

## Self-oscillating step-up converter

With a supply voltage of around 9-12V, this stabilised converter provides outputs of up to 50V

With the additional feature of good stability, this oscillator provides an output voltage several

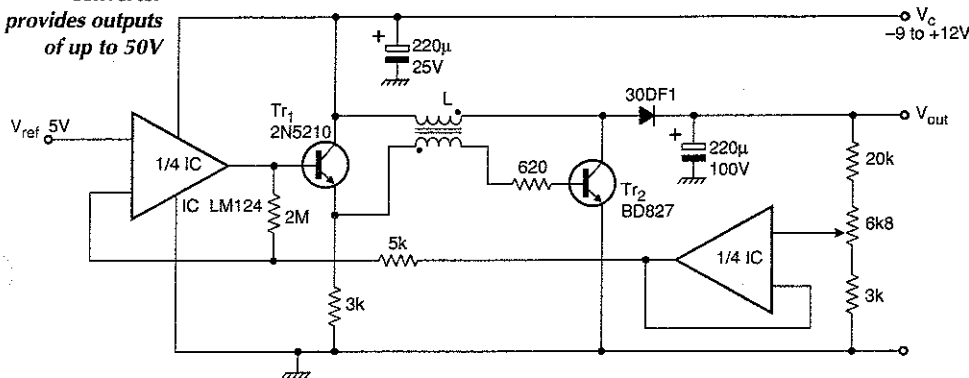
times higher than its supply rail.

Transistor  $Tr_2$  and the transformer form the oscillator, whose

mark:space ratio depends on the emitter voltage of  $Tr_1$ ; feedback from the output to that point via the voltage divider and the two op-amps confers stability.

Transistor  $Tr_1$  should have a  $h_{FE}$  of several hundred or be a Darlington stage, while  $Tr_2$  must handle reverse voltages of around 10V; a heat sink may be needed for this stage. Design the transformer carefully to avoid saturation; collector and base windings may be equal or, with higher supply voltages, the base winding can be about three-quarters of the collector one.

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## Luminance hf corrector sharpens video

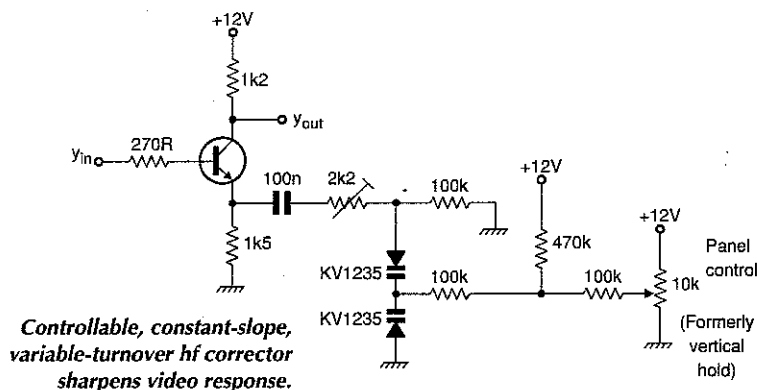
A couple of varicaps yield a method of varying the hf response of a video luminance amplifier.

A new video circuit is built around the Sony XE3 chassis's luminance amplifier transistor, which is fed with the Y signal, delayed and

minus chroma. Control to allow adjustment of turnover frequency is a 10kΩ pot., which was the little used vertical hold control.

Some 'sharpen' circuits give a variable-slope, fixed turnover frequency characteristic, but here the reverse happens and the circuit can be set to compensate for droop from any frequency. Negative feedback generated by the previously undecoupled emitter resistor is varied by the new control, the 2.2kΩ potentiometer preventing gain becoming too high at very high frequencies.

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Controllable, constant-slope, variable-turnover hf corrector sharpens video response.

## Man-powered high-voltage tester

You can make a 20kV, low-current source for simple insulation or gap testing from the kind of piezoelectric gas lighter operated by a trigger and a few extra components; no other power is needed.

The lighter generates an oscillatory 20kV pk-pk waveform which is rectified by high-voltage diodes, the resulting dc being stored on 200pF capacitors in series to give 100pF, which represents 2microcoulombs at

20kV. This is probably safe, but increasing the capacitance to give more charge could, if applied in the wrong place, be very dangerous. If you do increase it, take thorough precautions! It might also be necessary, if the capacitance is increased, to trigger the lighter several times. Apply the output to the spark gap and observe the corona.

In the original, the lighter electrodes were covered with Teflon tape to stop corona discharge in the lighter's spark gap cavity.

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A gas-stove lighter makes a good 20kV source, but be careful!

