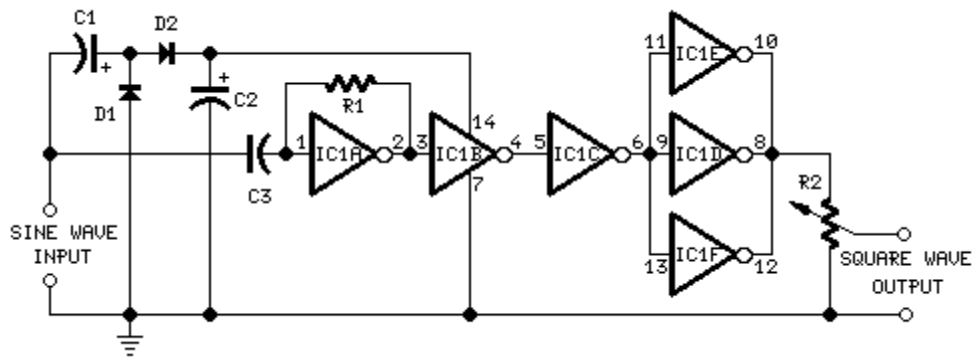


Self-powered Sine to Square wave Converter

**Converts sine to square waves without a power-source
Useful as a test instrument for audio purposes**

Circuit diagram:



Parts:

R1	_____1M	1/4W Resistor
R2	_____100K	Linear Potentiometer
C1,C2	_____100 μ F	25V Electrolytic Capacitors
C3	_____10nF	63V Polyester Capacitor
D1,D2	_____1N4148	75V 150mA Diodes
IC1	_____4069	Hex Inverter IC

Device purpose:

This circuit is intended to provide good square waves converting a sine wave picked-up from an existing generator. Its major feature consists in the fact that no power-source is needed: thus it can be simply connected between a sine wave generator and the device under test.

The input sine wave feeds a voltage doubler formed by C1, C2, D1 & D2 that powers the IC. IC1A

amplifies the input sine wave, other inverters included in IC1 squaring the signal and delivering an output square wave of equal mark/space ratio and good rise and fall times through the entire 20Hz-20KHz range.

Notes:

- | Best performances are obtained with an input sine wave amplitude from 1V RMS onwards.
- | Output square wave amplitude is proportional to input amplitude.
- | Minimum sine wave input amplitude needed for good performance: 750mV RMS.
- | Output square wave amplitude with 1V RMS input: 3V peak to peak, with R2 set at max.
- | Minimum output square wave amplitude: 2V peak to peak, with R2 set at max.
- | Substituting the two silicon diodes with germanium types (e.g. AA118, AA119), the minimum input threshold can be lowered.

This circuit won £50 and was published on ELECTRONICS WORLD "Circuit Ideas", February 2000 issue, page 135.
