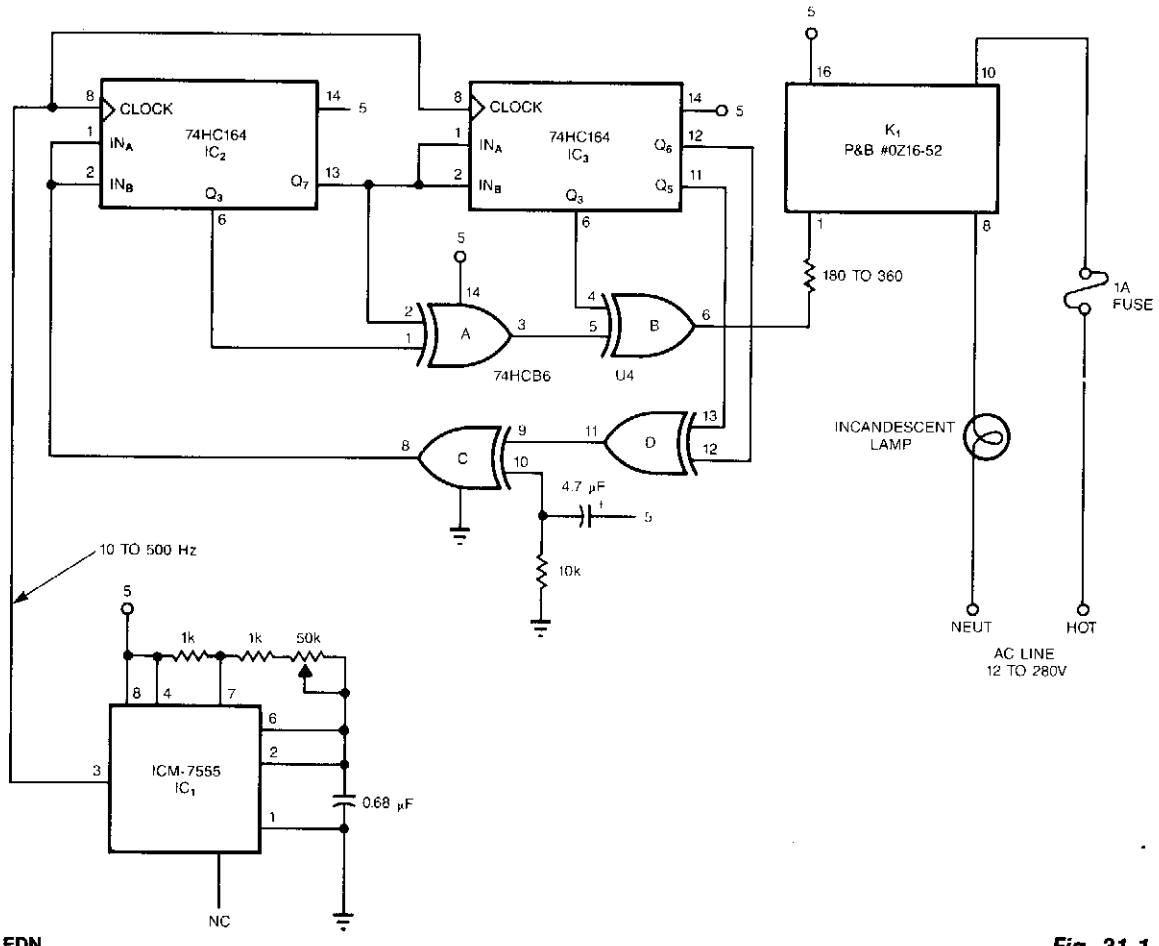
PSEUDORANDOM SIMULATED FLICKER SEQUENCER



