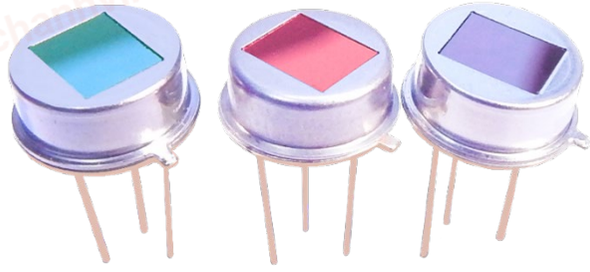
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Thin Film Pyroelectric Flame Sensor

Introduction

Broadcom® thin film pyroelectric infrared flame detectors offer exceptionally high responsivity, a wide field of view of typically 100° (*subject to filter band pass specification) and class leading rapid recovery from thermal and electrical shocks (typically <1 second downtime). This current mode sensor has excellent signal to noise at the signature 8-10 Hz flicker range of a flame, and can provide accurate discrimination of flame sources in triple IR flame detection systems. The sensor element is built into a low noise circuit that has an internal CMOS op amp with a 10GΩ feedback resistor outputting a voltage signal centred around half the supply rail.



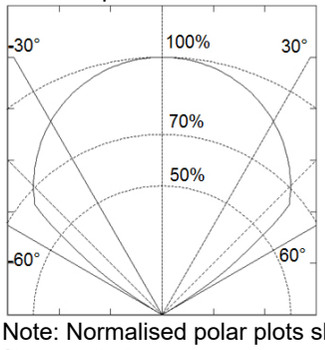
Sensor Characteristics	
Filter aperture	5.2 mm x 4.2 mm
Element size	1000 µm x 1000 µm
Package	TO39
Responsivity [1]	150,000 V/W
D* [1]	3.5 x 10^8 cm√Hz/ W
Noise [1]	Mean 70 µV√Hz
Field of View	Typical 100° [2]

[1] 10 Hz, 500 K, room temperature, without window and optics
[2] With reference to filter used in AFBR-S6PY0573
[3] Absolute maximum operating voltage

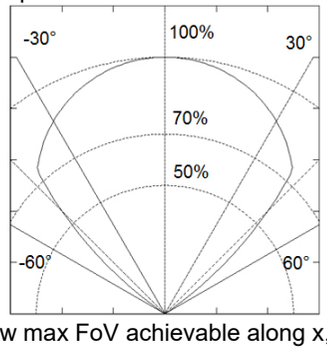
Electrical Characteristics	
Max. Voltage (+V) [3]	8.0 V
Min. Voltage (+V)	2.7 V
Output voltage normalised around mid-rail	
Microphonics	S_{vib}~2 µV/√Hz at 10 Hz
Time Constant	~12 ms
Operating Temperature	-40 to +85 °C
Storage Temperature	-40 to +110 °C
Op-Amp with 10 GΩ feedback resistor	
Filter	As per Filters Available table

Frequency Characteristics

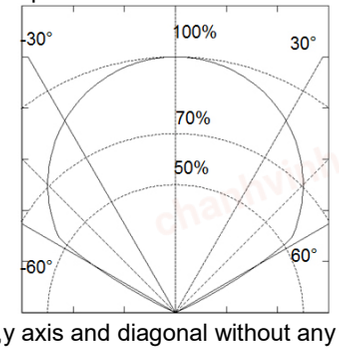
For V across horizontal window aperture



For V across vertical window aperture



For V across diagonal window aperture

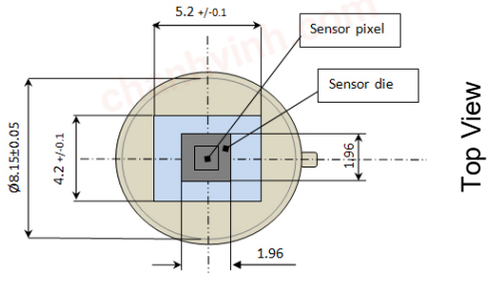




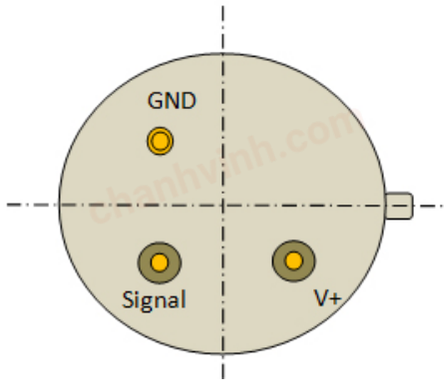
Note: Normalised polar plots show max FoV achievable along x,y axis and diagonal without any filter applied.

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Package Information

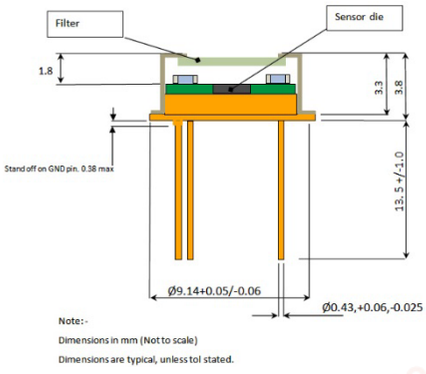


Top View

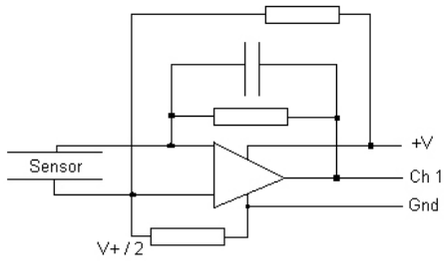


Bottom View

Filter window size



Package dimensions



Internal Scematic

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

Filters Available

Part number	AFBR-S6PY3200	AFBR-S6PY0575	AFBR-S6PY0573	AFBR-S6PY0574	AFBR-S6PY2341	AFBR-S6PY1601
Filter name	2.77 µm bandpass	3.91 µm bandpass	4.35 µm bandpass	4.55 µm bandpass	4.64 µm bandpass	5.0 µm cut on
Cut on wavelength typical (µm)	2.425	3.865	4.05	4.34	4.55	5.0
Cut off wavelength typical (µm)	3.115	3.955	4.65	4.76	4.73	—

Note: An additional window is required to provide high wavelength blocking (above 8.0 µm) and thermal shielding.

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

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