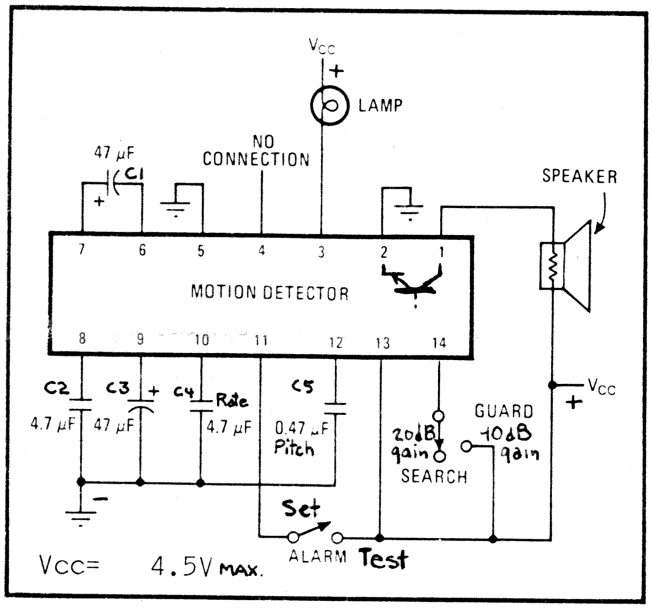


1. Optolinear. Initially intended for electronic toys, integrated motion detector may be at the heart of low-cost intrusion alarm systems in the near future. Combining digital I²L circuitry with linear bipolar circuitry, the device includes an on-chip photodiode.

also adaptively [illegible]
way, input bias current is typically held to 1% of the photocurrent output, independent of the illumination.

Meanwhile, special-purpose optolinears are moving into consumer applications other than cameras.

, has designed a fully integrated motion detector for electronic toys that looks very promising for use in a low-cost, high-volume alarm system. This bipolar chip is capable of sensing motion at a minimum distance of 8 feet over a 2-ft surveillance diameter. Made up of both I²L digital circuitry and linear bipolar circuitry, the device (Fig. 1) contains an on-chip photodiode and high-current output drivers.

Upon sensing motion, it sounds a whooping alarm (via an external speaker) for a given time, after which it automatically resets. The device also offers a search mode of operation, flashing an external lamp at a rate of approximately 2.5 hertz while simultaneously sounding a random sequence of audible notes.

Another chip combination, photodiodes with processing circuitry, is found in an IC to be reported on.

The chip senses a change in the illumination falling on the photodiode, and the rate at which the illumination changes determines whether the chip will trigger. The rate needed for triggering is set by external components. If the change is more than 10% and fast enough, the chip generates a tone with enough power for an audible alarm. It has a separate visual-alarm output as well.

The circuit is alarming

Not surprisingly, then, the IC, originally designed for a toy, is also suitable for an intrusion alarm. Noting that the motion of objects in the field of view is likely to change the amount of light on the IC,
call their IC a motion detector. With proper optics, the chip can detect a flag fluttering 50 ft away. When used as an intrusion alarm, it requires no light source.

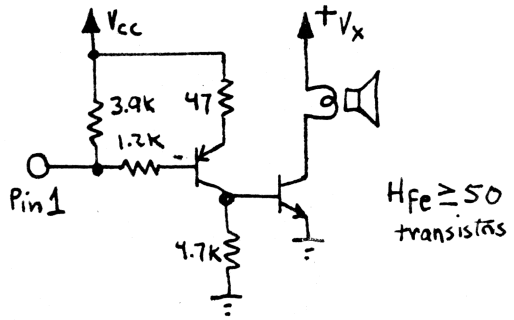
The chip also has two oscillators: One is for the audible alarm, and the other is a clock oscillator for the toy functions.

PHOTOMICROGRAPH OF THE ACTUAL IC CHIP

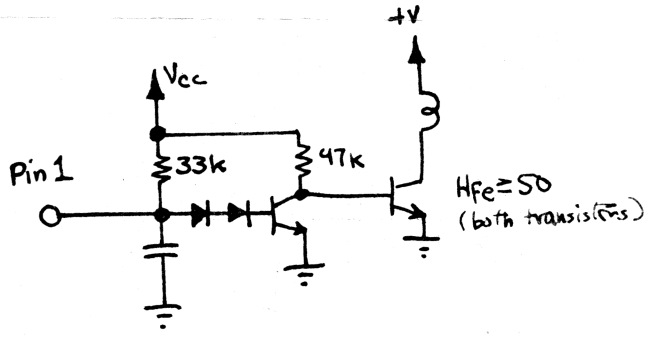
General Design/Application notes

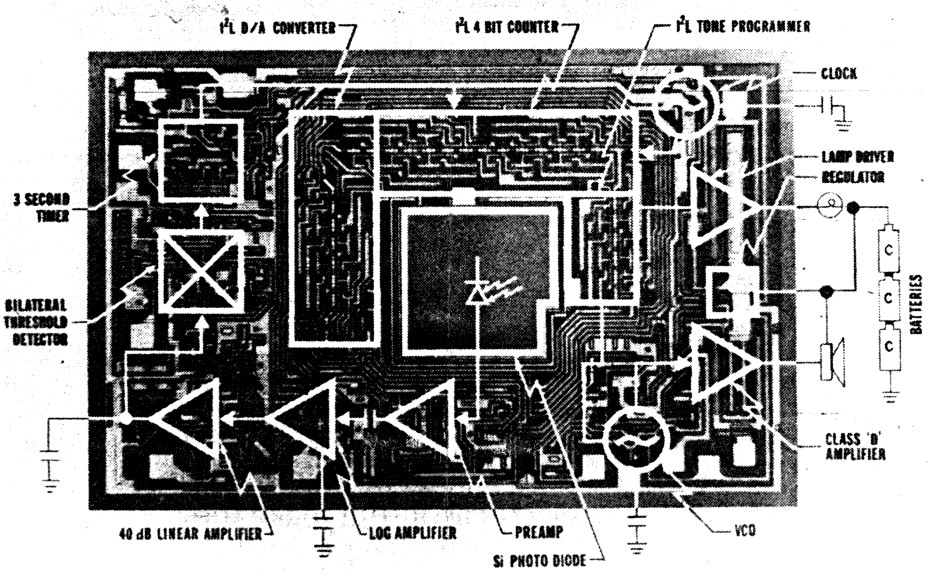
C1 and C3 set the amplifier high-pass response (0.7Hz)
C2 sets the amplifier low pass response (9Hz)
C4 sets the time-out timer (4 seconds) the yelp rate, the lamp flash rate (2.5 Hz in the SEARCH MODE), a short circuit will produce a constant tone.
C5 sets the tone pitch
Vcc should be between 3 volts and 4.5 volts.
Supply current (pins 11, 13, and 14) is about 25 mA.
Supply current (pin 1) is up to 80 mA depending on load.
Supply current to pin 3 is up to 500 mA peak in the SEARCH MODE

AUDIO POWER AMPLIFIER



RELAY DRIVER





The integrated intrusion alarm system, offered by Sprague Electric, mixes integrated injection logic, standard linear processing and a silicon photodiode on one chip.