



# **Pyroelectric Infrared Radial Sensor**

Type:D202X

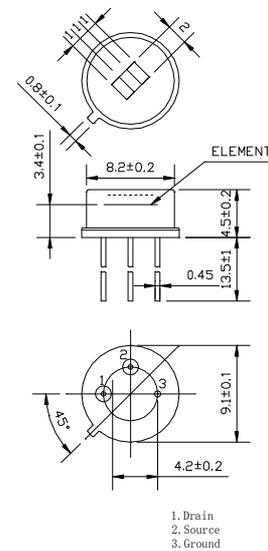
**Eagle Power International Holdings Ltd**

## Dual Elements Pyroelectric Infrared Radial Sensor

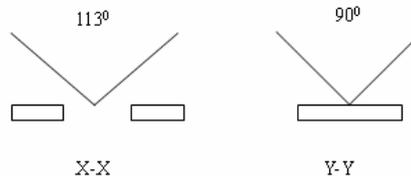
The pyroelectric infrared sensor detects infrared radiation on the basis of the characteristics that the self-polarization of pyroelectric material changes with temperature. Dual compensated sensing elements are applied to suppress the interference resulting from temperature variation. As a result, the operating stability of the sensor is greatly improved. It can be widely used in many applications such as in intellectualized toy, automatic light switch control, and visitor acknowledgement etc., especially in the field of intellectualized toy applications.

### Standard Specifications and Dimensions

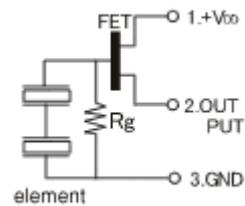
Recommended Model	D202X
Encapsulation Type	TO-5
IR Receiving Electrode	2×1mm, 2elements
Window Size	2×3mm
Spectral Response	5-14μm
Transmittance	≥75%
Output Signal[Vp-p]	≥3300mV
Sensitivity	≥3100V/W
Detectivity (D*)	$1.4 \times 10^8 \text{ cmHz}^{1/2}/\text{W}$
Noise[Vp-p]	<70mV
Output Balance	<10%
Offset Voltage	0.3-1.2V
Supply Voltage	3-15V
Operating Temp	-30-70°C
Storage Temp	-40-80°C



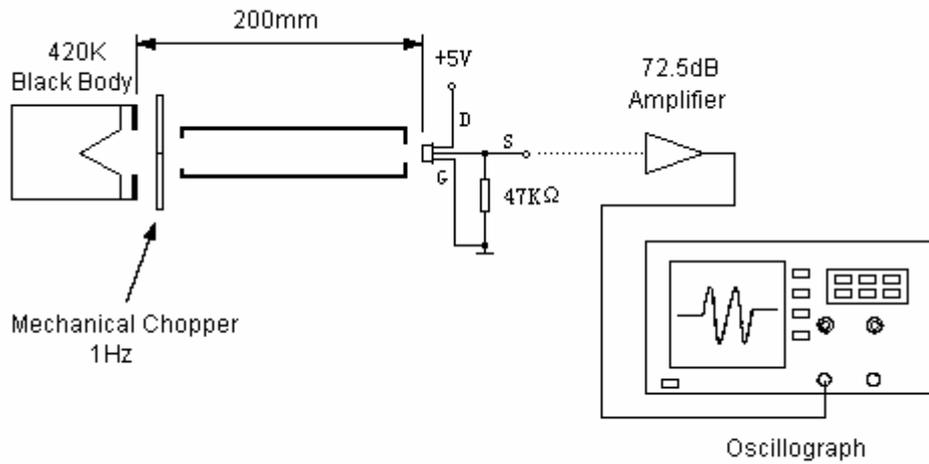
Field of View



Equivalent Circuit

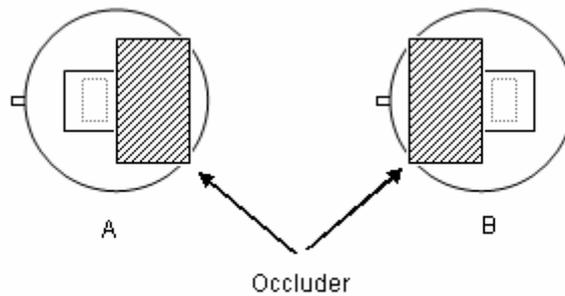


## ■ Test Method



## Measurement conditions

- ◆ Circumstance situation temperature 25°C
- ◆ Black-body temperature 420K (@147°C)
- ◆ Chopping frequency 1 Hz, 0.3~3.5Hz  $\Delta f$
- ◆ 72.5 dB Amplifier



