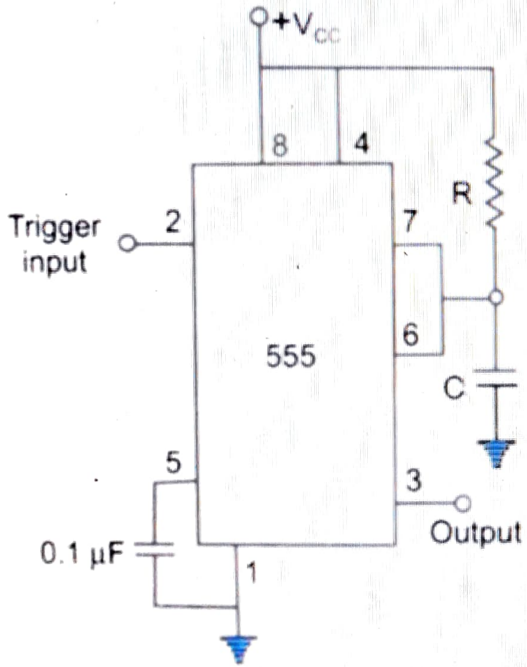
Functional diagram of Monostable operation of 555 timer



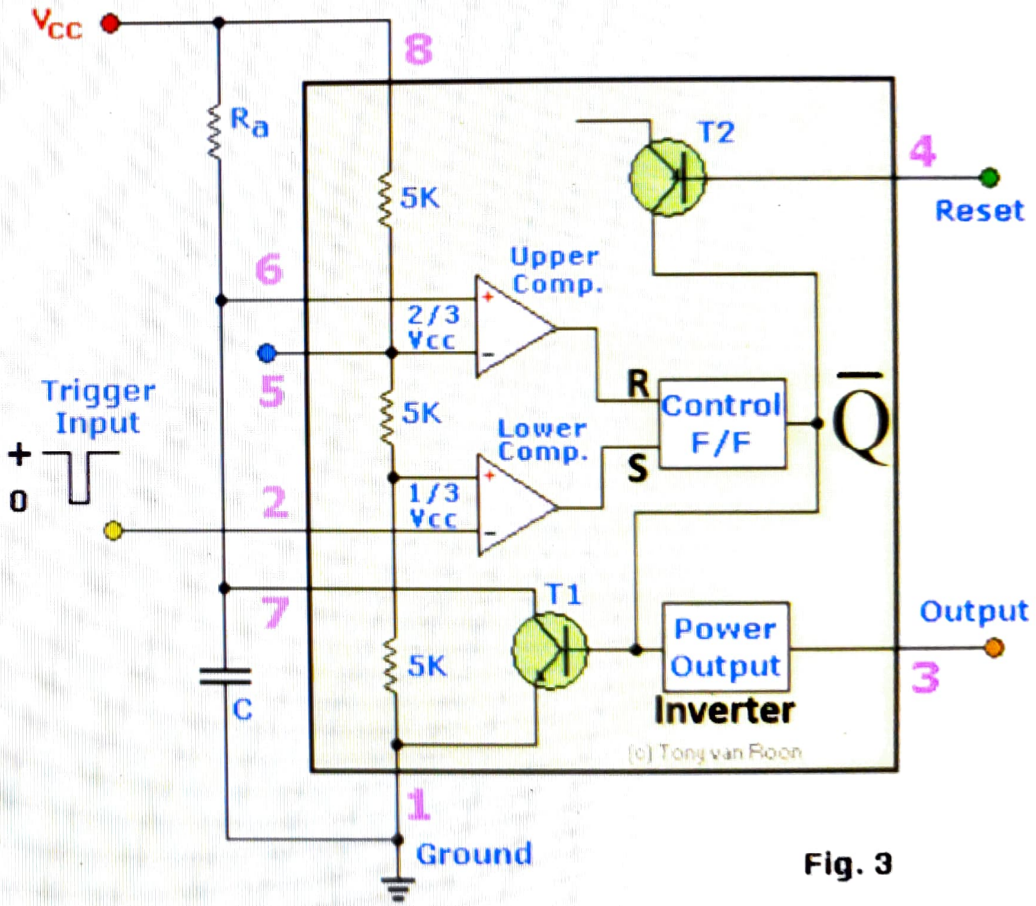


Fig. 3

Monostable operation of 555 timer

- In the standby state
  - FF is reset, and holds transistor T1 in ON state
  - External capacitor C is short circuited and clamped to ground
  - Output is LOW