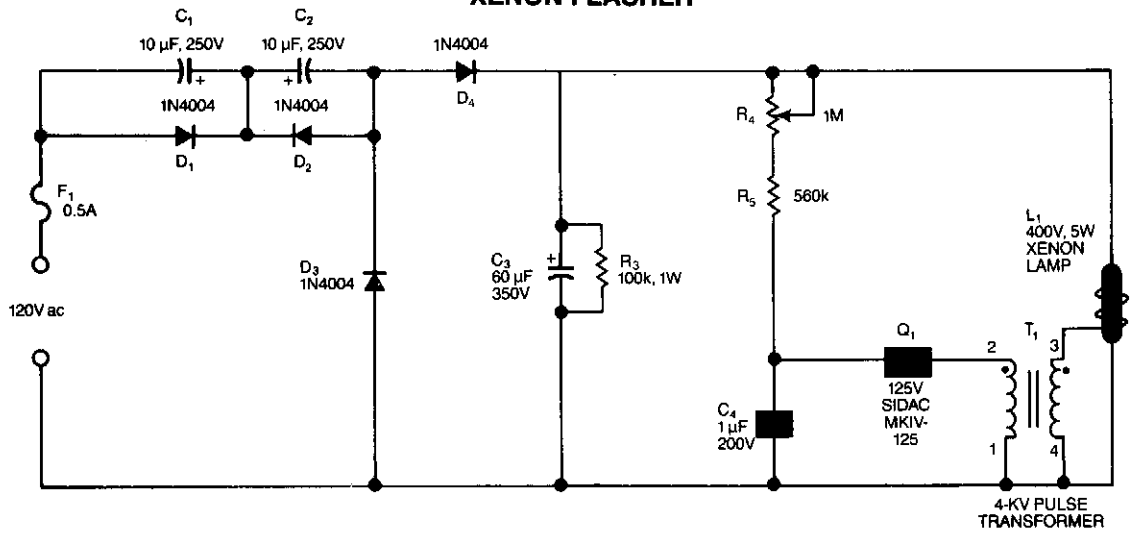
EDN

Fig. 31-1

The pseudorandom sequencer drives a solid-state relay. If you power a low-wattage lamp from the relay, the lamp will appear to flicker like a candle's flame in the wind; using higher-wattage lamps allows you to simulate the blaze of a fireplace or campfire. You can enhance the effect by using three or more such circuits to power an array of lamps.

The circuit comprises an oscillator, IC1, and a 15-stage, pseudorandom sequencer, IC2–4. The sequencer produces a serial bit stream that repeats only every 32 767 bits. Feedback from the sequencer's stages 14 and 15 go through IC4D and back to the serial input of IC2. Notice the RC network that feeds IC4C; the network feeds a positive pulse into the sequencer to ensure that it won't get stuck with all zeros at power-up. The leftover XOR gates IC4A and IC4B further scramble the pattern. The serial stream from IC4B drives a solid-state relay that features zero-voltage switching and can handle loads as high as 1 A at 12 to 280 Vac.

XENON FLASHER

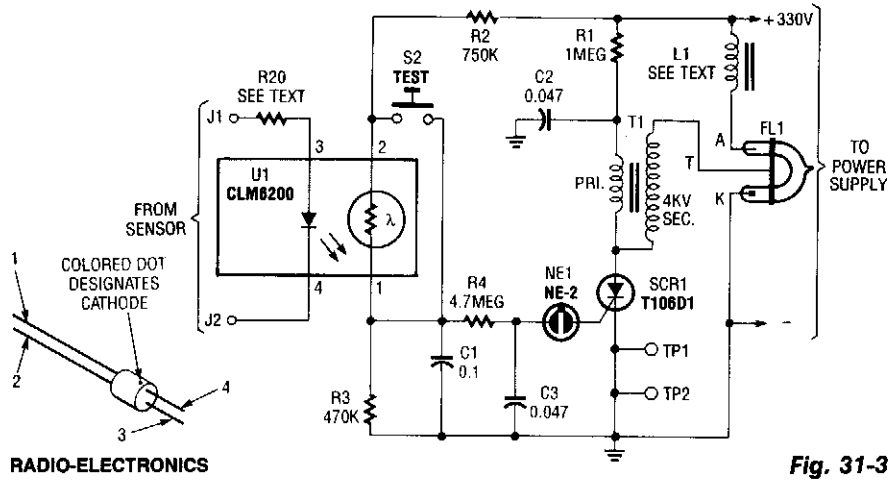


EDN

Fig. 31-2

Using a voltage-doubler supply, this circuit charges a 60-μF capacitor and discharges it through a Xenon lamp. The SIDAC device is manufactured by Motorola. It is a two-terminal device that breaks over at a specified voltage. R4, R5, and C4 determine the flash rate.

