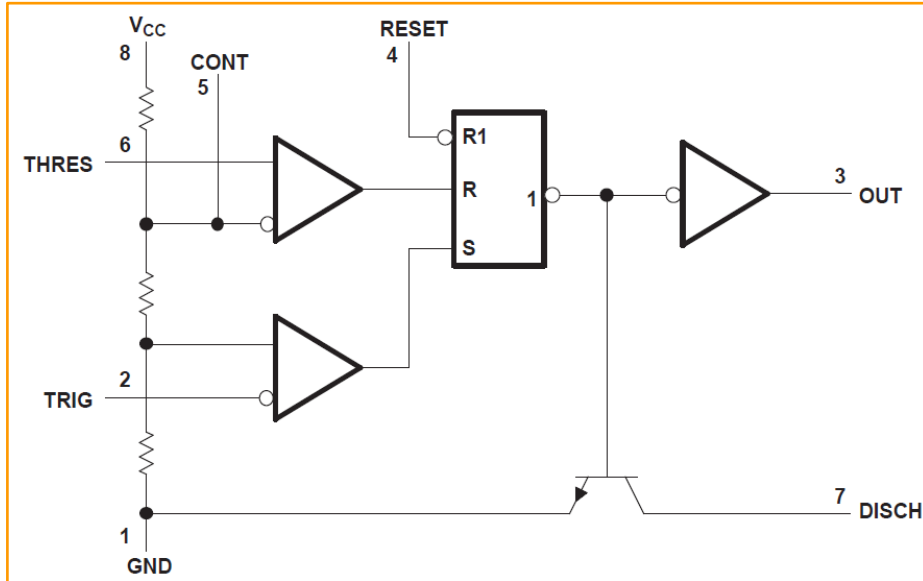

xx555 Precision Timer Spice Model Explanation

KS Kelvin Kelvin Leung
10-3-2023

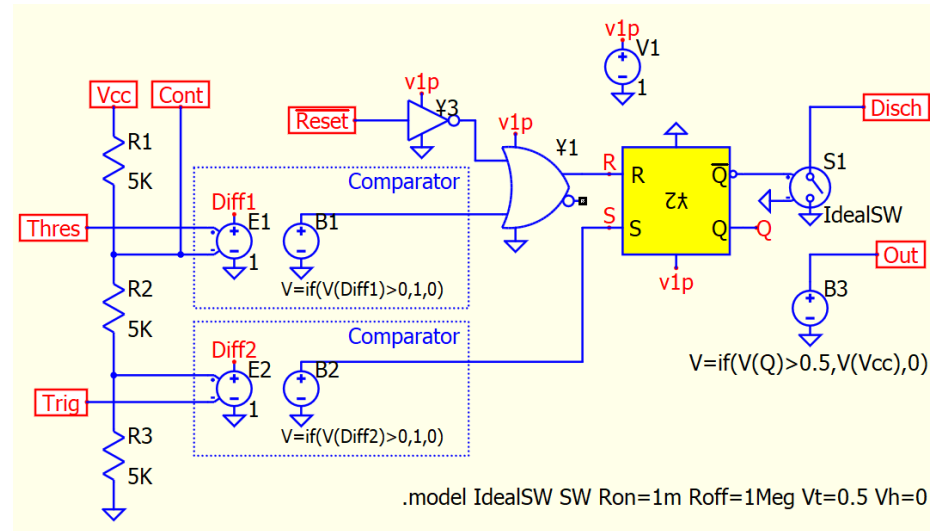
xx555 Behavioral Model

Functional Block Diagram

In Texas Instruments xx555 Precision Timers Datasheet



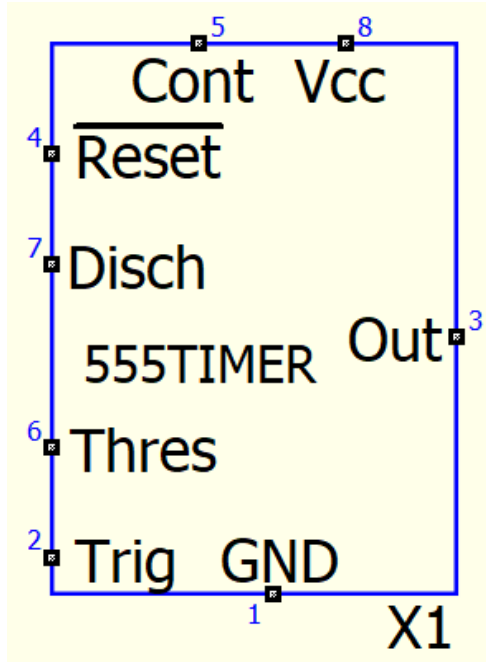
Qspice Behavioral Model



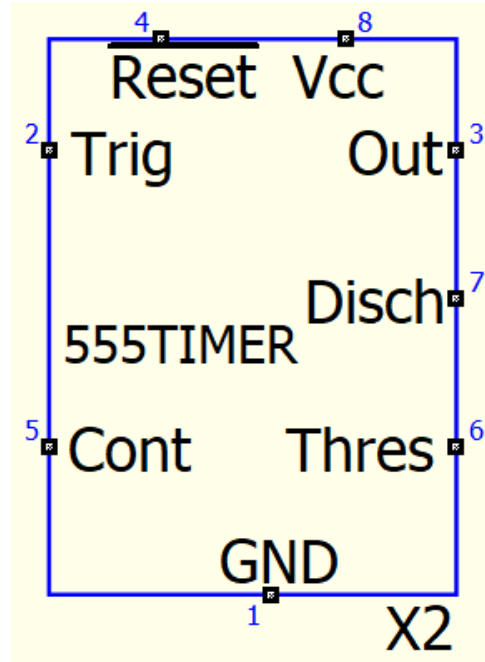
