

50 This astable multivibrator is built from an odd number of inverters. These inverters can be either TTL or COSMOS. The frequency of oscillation depends on the total propagation delay time of the inverters. The oscillation is the result of circulating inverted pulses. The cycle time of the square wave voltage equals twice the total propagation delay time.

The frequency can be calculated by using:

$$f = \frac{1}{2 \cdot n \cdot T_p}$$

where f = oscillating frequency

n = number of inverters (odd)

T_p = propagation delay time
(per gate)

If the circuit was built using 5 TTL inverters such as a 7404, the propagation delay time would be 10 ns per gate. The resultant frequency would be:

$$f = \frac{1}{2 \times 5 \times 10^{-8}} = 10 \text{ MHz}$$

