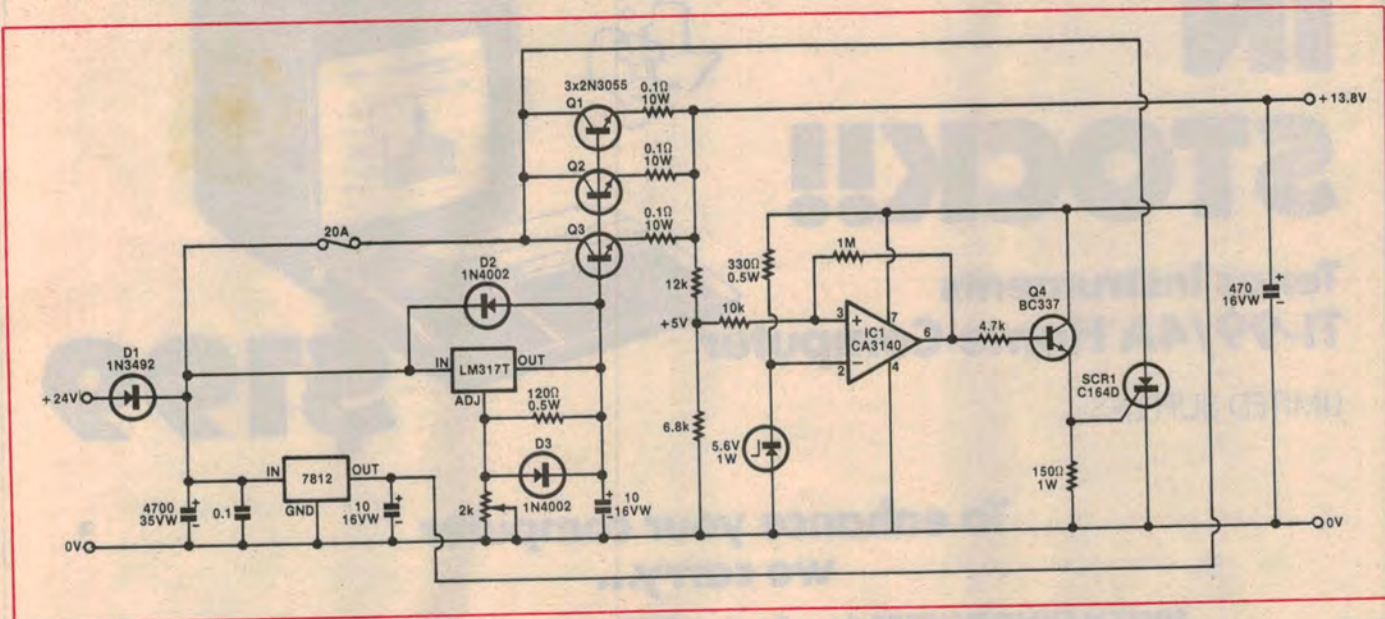


Circuit & Design Ideas

Interesting circuit ideas from readers and technical literature. While this material has been checked as far as possible for feasibility, the circuits have not been built and tested by us. As a consequence, we cannot accept responsibility, enter into correspondence or provide constructional details.



24 to 12 volt converter

This circuit should prove popular with truck and bus owners. The converter can power 12V equipment from a 24V battery at currents up to 20A. There is overvoltage protection which works by blowing the fuse if the regulated voltage reaches 15.5V.

An LM317 three terminal regulator is used to control the paralleled transistors, Q1, Q2 and Q3. These provide the high current demanded by the load, while the regulator supplies base current to each transistor. The 0.10 10W resistors in the

emitter of each transistor ensure that the transistors source an equal share of the load current.

The regulator voltage is set by the 2kΩ trim potentiometer at the adjust terminal. Diodes D2 and D3 protect the regulator, while D1 protects the entire circuit from reverse polarity.

The overvoltage protection circuitry consists of IC1, transistor Q4 and the SCR. IC1 is connected as a Schmitt trigger to switch transistor Q4 when the regulated voltage level exceeds a certain level.

Pin 3 of IC1 is normally at 5V due to

the voltage divider consisting of the 6.8kΩ and 12kΩ resistors. The inverting input, pin 2, is fixed at 5.6V by the zener diode. Should the regulated output voltage exceed 15.5V, the voltage at pin 3 becomes greater than 5.6V and the op amp output at pin 6 goes high, turning on Q4. This switches SCR 1 which shorts the supply via the fuse. The fuse therefore blows and removes power to the transistors.

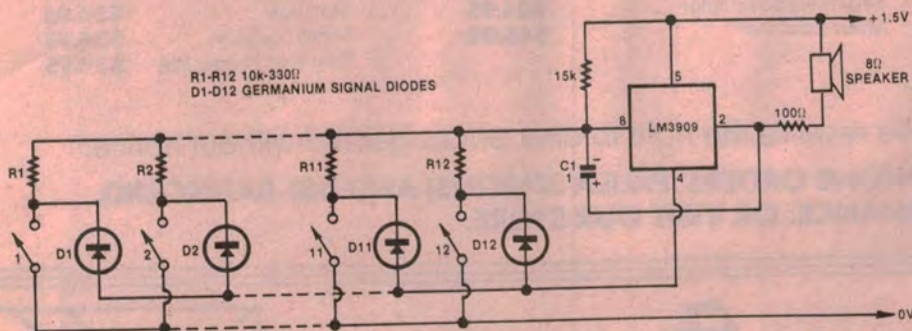
A 7812 regulator supplies the positive 12V for the op amp and transistor Q4.

P. Howarth
Gunnedah, NSW.

\$25

Simple monophonic organ

This simple organ circuit does not require an on-off switch and will run



from a single 1½-volt battery. The heart of the circuit is the LM3909 which is normally used as a LED flasher but here it drives a loud-speaker.

The LM3909 functions as an astable multivibrator with its time-constant determined largely by one of the resistors R1 to R12 and the 1μF capacitor. Because of the diodes D1 to D12, only one resistor is brought into play at any given time. The resistor values may be selected initially by using trimpots which can then be replaced by fixed resistors.

The 100Ω resistor minimises loading effects of the loudspeaker on the oscillator. Current drain when a note is played is about two milliamps.

E. Rodda,
Marion, SA.

\$15