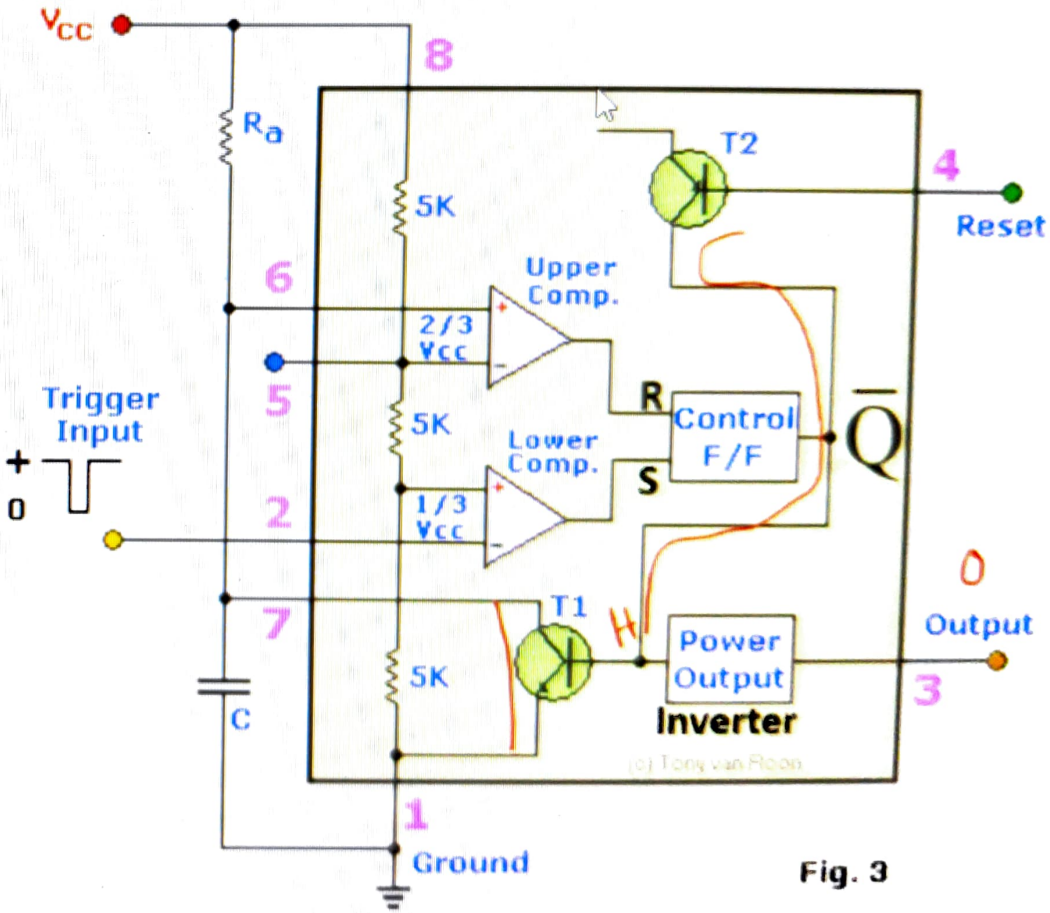


Fig. 3

Monostable operation of 555 timer

- As trigger passes through less than Vcc/3,
  - FF is set
  - Q is high and $\bar{Q}$ is low
  - Transistor T1 is OFF
  - Output is HIGH
  - C is unclamped, voltage across C rises exponentially through R_a towards Vcc
    - Time constant is R_aC
  - After a time period (T), the capacitor voltage as it goes beyond (2/3)Vcc