STROBE ALARM

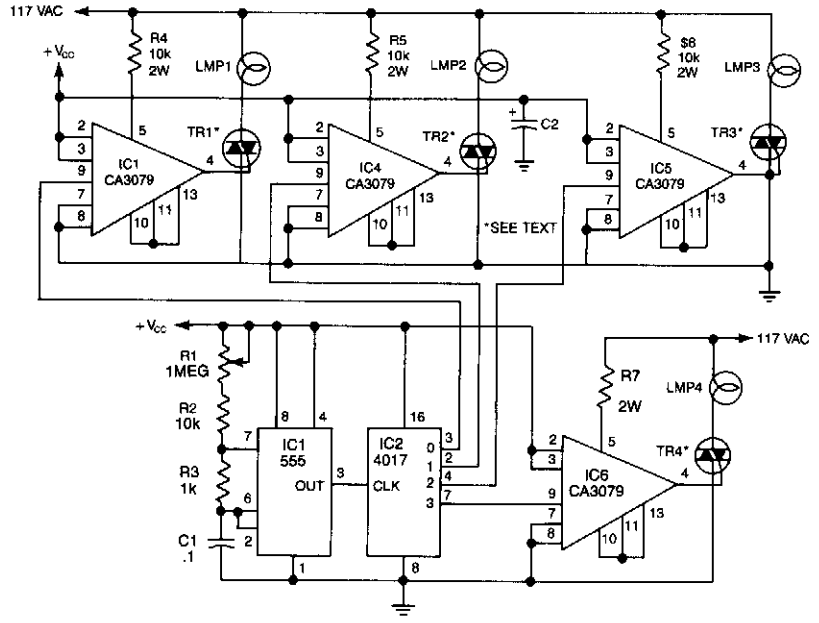


RADIO-ELECTRONICS

Fig. 31-3

This strobe gives a visual indication of a sensor input. The input signal causes U1, a light dependent resistor, to charge C1 and C3 through R4. When NE1 fires, C3 discharges into SCR1, which triggers it and causes C2 to discharge through trigger transformer T1, which triggers Flashlamp FL1. The 330-V supply should have about 50 to 100 μF output capacitance. L1 supplies about 25-mH inductance to prolong the flash and the life of FL1.

SEQUENTIAL FLASHER



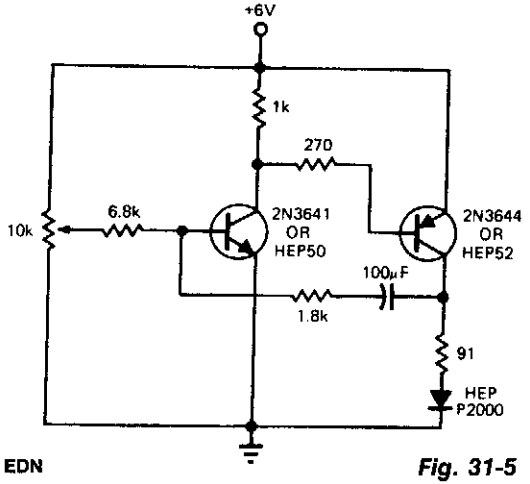
RADIO-ELECTRONICS

Fig. 31-4

Using a 555 timer to drive a CMOS counter, this device uses RCA CA3079 zero-voltage switch to control triacs TR1 through TR4. This circuit can be used to sequence lamp displays, etc.

Caution: The CA3079s are connected to the 117-V line, as is the clock and counter circuit and their power supplies. Use caution, good insulation, and safe construction practices.

LED FLASHER

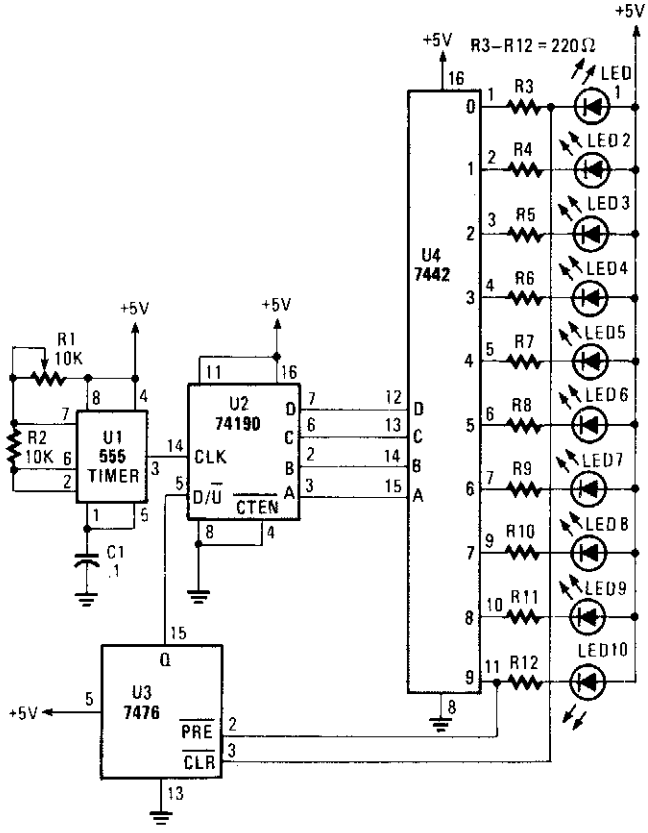


EDN

Fig. 31-5

This circuit is designed to flash an LED. The 100-μF capacitor can be changed to alter the flash rate as desired.

