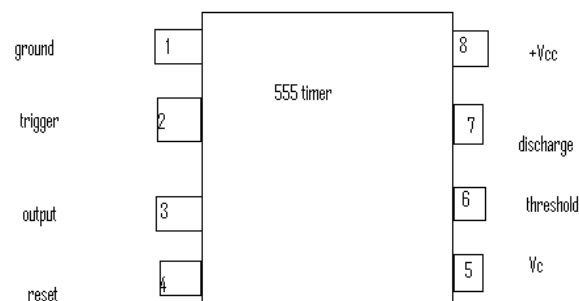


## Introduction to 555 Timer

The 555 timer is one of the most useful electronic devices in the market. The 555 timer was first introduced by Signetics but today it is manufactured by nearly all semiconductor firms. The cost of this device is low and it is widely available. The 555 timer has lots of uses such as: Mark Space Adjustment, Pulse Width Modulation and Inductive Current Detection just to name a few.

One of the most versatile linear integrated circuits is 555 timer. A sample of these applications are monostable and astable multivibrators, digital logic probes, waveform generators, burglar and toxic alarms. The 555 is a monolithic circuit that can produce accurate and highly stable time delays or oscillations.

### Pin diagram of 555 timer:



**Figure 4.1**

The 555 has some unique advantages and capabilities, such as: low-cost, high operating voltage (5-15V) range, it is high powered and at the same time able to be triggered by small currents. It is usable astable or multivibrator modes.

The last feature of the 555 timer is the most commonly used feature. Here is the composition of a 555 timer:

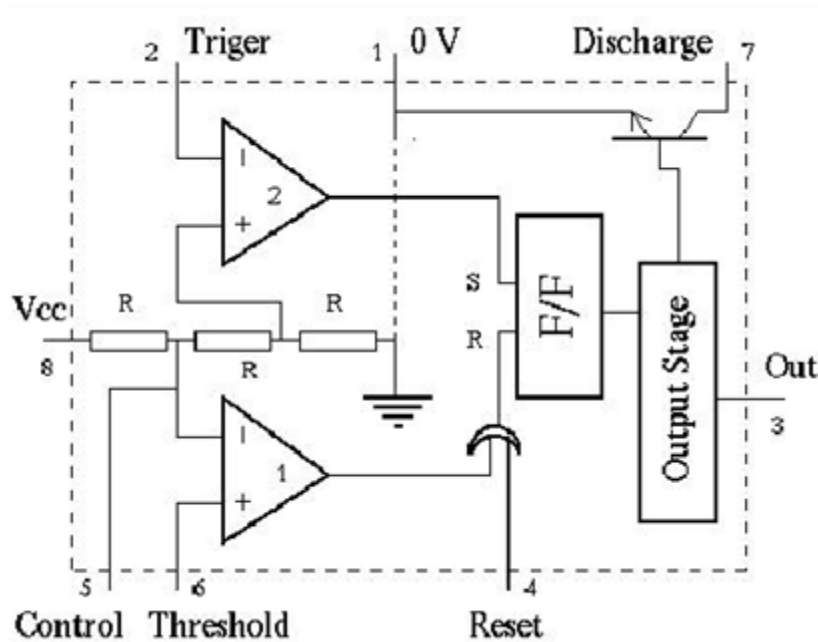


Figure 4.2

The 8-pin 555 timer must be one of the most useful ICs ever made and it is used in many projects. With just a few external components it can be used to build many circuits, not all of them involve timing!

A popular version is the NE555 and this is suitable in most cases where a '555 timer' is specified. The 556 is a dual version of the 555 housed in a 14-pin package, the two timers (A and B) share the same power supply pins. The circuit diagrams on this page show a 555, but they could all be adapted to use one half of a 556.

Low power versions of the 555 are made, such as the ICM7555, but these should only be used when specified (to increase battery life) because their maximum output current of about 20mA (with a 9V supply) is too low for many standard 555 circuits. The ICM7555 has the same pin arrangement as a standard 555.

The circuit symbol for a 555 (and 556) is a box with the pins arranged to suit the circuit diagram: for example 555 pin 8 at the top for the +Vs supply, 555 pin 3 output on the right. Usually just the pin numbers are used and they are not labelled with their function.

The 555 and 556 can be used with a supply voltage (Vs) in the range 4.5 to 15V (18V absolute maximum).

Standard 555 and 556 ICs create a significant 'glitch' on the supply when their output changes state. This is rarely a problem in simple circuits with no other ICs, but in more complex circuits a **smoothing capacitor** (eg 100 $\mu$ F) should be connected across the +Vs and 0V supply near the 555 or 556.