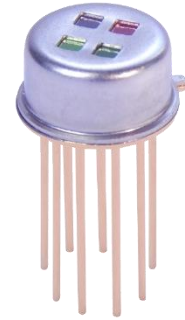


# Miniature Thin Film Four Channel Pyroelectric Sensor

## Introduction

Unlike other pyroelectric materials, the Pyreos thin film pyroelectric infrared sensors can be reduced in physical size and still provide high sensitivity with fast frequency operation, enabling this highly stable four element sensor in a TO39 package. This current mode sensor offers performance in a small footprint and up to 100 Hz data monitoring. The sensor has internal CMOS trans impedance amplifiers, with 10 GΩ feedback resistors outputting voltage signals centred around half the supply rail. A range of IR filters are available.



### Sensor Characteristics

Filter aperture	1.4 mm x 1.4mm
Element size	700 μm x 325 μm
Package	TO39
Responsivity <sup>1</sup>	100,000 V/W
D* <sup>1</sup>	1.5 x 10 <sup>8</sup> cm√Hz/ W
Noise <sup>1</sup>	40 uV√Hz
Op amp with 10 GΩ feedback resistor	

### Electrical Characteristics

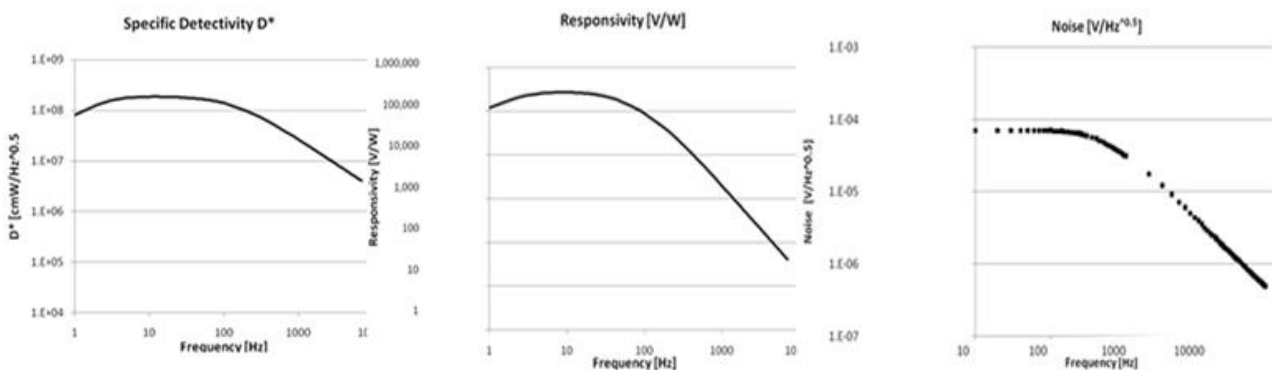
Max. Voltage (+V)	5.0 V <sup>2 3</sup>
Min. Voltage (+V)	2.7 V <sup>2</sup>
Recommended Offset V	(+V / 2) <sup>2</sup>
Microphonics	S <sub>vib</sub> ~1 μV/ g at 10Hz
Time Constant	~10 ms
Operating Temperature	-40 to +85 °C
Storage Temperature	-40 to +110 °C
Offset V max	(+V) – 0.1 V <sup>2</sup>
Offset V min	0.1 V <sup>2</sup>

<sup>1</sup> 10 Hz, 500 K, room temperature, without window and optics

<sup>2</sup>With reference to GND

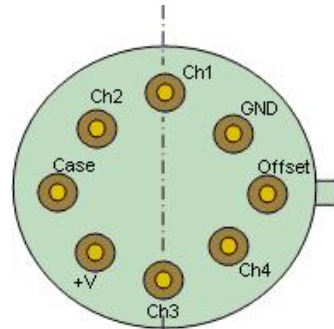
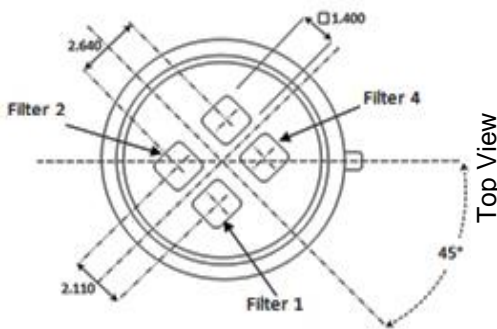
<sup>3</sup> Absolute maximum operating voltage 6.0V