Ideal Switch is used as PNP transistor for simplicity
Ideal comparator with B-source with if function is used

3 types of Symbol Pin Layout (Functional Identical)

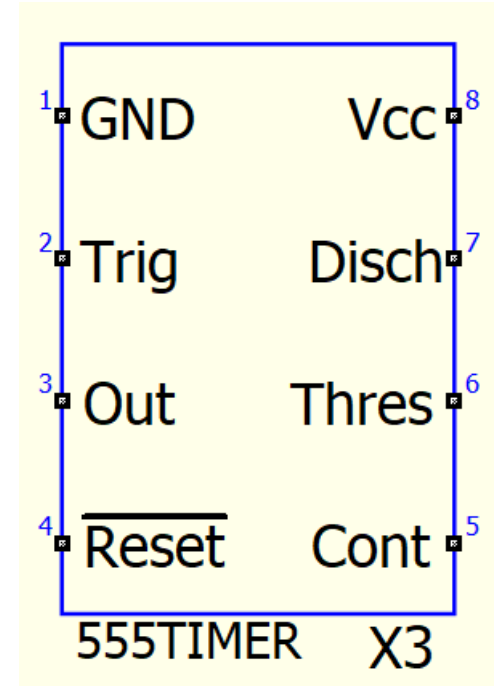
555Timer_SymType1.qsym



555Timer_SymType2.qsym



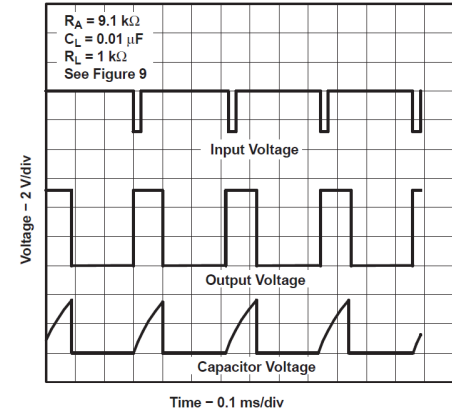
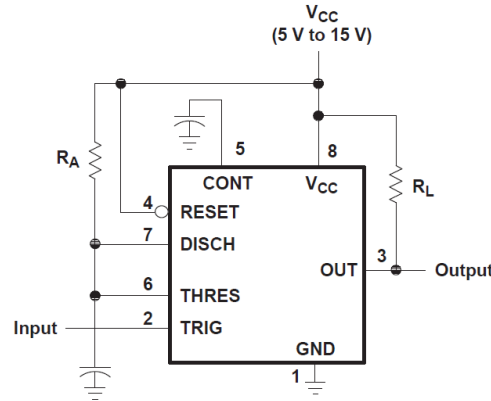
555Timer_SymType3.qsym



