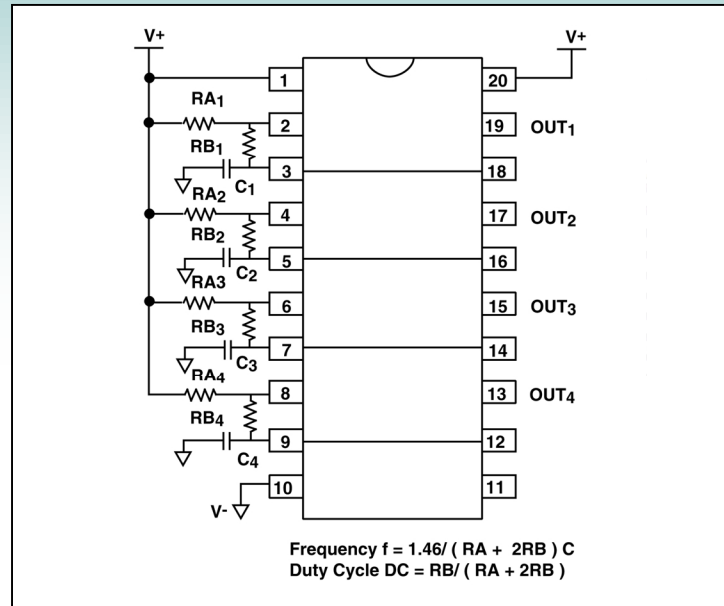




Quad Astable Mode Operation (Free Running Oscillator)



Description

This circuit is configured in quad astable mode of operation, which consists of 4 separate basic oscillator circuits using a 555 type of timers. Each of the circuit is also referred to as a free-running oscillator, with the oscillation frequency given by $f = 1.46 / ((RA + 2RB) \times C)$. The quad oscillator produces 4 separate frequencies as determined by their respective RA, RB and C values. The single chip quad timer offer excellent timing and temperature tracking between the 4 separate timers. Capacitor C charges towards 2/3 V+ and when its voltage reaches that threshold level, the output driver on pin3 is turned on to the low output state. Now the capacitor C is discharging towards ground. When voltage on C is discharged to 1/3 V+, it triggers the comparator inside pin2 and starts the C charging cycle again. Hence an oscillator circuit is implemented. The output high time period is determined by $T_H = .693(RA + RB) \times C$. The output low time period is determined by $T_L = 0.693 RB \times C$. Using CMOS version of quad 555 timer circuit, a very wide frequency range at very low level of voltage spikes and power dissipation can be achieved. Selection of the values of RA and RB is limited by the input leakage specifications of the timer at pin2 and pin6 (pins 5 through pin 9 respectively for the other timers) and the internal leakage current at the capacitor C. The value of C has a range from 10,000µF down to 0. At C=0, the timer will oscillate without an external C, and depends entirely on the internal parasitic capacitor inside the 555 timer for timing.

Recommended Components

ALD4501

Other Related Circuit Ideas

[Schematic no. time_15005.0 Quad Monostable Mode Operation \(One Shot Pulse\)](#)

[Schematic no. time_15006.0 Synchronized Timing Generators](#)