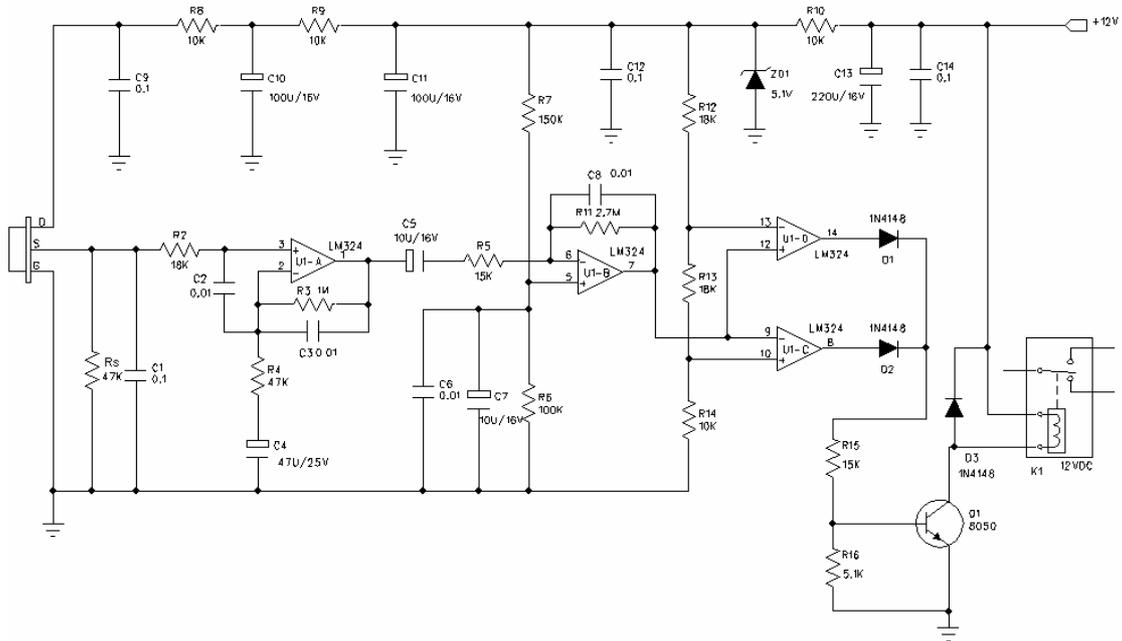
The sensitivity balance of sensor is calculated by measuring the sensitivity (signal output voltage) of each side and uses the formula as below:

$$\text{Balance} = |V_A - V_B| / (V_A + V_B) \times 100\%$$

$V_A$  = Sensitivity of side A ( mVp-p )

$V_B$  = Sensitivity of side B ( mVp-p )

■ Typical Application



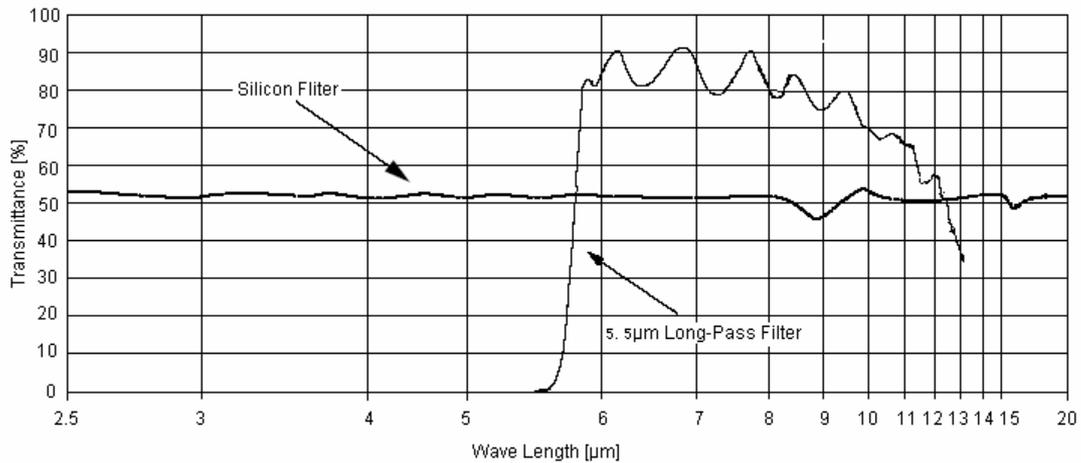
Notice:

