

## 12-240V 60VA Inverter

This inverter can provide a 240VAC output from a 12V battery and deliver about 60VA of power. It uses three ICs, four transistors and a transformer, plus a handful of passive components. It operates at 50Hz and has a square wave output.

555 timer IC1 oscillates at 50Hz and is connected to provide a duty cycle of 50%. This is achieved by connecting the 200k $\Omega$  charging resistor for the 0.1 $\mu$ F capacitor from the output at pin 3 rather than from the

positive supply. However, the waveform of interest is the triangle waveform at pin 2 and this is coupled to op amp IC2a which operates as a non-inverting buffer.

The buffered output signal is then coupled to the inverting inputs of comparators IC3a and IC3b and to the non-inverting inputs of IC3c and IC3d. The remaining inputs of the comparators are connected to the output of op amp IC2b which sets the threshold voltage at 0.5Vcc. The comparators produce complementary square waves to drive transistors Q1 to Q4.

The outputs of IC3a and IC3b are paralleled to drive Q3 while IC3c and IC3d are paralleled to drive Q4.

Q1 and Q2 drive the transformer in push-pull mode, alternately applying 12V to one half of the primary winding and then to the other half. The output is taken from the 240V winding.

VR1 sets the "dead time" between Q1 turning off and Q2 turning on (and vice versa). It can be used to set the output voltage from the transformer.

The suggested transformer is a 60VA unit from Altronics, Cat. No. M-2165.



