

**DING/DONG DOOR CHIME (PIR SENSOR)**  
CODE 512 **LEVEL 3**

A detector circuit that uses a PIR (Pyroelectric infrared) sensor to detect infrared radiation from human and animal body. It also has fractional round and flat lens for better detecting efficiency.

**Technical specifications:**

- Power supply : 4.5VDC.
- Consumption : 7mA. @ 4.5VDC.(stand by)  
180mA. @ 4.5VDC.(working).
- Detection range : 5m.(round len) or 8m.(flat len).
- PCB dimensions : 3.07 x 1.76 in.

**How to work:**

When human or animal pass the PIR sensor, the signal at pin S of PIR will be fed to the input of IC1/1 at pin10. IC1/1 then will be configured as the first amplifier to adjust the gain control (VR1) ranging from 10 to 100. The output of IC1/1 at pin8 is also fed to the input of IC1/2 (second amplifier) at pin 13. IC1/3 and IC1/4 are comparative circuits. IC1/4 will be compared to ranging of the swing down signal and IC1/3 will be compared to ranging of the swing up signal.

When the signal is over or nearly ended, the voltage of IC1/3 or IC1/4 will be fed to the base of TR1. Then TR1 will work together with TR2 and caused IC2 to produce a ding/dong sound. TR3 and TR4 will amplify the sound and forward to speakers.

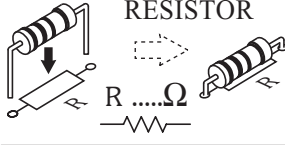
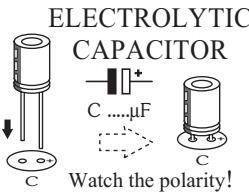
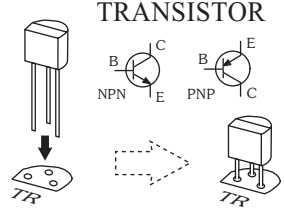
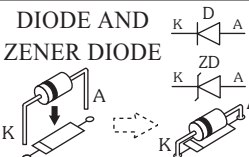
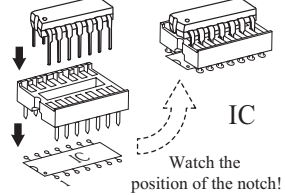
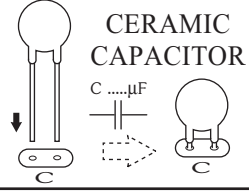
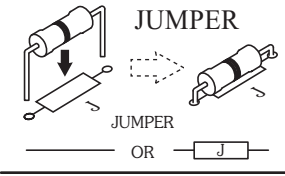
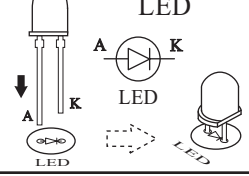
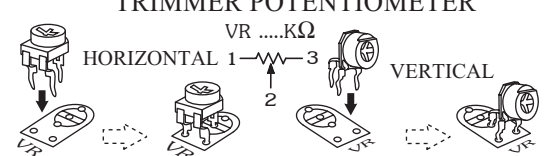
**Circuit assembling:**

External connecting and fitting of components are shown in figure 3. It is recommended to assemble the circuit starting with a less height component i.e. diodes, resistor, electrolite capacitors and transistors etc. Be careful while assembling and check for the matching of PCB poles and components before soldering as shown in Figure 1. Use a max. 40W. solder and soldering lead with a tin and lead ratio of 60/40 together with a joint solution inside. Recheck the assembled circuit for your own confidence. Better using a lead sucker or a lead wire absorber in case of misplacing component to protect PCB damage.

