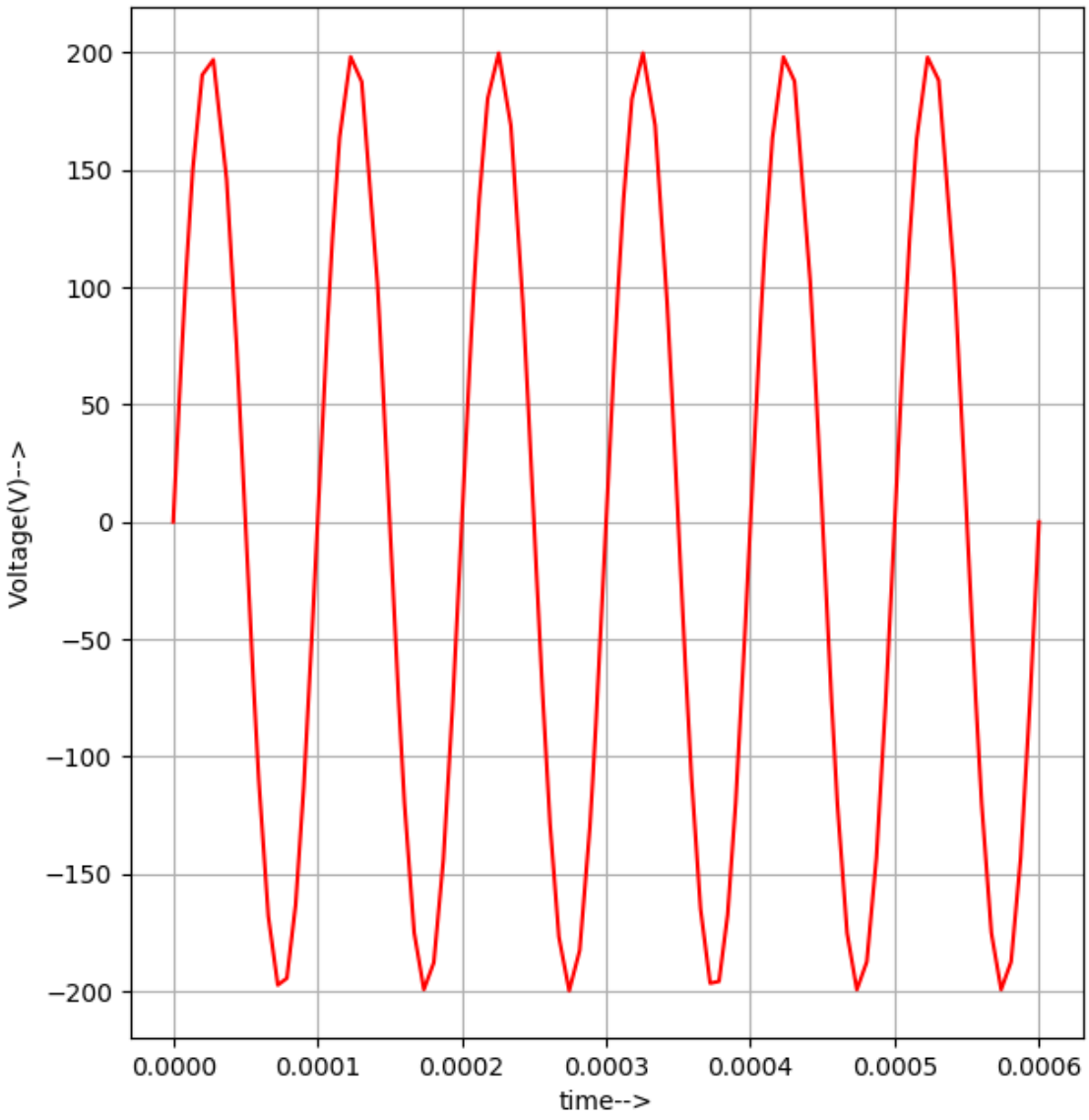

Fig7: python plot for input waveform

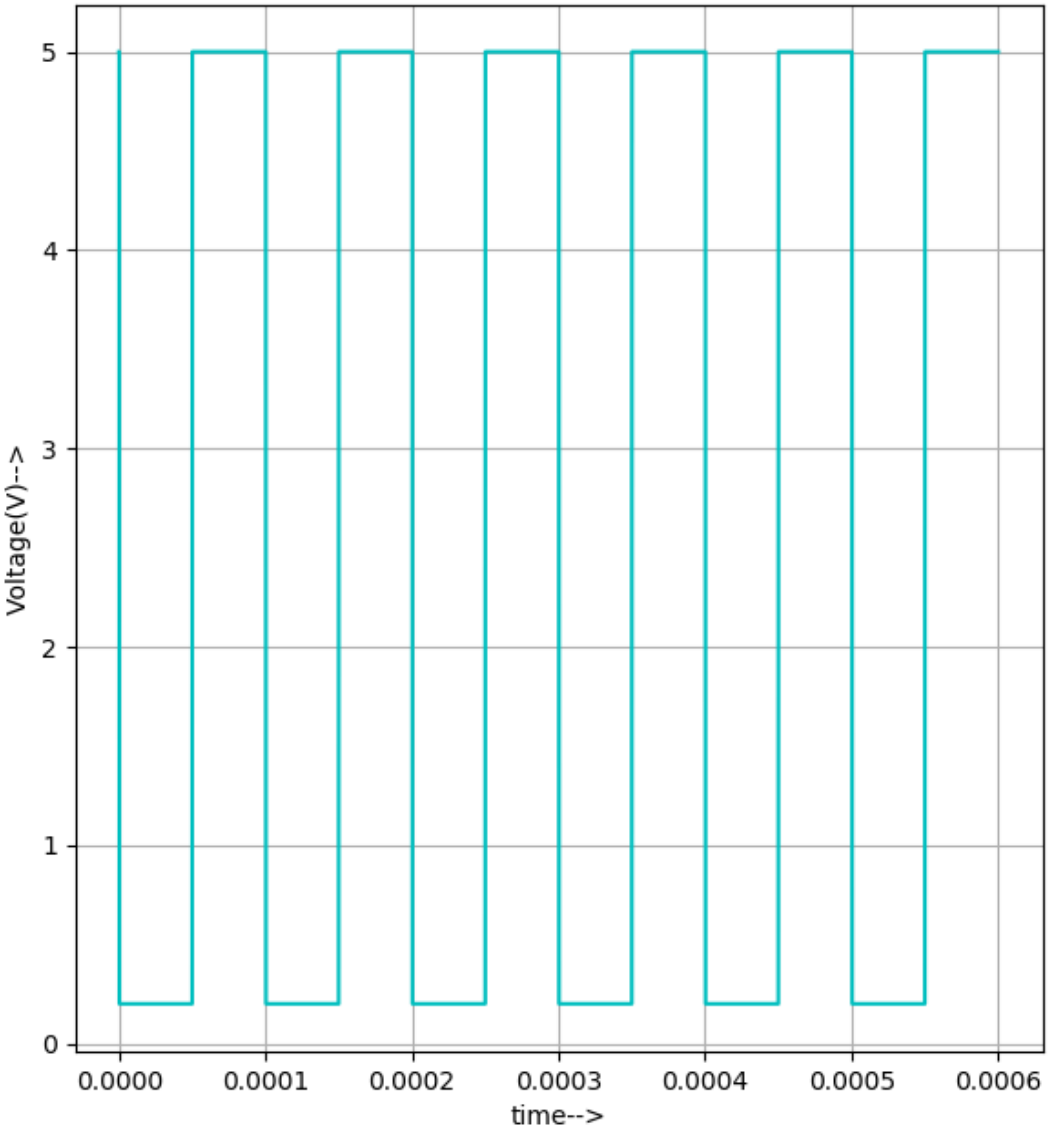

Fig8: Python plot for output waveform

Reference:

https://www.electronicshub.org/555-timer-as-schmitt-trigger/