## Frequency Characteristics



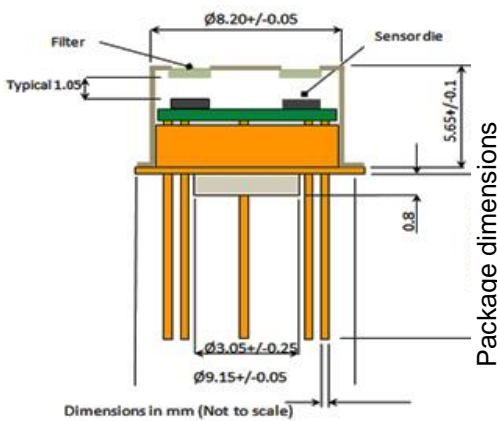
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**Package Information**



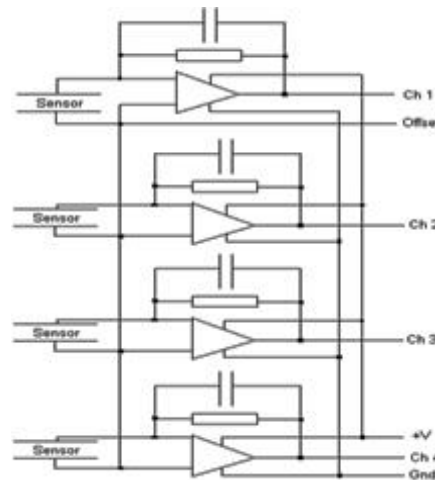
Bottom View

Filter window size



Package dimensions

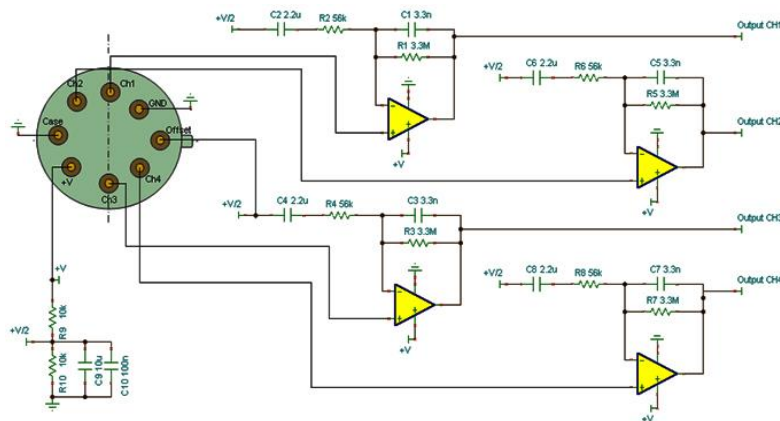
Dimensions in mm (Not to scale)



Internal Schematic

Note: Ensure that the sensor base is not in contact with the PCB in order to avoid shorts.

**Recommended Circuit Diagram**



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## Recommended Circuit Diagram

Pyreos has a range of standard filters available.

Part number	Channel 1 CWL $\mu\text{m}$ / (HPB nm)	Channel 2 CWL $\mu\text{m}$ / (HPB nm)	Channel 3 CWL $\mu\text{m}$ / (HPB nm)	Channel 4 CWL $\mu\text{m}$ / (HPB nm)	Use
<b>PY0235</b>	4.26 / (180)	4.64 / (180)	3.30 / (160)	3.91 / (90)	Exhaust, environmental
<b>PY2213</b>	3.90 / (200)	3.90 / (200)	4.26 / (180)	8.416 / (180)	Anaesthesia (1)
<b>PY2435</b>	8.75 / (200)	9.62 / (230)	12.25 / (210)	8.55 / (180)	Anaesthesia (2)

Note: An additional window may be required to provide high wavelength blocking.

## Order Information

Please quote PY-I-QUAD-TO39(7+1) and your desired filter combination or quote specific part number PYXXXX as per filter table. Contact: [sales@pyreos.com](mailto:sales@pyreos.com)

Search terms: current mode, voltage mode, infrared detector, infrared sensor, MIR, mid-IR, thermopile, photodiode