

# Thin Film Pyroelectric Dual Channel Sensor

## Introduction

Broadcom® thin film pyroelectric infrared (IR) sensors for gas detection and other substance concentration measurements offer exceptionally high responsivity, low microphonics, and class-leading thermal and electrical stability. This high-performance current mode sensor achieves a signal to noise of ~10,000 and offers a fast, stable response over a wide operating frequency range. The sensor elements are built into a low-noise circuit that has an internal CMOS op amp, with a 10-GΩ feedback resistor outputting a voltage signal centered around half the supply rail.



### Sensor Characteristics

Filter aperture	2.6 mm square
Element size	1000 μm x 1000 μm
Package	TO39
Responsivity <sup>1</sup>	150,000 V/W
D* <sup>1</sup>	3.5 x 10 <sup>8</sup> cm√Hz/ W
Noise <sup>1</sup>	70 μV√Hz

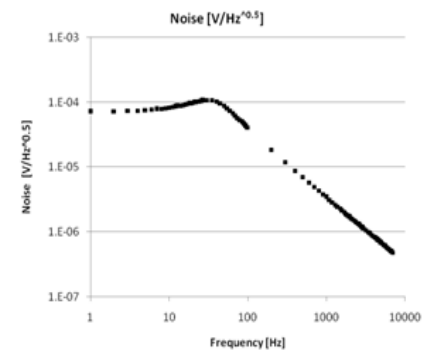
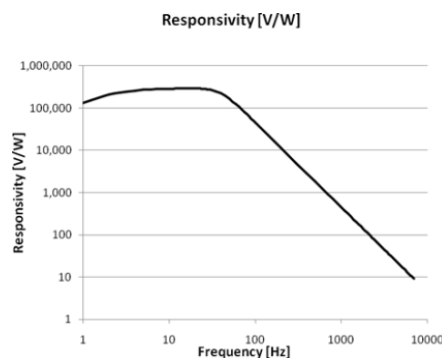
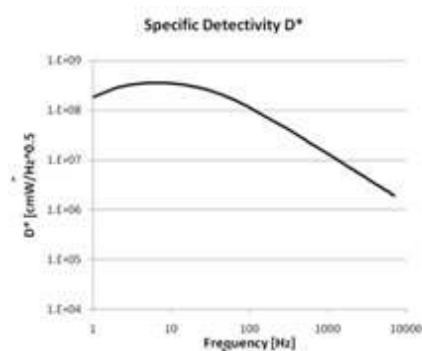
### Electrical Characteristics

Max. Voltage (+V) <sup>2</sup>	8.0 V
Min. Voltage	2.7 V
Output voltage normalized around mid-rail	
Microphonics	S <sub>vib</sub> ~2 μV/ g at 10 Hz
Time Constant	~12 ms
Operating Temperature	-40 to +85 °C
Storage Temperature	-40 to +110 °C
Filters	See "Filters Available"

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

<sup>2</sup>Absolute maximum operating voltage

## Frequency Characteristics





Broadcom has a range of standard filters available.

Part Number	Channel 1		Channel 2 (Tab)	
	CWL $\mu\text{m}$ / HPB nm	Use	CWL $\mu\text{m}$ / HPB nm	Use
<b>AFBR-S6PY2486</b>	3.91 / 90	Reference	3.33 / 160	H-C
<b>AFBR-S6PY0234</b>	3.91 / 90	Reference	4.26 / 180	CO <sub>2</sub>
<b>AFBR-S6PY2343</b>	3.70 / 110	Reference	4.26 / 180	CO <sub>2</sub> (Medical)
<b>AFBR-S6PY2572</b>	4.90 / 130	Reference	4.26 / 180	CO <sub>2</sub> (Medical)
<b>AFBR-S6PY1943</b>	3.91 / 90	Reference	4.30 / 110	CO <sub>2</sub> (Narrow)

Note: In some implementations, it may be necessary to add an optical high wavelength blocking filter externally to the sensor package.

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AFBR-S6ATO2-DS100