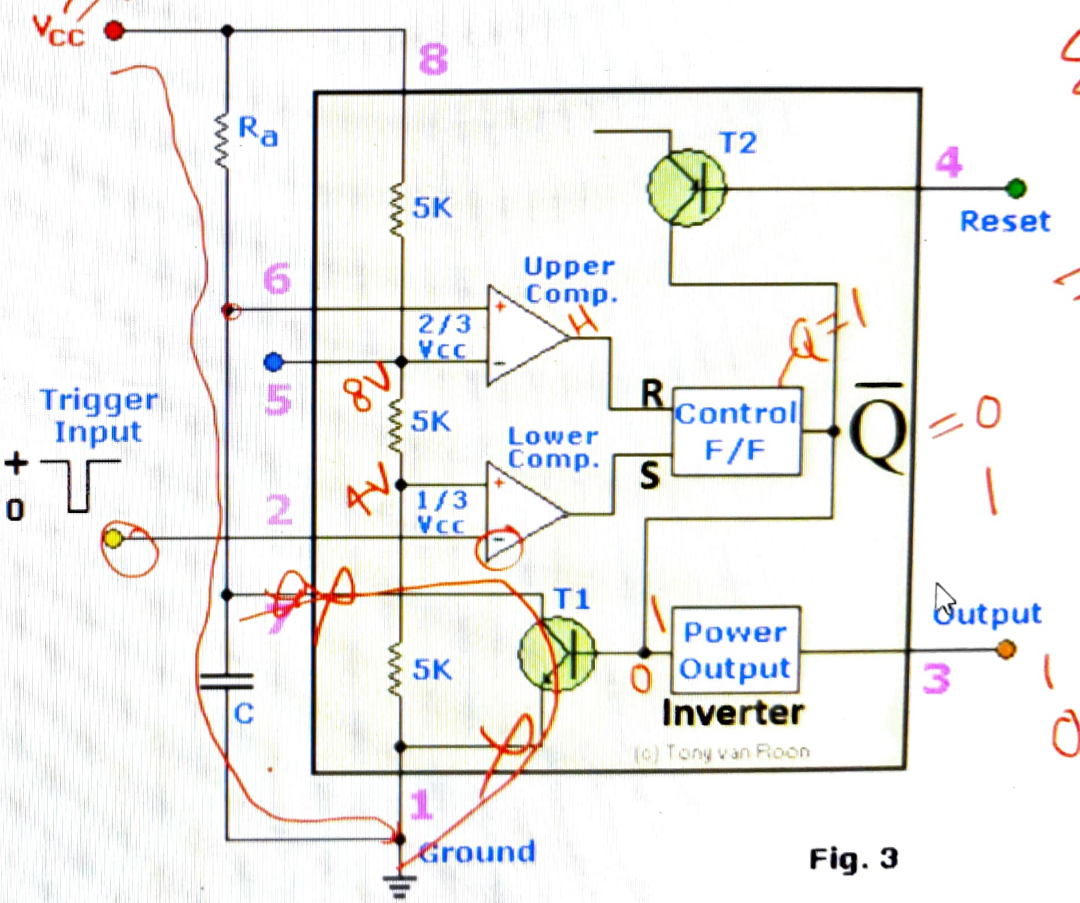


Fig. 3

Standby Reset → $\bar{Q}$ – H ; o/p → L
T1 → ON → C → gnd

$V_{TI} = 3.99$ (V+ > V)

$V_{O,LC} = +V_{sat}$ (High)

↓

Set FF

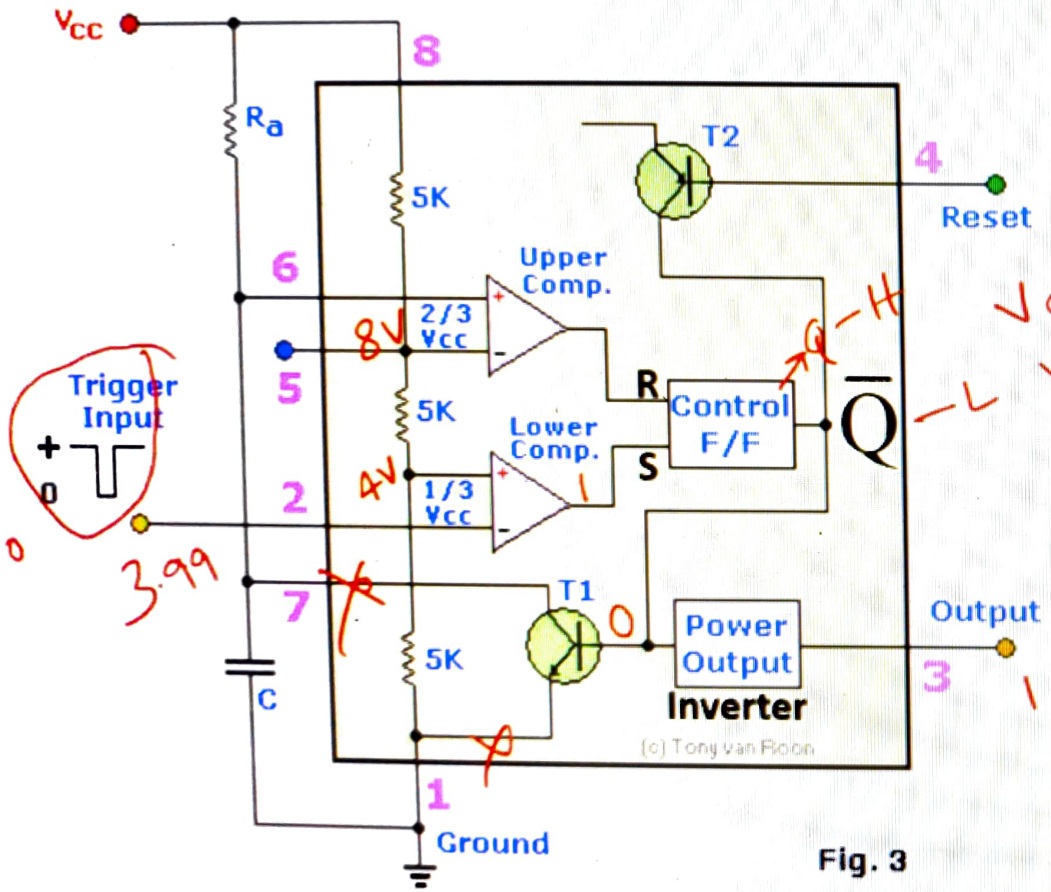


Fig. 3

Vcc

Ra

6

C

o/p FF → Q → 1

Q → 0

o/p T1 = 0 T1 open

cap → unclamped