

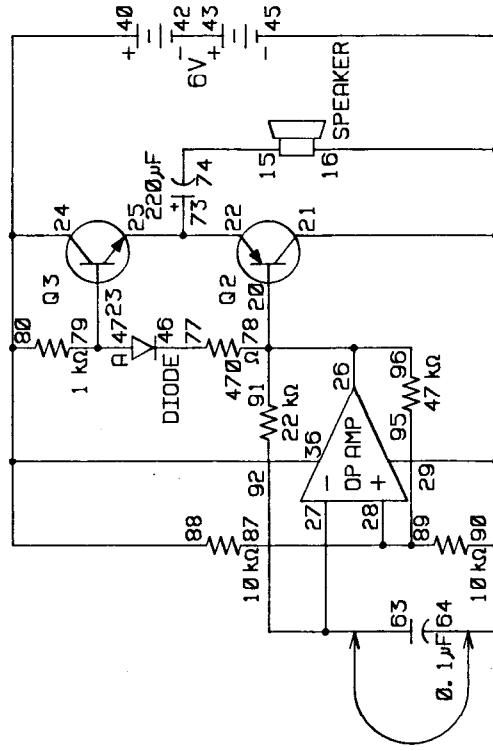
46. Burglar Alarm

In this project you build a mini-burglar alarm. If this were an actual burglar alarm, you could stretch the wire loop (connected to terminals 63 and 64) across an area where a burglar is likely to pass through. If a burglar gets caught in the wire, then cuts the wire to free himself, the burglar alarm sounds.

Connect the wires according to the wiring sequence. Try to remove the wire between 63 and 64 and note what happens. The speaker produces a loud alarm sound. To silence the alarm, restore the connection between 63 and 64.

The OP AMP acts as a low-frequency oscillator to produce the alarm signal. As long as there is a wire across the 0.1 μ F capacitor, the oscillation does not start. Once the wire connection is broken (the alarm is tripped), the oscillation begins.

Q2 and Q3 amplify the sound to the speaker. The circuit is a SEPP (Single Ended Push-Pull) type: the NPN and PNP transistors work together.



Wiring Sequence

15-74, 20-26-78-91-96, 24-80-88-36-40, 25-22-73, 27-92-63-64-16-21-29-90-45, 28-87-89-95, 46-77, 47-23-79, 42-43

NOTES

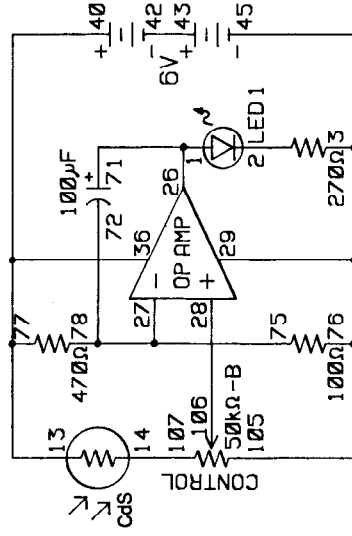


47. Shot in the Dark

Shot in the Dark is like a game—you try to hit the CdS with a light beam in the darkness. LED1 lights to let you know whether or not you hit the target.

Connect the wires according to the wiring sequence. When you're finished, darken the room and turn the control clockwise until LED1 lights. Turn it back just enough for LED1 to turn off. Shoot a light beam at the CdS (a flashlight works fine). If the light beam hits the CdS, LED1 lights.

A light signal detected by the CdS is added to the positive (+) input terminal of the OP AMP. The OP AMP works as a comparator – it checks the voltage applied to the positive (+) input terminal and compares it with the reference voltage applied to the negative (-) input terminal. If the input voltage is higher than the reference voltage, the OP AMP produces output and LED1 lights.



Wiring Sequence:

1-26-71, 3-29-76-105-45, 14-107, 27-78-75-72, 28-106, 40-13-36-77, 42-43

NOTES