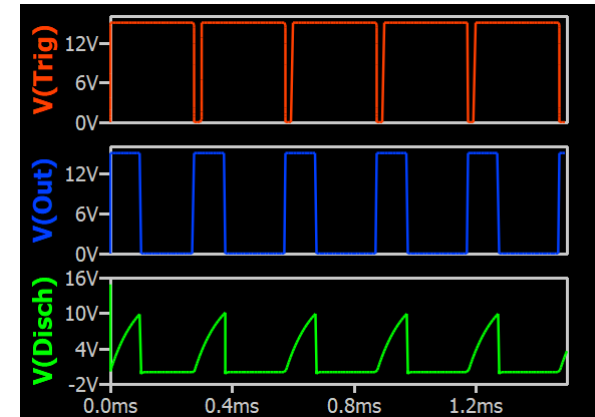
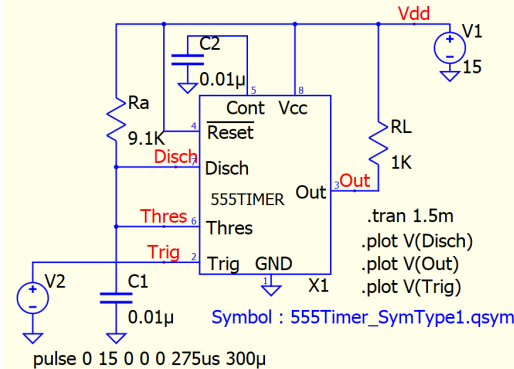
Simulation Example #1 : Mono-stable Operation

Qspice : parent - Monostable Operation.qsch

- TI Datasheet
 - Section 8.3.1 Mono-stable Operation
 - $t_w = 1.1 R_a C$



TI Datasheet : 8.3.1 Mono-stable Operation

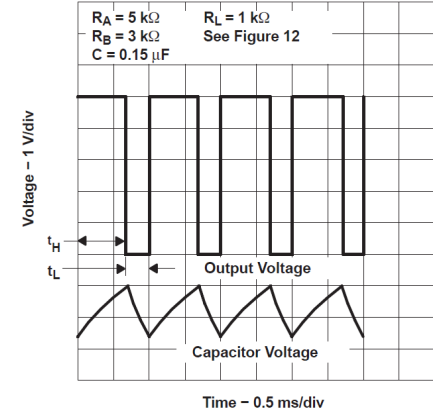
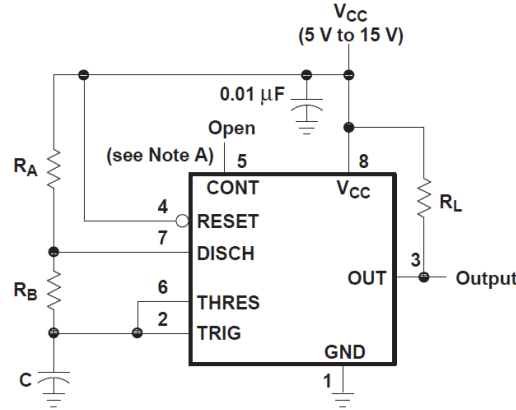


Simulation Example #2 : A-stable Operation

Qspice : parent - Astable Operation.qsch

- TI Datasheet

- Section 8.3.2 A-stable Operation
- $t_H = 0.683(R_a + R_b)C$
- $t_L = 0.693 R_b C$



TI datasheet : 8.3.2 A-stable Operation

