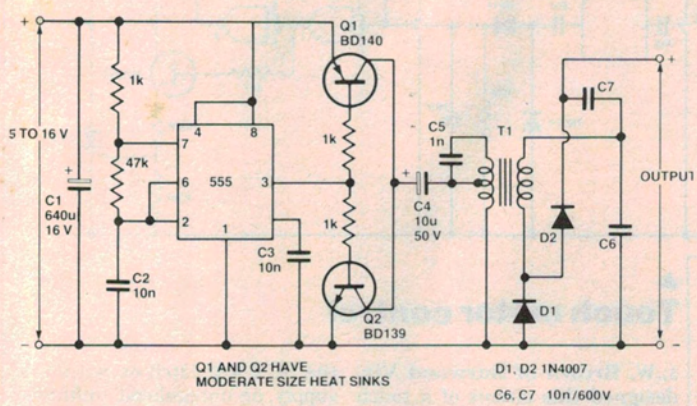
IDEAS FOR EXPERIMENTERS

These pages are intended primarily as a source of ideas. As far as reasonably possible all material has been checked for feasibility, component availability etc, but the circuits have not necessarily been built and tested in our laboratory. Because of the nature of the information in this section we cannot enter into any correspondence about any of the circuits, nor can we produce constructional details.



Cheap high voltage, low current dc-to-dc inverter

Alec Phillips of Myrtleford Victoria designed this circuit, without a special inverter transformer, when he needed a high dc voltage from a low dc voltage supply. It cost him about $7.

The 555 IC drives Q1 and Q2 alternately, Q1 charging via the transformer and Q2 discharging C4 into the transformer. C5 reduces power consumption and increases the output voltage. The output is fed into a voltage doubler and, with a 15 Vdc supply, the output can exceed 600 V. D1 and D2 must be 1 kV, 1 A diodes.

The transformer is a 12.6-0-12.6 V, 150 mA type. The oscillator drives the centre tap of the primary low voltage winding and the output is from the 240 V end.

Q1 and Q2 must be on a heatsink of moderate size.

If higher output voltages are required, just add more voltage doublers, but obviously it will handle a smaller load on the output. The circuit will operate at input voltages ranging from 5 to 16 volts.

Spotlamp dimmer

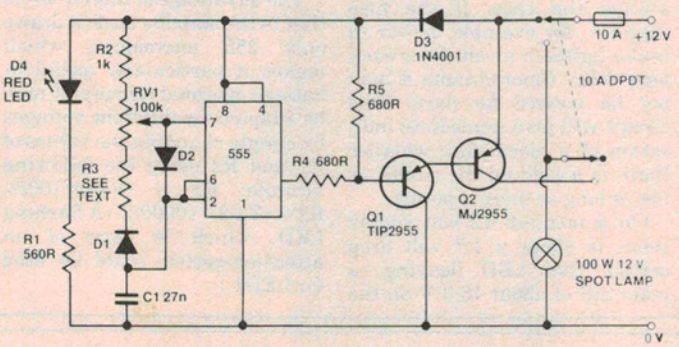
If you're a hunter or a farmer and you've been out walking at night then you'll understand the problem that **Alec Phillips of Myrtleford Victoria** had.

I use a 12 V motorcycle battery and a 100 W spotlamp when I'm out hunting at night but it's often happened that the light starts to fade just when I'm sighting up on the last target. The battery doesn't have enough storage capacity to let me shoot that rabbit or fox, skin them, clean them and find my way home. I didn't want to carry a larger battery so I found the answer with this simple circuit which costs about $12 to set up.

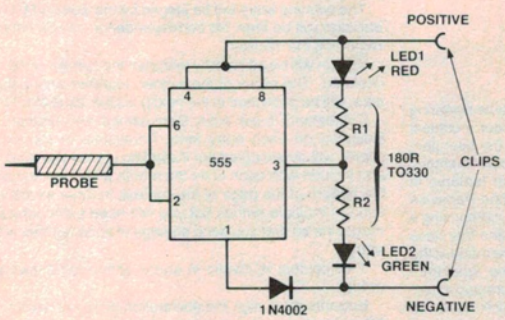
The 555 oscillator has a variable mark/space ratio by means of the 100k linear pot RV1. R4 limits the load on the oscillator and the base current to Q2. D3 is for reverse battery protection of the oscillator. The DPDT switch must be rated at 10A, 12 Vdc.

Q1 and Q2 are mounted and insulated on a 10.2 mm x 7.6 mm (4" x 3") finned black aluminium heatsink which I bolted on to the circuit control box. As Q2 gets hotter than Q1 I found it best to mount Q1 at the top and Q2 at the bottom of the heatsink.

Operation is simple once R3 is chosen to suit your light requirement for walking. When the target is seen, turn the control to full on or switch to direct battery which is brightest, then the lamp may be dimmed again for walking or skinning.



Because the power to the lamp is pulsed at a high frequency the light doesn't flicker and A.H. capacity is conserved.



Positive-negative probe

This circuit, which acts as a simple substitute for a voltmeter, was designed by **David Pye of Happy Valley SA.**

I've found in many cases that all I wanted to know was whether the reading was positive or negative. This is particularly useful in car or motorcycle electrical repairs and, as the unit can be made extremely small, it will fit in any tool kit.

It will fit in a small plastic pill container, operate on any voltage between 5 V and 15 V and is quite cheap as it only requires a few components.

When the positive and negative clips are connected to the circuit both LEDs will light. Then when the probe touches a positive point the green LED is extinguished, leaving the red LED on, signifying positive. Touching the probe to a negative point extinguishes the red, leaving the green LED on. The 1N4002 is a protective diode for reverse polarity.