Multivibrators

Square wave generator:

Square wave outputs are generated when op- amp is forced to operate in the saturation region. That is the output of op-amp is forced to swing reprtatively between +ve saturation and –ve saturation, resulting in square wave output. The square wave generation is also called as free running or astable multivibrator.

Op-Amp Monostable Multivibrator Circuit Diagram:

Monostable multivibrator consists of two states.

1. One stable state 2. One quasi stable state.

A monostable multivibrator is a timing circuit that changes state once triggered, but returns to its original state after a certain time delay. It got its name from the fact that only one of its output states is stable. It is also known as a 'one-shot'.

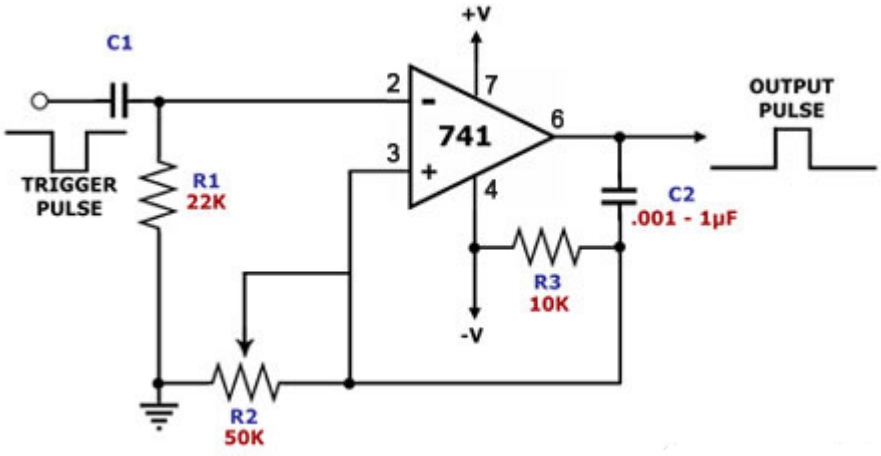

Figure 2.7

This is a monostable multivibrator circuit that employs a single op amp. The main component of this circuit is the 741, a general-purpose operational amplifier. A monostable multivibrator is a timing circuit that changes state once triggered, but returns to its original state after a certain time delay.

A negative trigger pulse at the input forces the output of the op amp to logic 'high'. This charges up C2 which keeps the non-inverting input of the op amp temporarily higher than the inverting input, maintaining the output high for a certain period of time. Eventually C2 discharges to ground and the op amp output swings back to logic 'low'. The duration of the pulse is defined by R2 and C2. The 'one-shot' has several applications, which include dividing the frequency of the input signal and converting an irregular input pulse to a uniform output pulse.

The highest frequency generated by Square wave generator is also set by the slew rate . an attempt to operate the circuit at relatively higher frequency causes the oscillator output to become triangular. In practice, each inverting and non inverting terminals need a series resistance to prevent excessive differential current flow. This resistance should be 100 kohm or higher.