

APPLICATIONS OF MONOSTABLE MODE OF OPERATION

(a) Frequency Divider:

The 555 timer as a monostable mode. It can be used as a frequency divider by adjusting the length of the timing cycle t_p with respect to the time period T of the trigger input. To use the monostable multivibrator as a divide by 2 circuit, the timing interval t_p must be a larger than the time period of the trigger input. [Divide by 2 $\blacklozenge t_p > T$ of the trigger]

By the same concept, to use the monostable multivibrator as a divide by 3 circuit, t_p must be slightly larger than twice the period of the input trigger signal & so on, [divide by 3 $\blacklozenge t_p > 2T$ of trigger]

(b) Pulse width modulation:

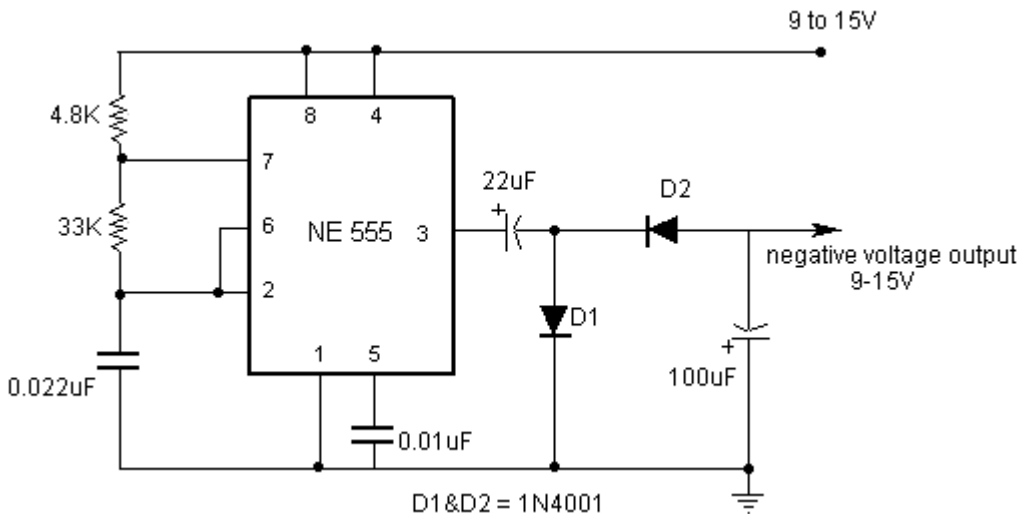
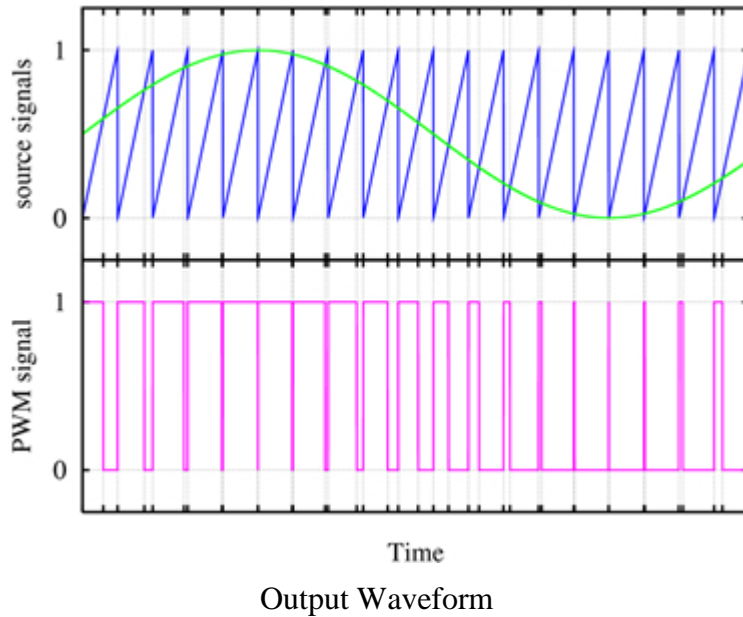


Fig: Pulse Width Modulation



Pulse width of a carrier wave changes in accordance with the value of an incoming (modulating signal) is known as PWM. It is basically a monostable multivibrator. A modulating signal is fed in to the control voltage (pin 5). Internally, the control voltage is adjusted to $\frac{2}{3} V_{cc}$. An externally applied modulating signal changes the control voltage level of the upper comparator. As a result, the required time to charge the capacitor up to the threshold voltage level changes, giving a PWM output.

(c) Pulse Stretcher:

This application makes use of the fact that the output pulse width (timing interval) of the monostable multivibrator is of longer duration than the negative pulse width of the input trigger. As such, the output pulse width of the monostable multivibrator can be viewed as a stretched version of the narrow input pulse, hence the name “Pulse stretcher”. Often, narrow-pulse width signals are not suitable for driving an LED display, mainly because of their very narrow pulse widths. In other words, the LED may be flashing but not be visible to the eye because its on time is infinitesimally small compared to its off time. The 555 pulse stretcher can be used to remedy this.

problem. The LED will be ON during the timing interval $t_p = 1.1R_A C$ which can be varied by changing the value of R_A & C .

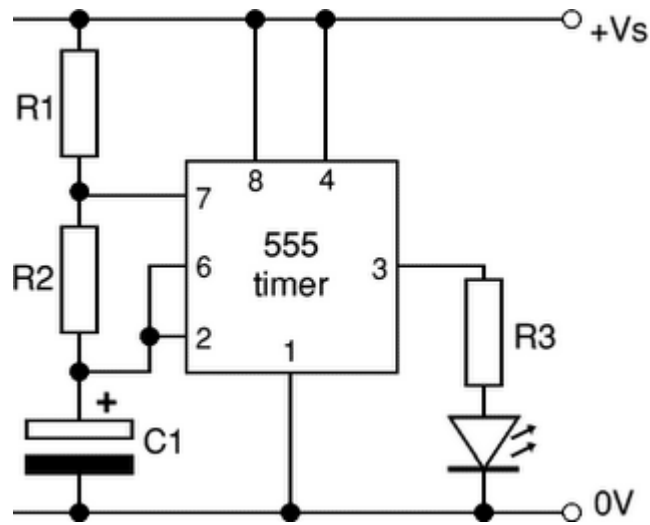


Fig: Pulse Stretcher

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