U1A-D:LM324

Vdd:12V DC

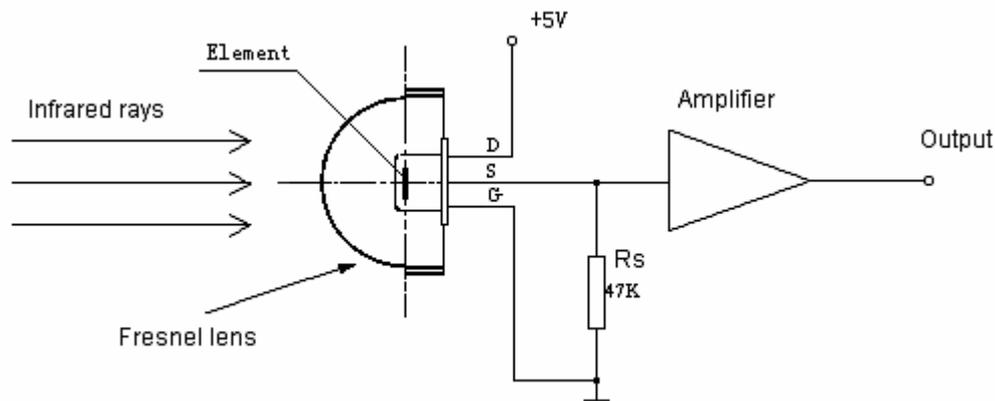
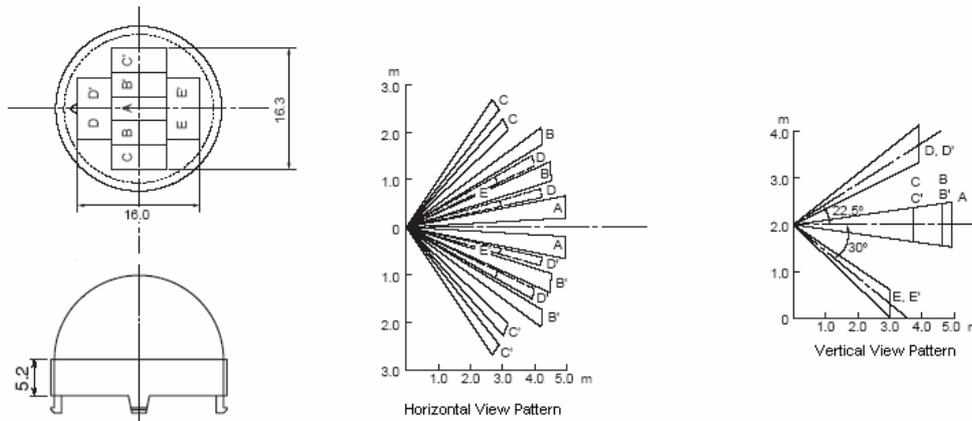
Rs=47KΩ @ on an offset voltage

■ Spectral Response of Window Materials



Notice:

The above curve is the typical figure of 5.5 μ m pass IR filter, the curve is the average value of IR transmittance, the window's substrate is vacuum-coated with semiconductor material.

**■ Fresnel Lens for Human Body Detection**

**■ Directions for Use**

- Pay attention to the mounting direction of the sensor's element and the size of element ichnography. Combining with focus of Fresnel lens can achieve a optimal optics design.
- The ex-factory parameter of sensor is gained by testing in the condition of standard Black Body and the relevant circuit after one minute steadying-time.
- The detecting distance of sensor is a multidimensional function, consisting of ambient temperature, temperature of moving target, target distance of Fresnel Lens', ambient humidity, amplifier gain and comparison voltage.
- The welding shall be made at 4mm above as per the recommendation for lead wire of sensor seat, and the welding should be completed in the shortest possible time.
- Do not touch the window by hand and the hard things directly.
- Strong shake and static should be avoided.
- This products are packed with the environmental protection material, and the sensors' surface has been covered specially with OHK anti-erode material, 100pcs per small package, 3000pcs per large package.