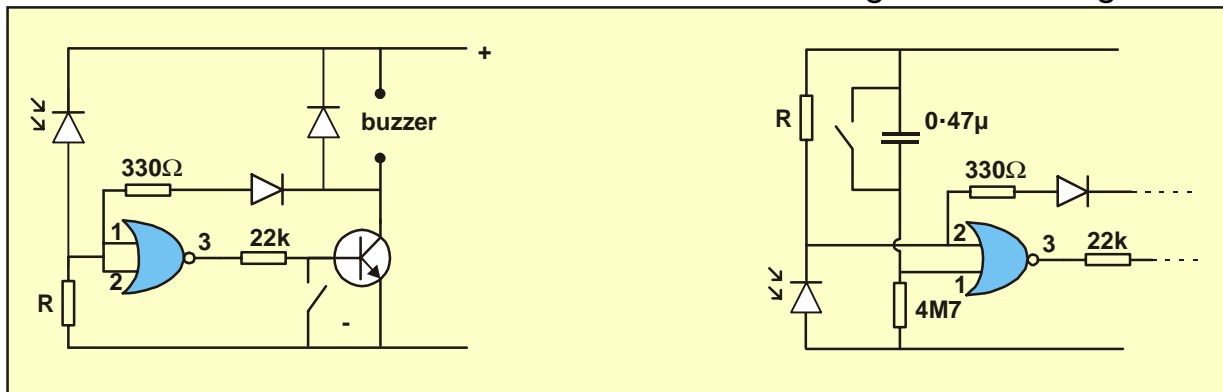


## Simple Alarms

### 1. Alarms using an electro-magnetic buzzer

To use the circuit shown below (left), the diode should be permanently illuminated by a beam of light. When the light beam is cut, by an intruder, the conductivity of the diode decreases and the alarm sounds. The alarm will continue to sound, even when the light returns, until the reset switch is pressed. The value of resistor R is found by experiment but will probably be between 100k and 560k (start with 180k.)

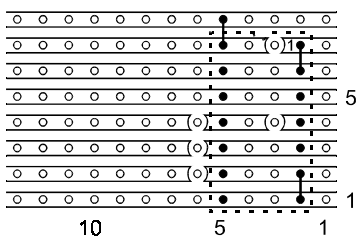
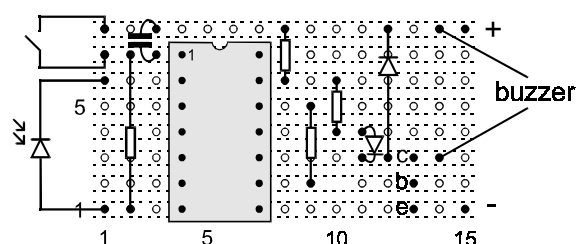
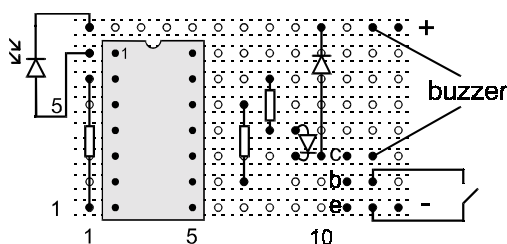
If you want an alarm which sounds when the diode is exposed to light (for example, in order to protect a bag, drawer, suitcase etc) you will need to use the modifications to the circuit shown in the diagram on the right.



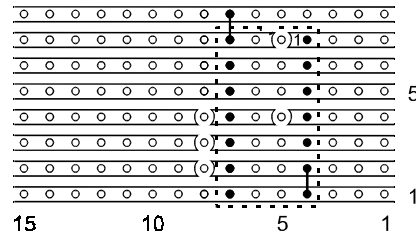
Dark alarm

Light alarm

The NOR gate is one quarter of a 4001 chip. Transistor: BC109C or similar.



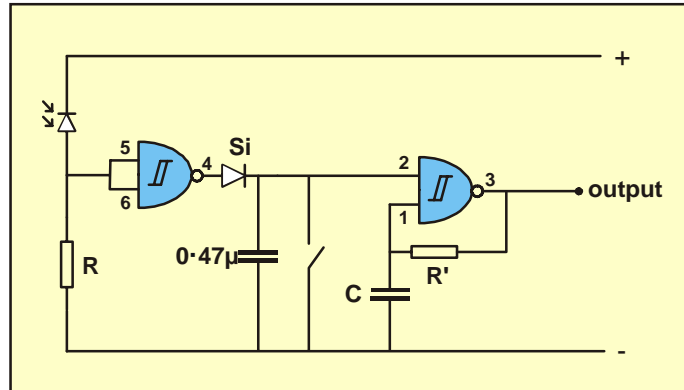
Dark Alarm



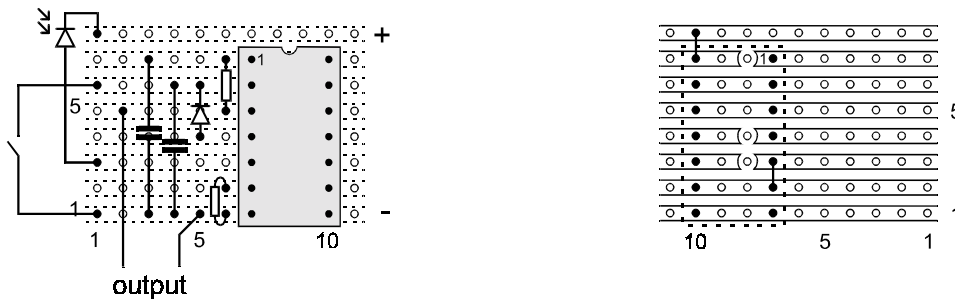
Light Alarm

## 2. Alarms using oscillator driving high impedance earphone

In the following circuits, the chip used is a 4093 quad NAND Schmitt trigger. These circuits will sound the alarm when the light goes off but it can easily be changed to give an alarm when the diode is illuminated simply by changing the places of the diode and resistor, R.



The components R' and C determine the frequency of the oscillator and therefore the "pitch" of the sound produced by the alarm; try 560k and 1.5n.



If the other two Schmitt triggers in the 4093 are used as shown below, you can have an alarm which gives a series of "beeps" rather than a continuous tone.  
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