

Ideas for Experimenters

The ubiquitous 555

These two circuits come from the pen of **F. Zickar of East Corrimal NSW** and illustrate some interesting applications of the ever-present 555 timer IC.

Circuit (1) shows a voltage doubling dc-to-dc inverter which consists of a 555 as an oscillator driving a complementary pair of transistors, Q1 and Q2, followed by a voltage-doubler rectifier.

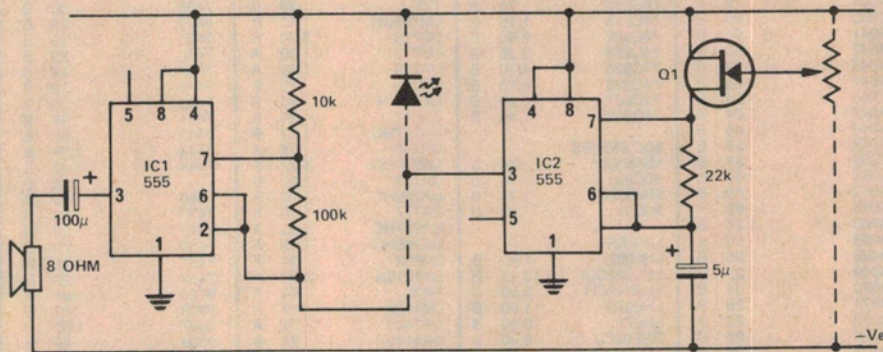
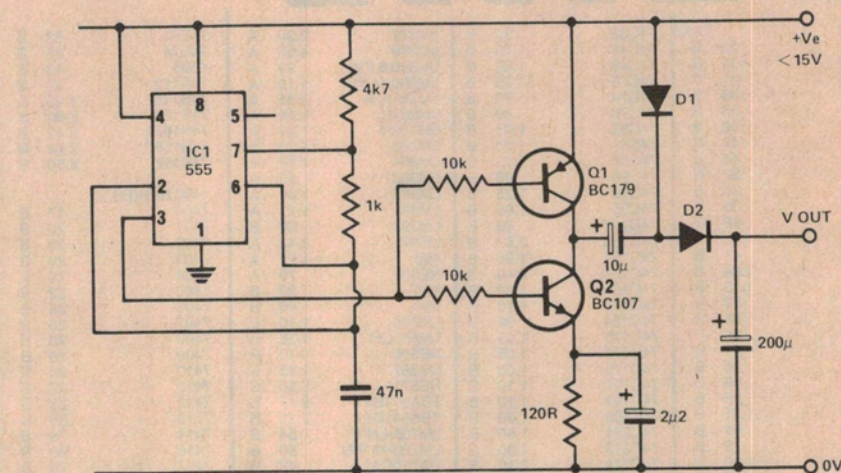
When pin 3 of the 555 goes high, the collector of Q2 drops to near 0V as it turns on (Q1 is off) and the 10u capacitor charges through D1 and the collector-emitter of Q2, reaching a value almost equal to the supply voltage.

When pin 3 of the 555 goes to 0V, Q2 turns off and the collector of Q1 goes to the positive supply rail as it turns on. Now, the 10u capacitor discharges into the 200u capacitor through D2 and the process repeats with every cycle of IC1. After a few cycles, this latter capacitor is fully charged to a value equal to almost twice the supply rail voltage. If the supply is 12V say, Vout will be about 22V.

This can be used to supply an audio preamp, for example, in an amplifier that has low voltage supply rails, in order to improve overload margin etc. Load current may be about 10 - 15 mA.

The circuit in (2) is a suggestion for a voltage-controlled oscillator (VCO). Here, a FET (Q1) is used as a voltage-variable resistance to control the voltage on pin 7 of the input 555 (IC2). As Q1 forms part of the CR timing network, this varies the frequency of the pulse from pin 3 of IC2.

IC2 can then be used to drive, for example, an LED (dotted circuit). Its brightness would vary with the



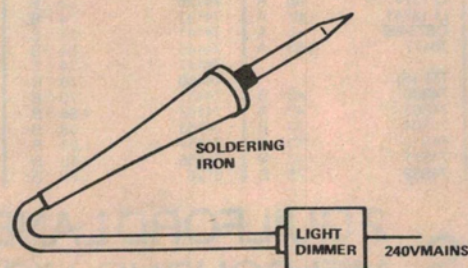
variation of the output frequency pulses from IC2. The gate of Q1 could be connected to the AGC line of a receiver and the LED used as a simple signal strength indicator in place of a more expensive 'S-meter'.

The rest of the circuit shows how to 'slave' another 555 (IC1) to provide an audio output.

Incinerated ICs — stopped!

Now here's a good idea if your soldering iron is a bit too hot for soldering delicate components to a printed circuit board — why not use a standard light dimmer between the iron and the mains?

A reader from Pentland in Queensland, **Mr B.D. Dever**, found this an ideal solution to soldering-without-sizzling.



Any ideas?

Have you had a bright idea lately, or discovered an interesting circuit modification? We are always looking for items for these pages so naturally, we'd like to hear from you.

We pay between \$5 and \$10 per item — depending on how much work we have to do on it before we publish it.

The sort of items we are seeking, and the ones which other readers would like to see, are novel applications of existing devices, new ways of tackling old problems, hints and tips.