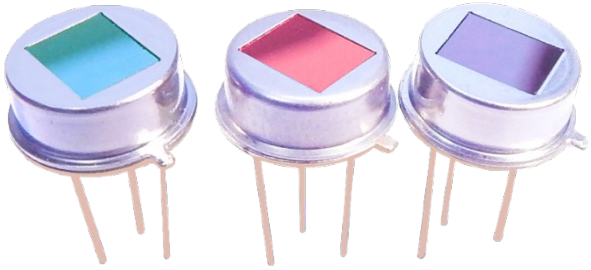
ezPyro™ TO I²C Pyroelectric Infrared Flame Sensor

Introduction



This thin film digital pyroelectric sensor for flame detection combines high quality sensors with a high level of configurable electronic integration in an industry standard TO-39 package. High sensitivity combined with fast response times ensure rapid and accurate flame detection. The high dynamic range allows detection of small and large flames, nearby or over larger distances. These sensors integrate a digital, current mode read-out offering high responsivity over the full frequency range of flame flicker (3-30 Hz). Programmable gain and filtering offer maximum flexibility in system design. Industry standard I²C communication enables plug-and-play connectivity to microcontrollers and allows easy tuning and calibration. Broadcom sensors are very stable over time ensuring a long and maintenance-free operational lifespan. Various optical filter options are available. These sensors can also be daisy-chained to allow synchronized sampling across devices and offer various low power modes.

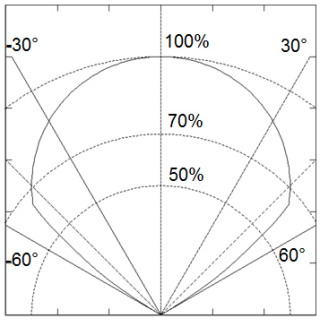
Sensor Characteristics	
Filter aperture	5.2 mm x 4.2 mm
Element size	1.0 mm x 1.0 mm
Sensor Package	TO-39
D* (typ.) [1]	Tbc
NEP (typ.) [1]	Tbc
Time Constant	~10ms (10-20 Hz peak)
Field of View	>100°

Electrical Characteristics	
Supply voltage	1.75 to 3.6 V
Supply current (typ.)	1 to 23 µA
Digital I/O	I²C (FM+ compatible)
ADC	15-23bit ΔΣ ADC @1ksp
Operating Temperature	-40 to +85 °C
Storage Temperature	-40 to +110 °C
Sensor read-out	Current mode
Configurable	Gain / digital filtering / sampling rate / power modes

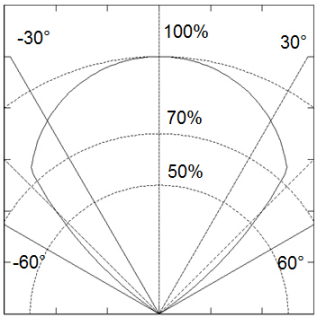
1) Measured without filter @ 500K, 10 Hz, room temperature

Field of View

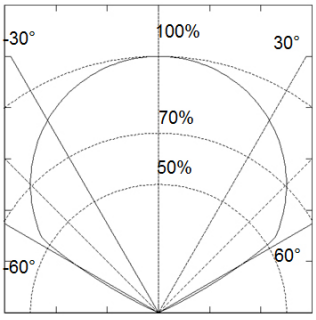
For V across horizontal window aperture



For V across vertical window aperture

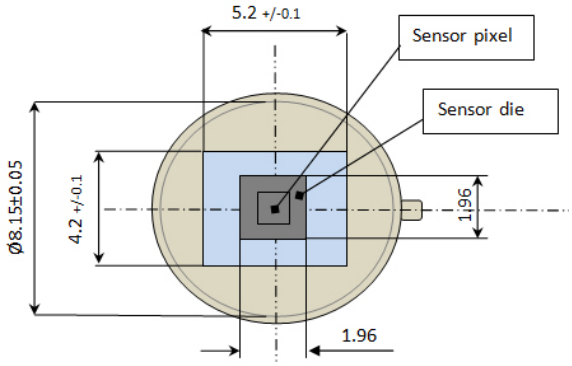


For V across diagonal window aperture

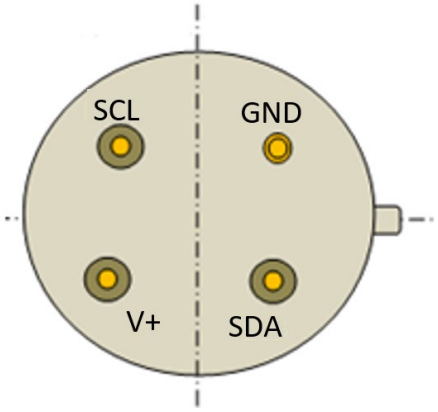


Note: Normalised polar plots show typical FoV along x,y axis and diagonal with 4.48µm/620nm filter applied, with infrared source being a blackbody radiator at 500 K temperature.

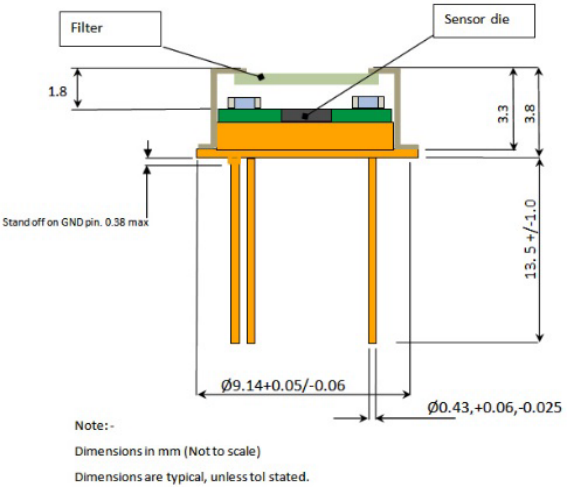
Mechanical Drawing



Top View



Bottom View



Package dimensions

Filter Information

Part number (marking)	AFBR-S6EPR44212	AFBR-S6EPR44252	AFBR-S6EPR44112	AFBR-S6EPR44352
Filter name	3.91 µm bandpass	4.48 µm bandpass	5.0 µm cut on	2.77 µm bandpass
Cut on wavelength typical (µm)	3.865	4.17	5.0	2.425
Cut off wavelength typical (µm)	3.955	4.79	—	3.115

Filters block up to 8 µm.

AFBR-S6EPRTO1F-DS100

Mouser Electronics

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