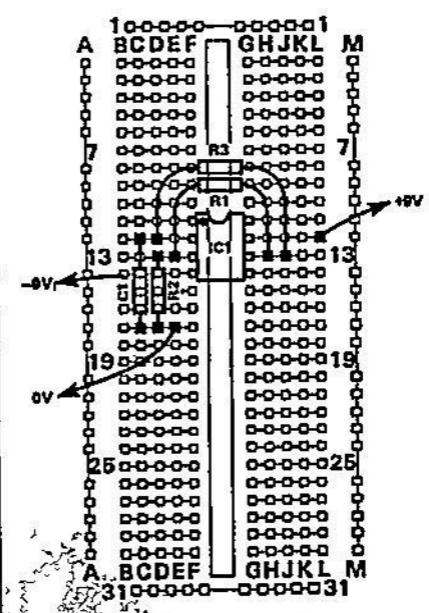
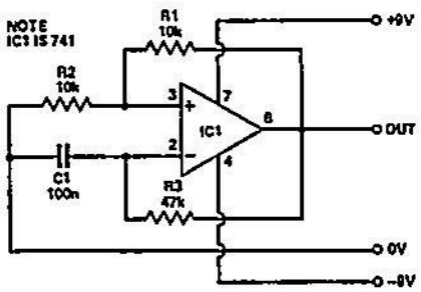


Square Wave Oscillator

by G. Boyce

IF you thought that the only way of producing a square wave was to use a 555 timer IC, then here's a circuit to change your mind. It's a square wave generator requiring only five components, including the IC — a 741 op-amp. The circuit consists of a Schmitt Trigger with positive feedback provided by the 10k resistors. The timing components, C1 and R3, control the frequency of oscillation and this can be varied over quite a large range (50 Hz to about 7 kHz) before the shape of the wave is no longer square.

If you monitor the voltage at pin 2, it can be seen to follow an exponential charge/discharge pattern, determined by the RC constant of R3 and C1. The mark-to-space ratio can be altered by placing a 10k resistor and a series signal diode in parallel with R3. This makes C1 discharge 11 times faster than it charges up. Current consumption is about 1.5 mA per rail.



Circuit of the square wave oscillator.