SEQUENTIAL LED FLASHER WITH REVERSIBLE DIRECTION

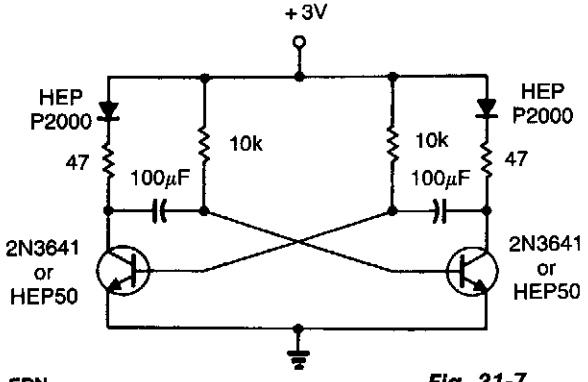


POPULAR ELECTRONICS

Fig. 31-6

A 555 timer clocks a 74190 up/down counter. The 74190 drives BCD decoder driver 7442. The 7476 is used to reverse the count on 0 and 9, which results in an up-down-up-down count sequence.

MULTIVIBRATOR WITH LEDs



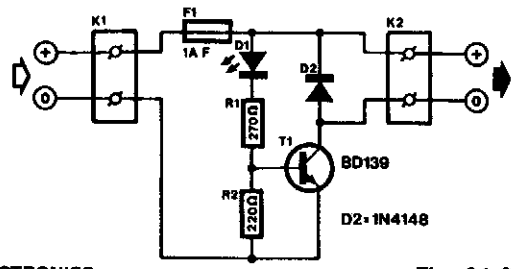
A simple astable multivibrator is used to alternately flash two LEDs. The approximate time constant is 0.69.

$(R_1C_1 + R_2C_2)$ $R_1 = R_2 = 10\ \text{k}\Omega$
$C_1 = C_2 = 100\ \mu\text{F}$

EDN

Fig. 31-7

FLASHING LED CONTROLLER



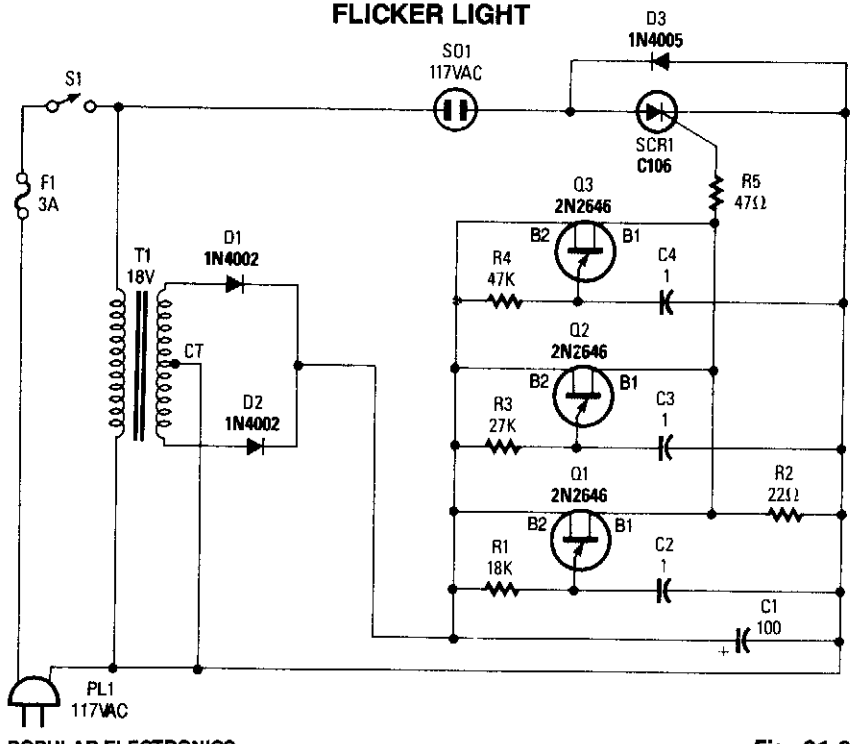
ELEKTOR ELECTRONICS

Fig. 31-8

The LED with integrated flasher is connected in series with the base-emitter junction of transistor T1. Thus, the load connected to K2 is switched on and off in rhythm with the flash rate. This load can be a relay or a lamp.

The maximum collector current of the transistor (of the BD139 = 750 mA) must not be exceeded. If that is not sufficient, a power Darlington can be used, which will give some amperes. The current drawn by the circuit under no-load conditions amounts to 20 mA.

FLICKER LIGHT



POPULAR ELECTRONICS

Fig. 31-9

This circuit will produce a flicker light effect with an ordinary incandescent lamp. Three UJT relaxation oscillators fire the SCR in a pattern.