**Testing:**

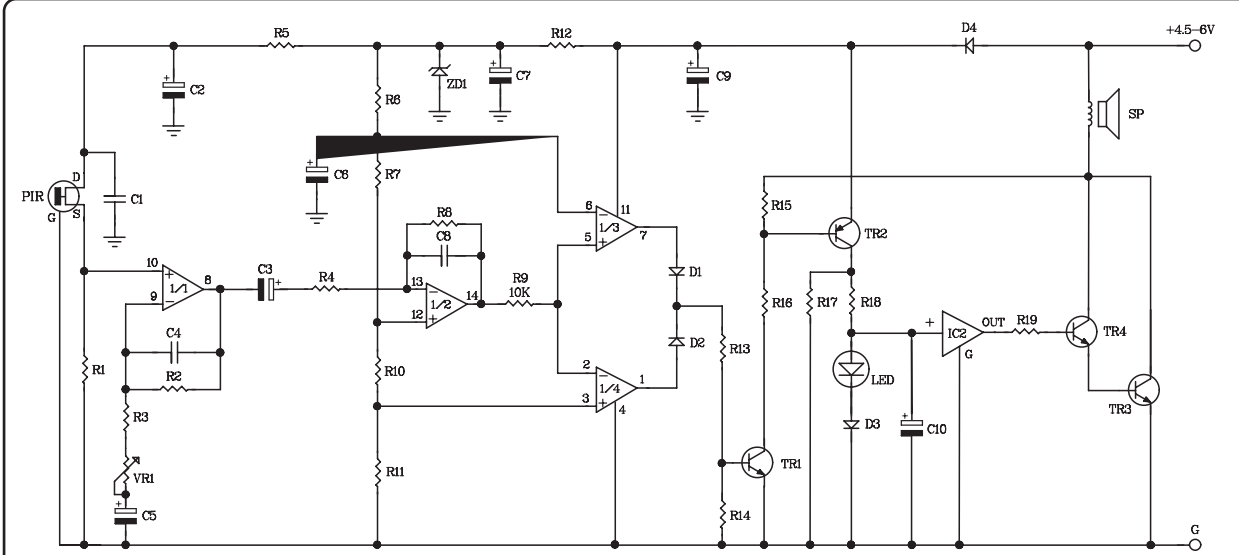
Rotate VR1 max. counterclockwise and turn PIR sensor to the position of "not human or animal pass". Connect the power supply of 4.5-6VDC to "+4.5-6V" point. Wave the hand passing the PIR sensor, LED1 will be lit and there will be a ding/dong sound from speaker. When pull out the hand from facing the PIR sensor, LED1 will be off and there is no more ding/dong sound. The above results will show that the circuit is workable.

**Figure 1. Components installing**

 <p><b>RESISTOR</b> R .....Ω</p>	 <p><b>ELECTROLYTIC CAPACITOR</b> C .....μF Watch the polarity!</p>
 <p><b>TRANSISTOR</b> NPN PNP</p>	 <p><b>DIODE AND ZENER DIODE</b></p>
 <p><b>IC</b> Watch the position of the notch!</p>	 <p><b>CERAMIC CAPACITOR</b> C .....μF</p>
 <p><b>JUMPER</b> OR J</p>	 <p><b>LED</b></p>
 <p><b>TRIMMER POTENTIOMETER</b> VR .....KΩ HORIZONTAL 1-2-3 VERTICAL</p>	

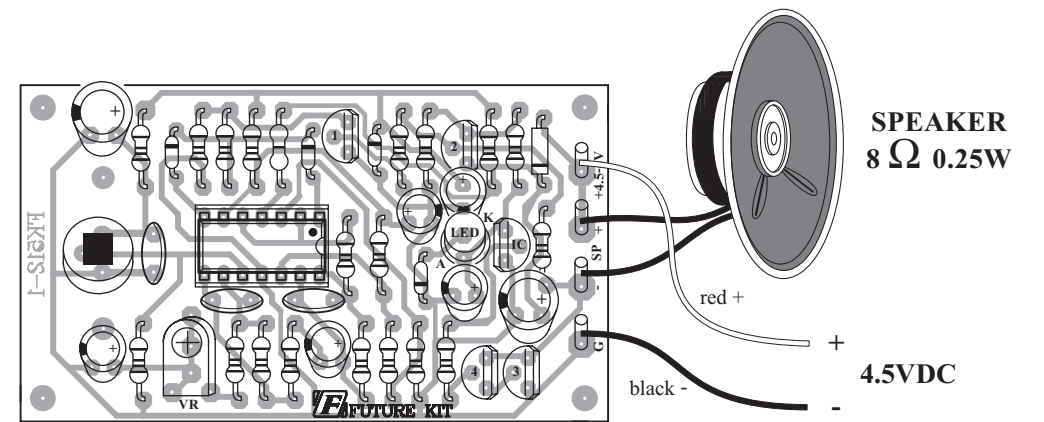
**Troubleshooting:**

As the circuit has only a few components, the main cause of troubles will come from misplacing component and defaulted soldering. When found out that the circuit does not work, check the placing component and various soldering points.

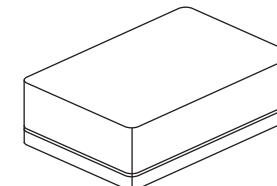


**Figure 2. The ding/dong door chime (PIR sensor) circuit**

**Figure 3. Circuit assembling**



**FK512-1**



**NOTE:**

FUTURE BOX FB03 is suitable for this kit.