



LFP-3144C-337

Spectrally tuneable pyroelectric detector

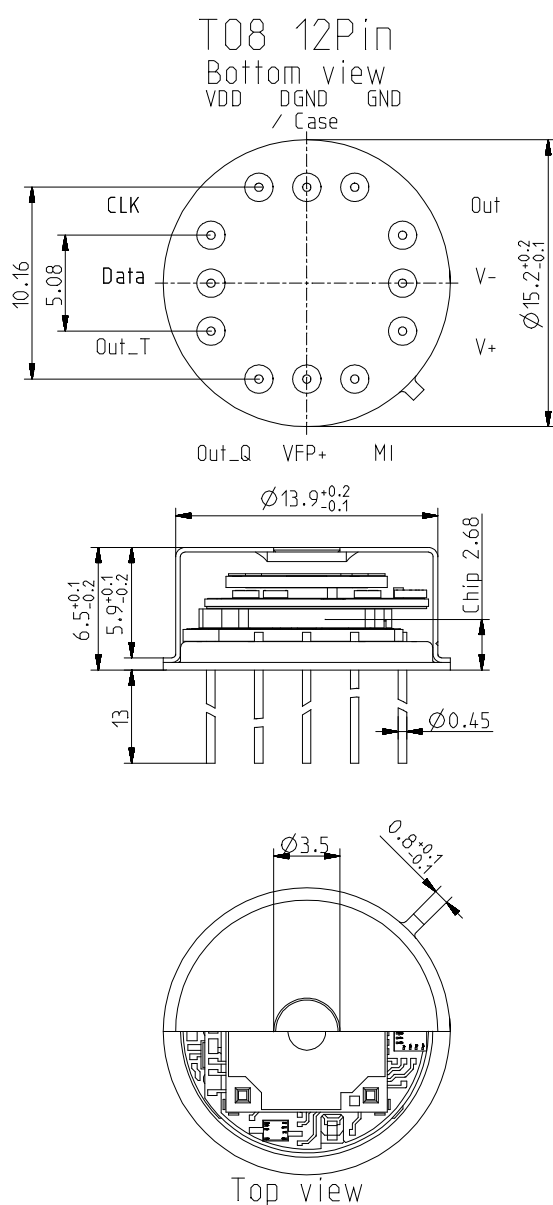
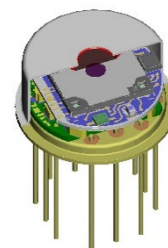
Description:

variable color; TO8 housing; medium chip size; thermal compensation; low Micro; OpAmp; current mode; feedback 100 GOhm; Pyroelectric IR detector with integrated Ø1.9 mm micromachined tunable Fabry-Perot filter. Tuning range 3.1 ... 4.4 µm, spectral bandwidth of about 60 nm, integrated ASIC and EEPROM for position measurement and storage of calibration data, advanced transimpedance amplifier (TIA) for 1 Hz to 100 Hz modulation frequency range

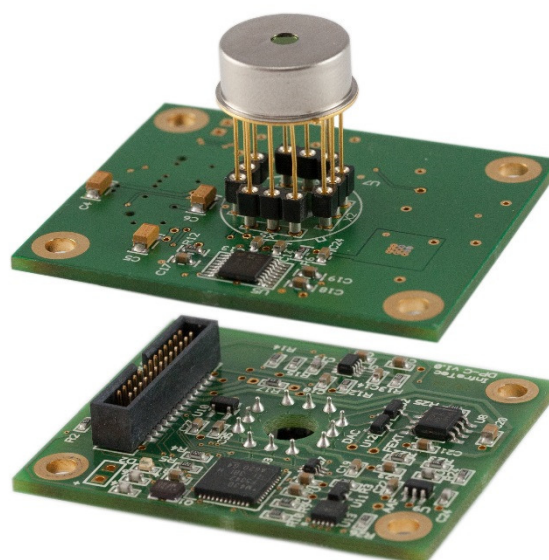
Detector works with individual PCB, referred to as detector board (S86744), for closed loop control.

InfraTec Part number: S88047

Housing:



Maximum current between Case and the "Case"-Pin 10 mA!



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Parameters:

Fabry-Pérot filter	nom	FPF 3.1 ... 4.4 μm , first order
Filter Aperture size		$\varnothing 1.9 \text{ mm}$
Mirror drive mechanism	nom	Electrostatic, 1 nF load, <0.05 μA leakage current
Guaranteed tuning range	nom	3.1 ... 4.4 μm
Spectral bandwidth @ 50 % of transmission peak ^{1,2}	nom	55 ... 70 nm
Filter Mechanical time constant ² (T63)	typ	2 ... 20 ms
CWL shift by gravity when turning upside down ² , open loop	typ	$\pm 15 \dots 35 \text{ nm}$
Accuracy of calibration stored in EEPROM (+15 ... 65 °C, without influence of gravity, open loop)	typ	$\pm 10 \text{ nm}$
Accuracy of calibration stored in EEPROM (+15 ... 65 °C, closed loop)	typ	$\pm 3 \text{ nm}$
CWL error by detector board {25 °C}	typ	$\pm 2 \text{ nm}$
Control accuracy { $\leq 10 \text{ g}$, $\leq 10 \text{ Hz}$ }	typ	$\pm 0.5 \text{ nm/g}$
Settling time (closed loop)	typ	5 ... 10 ms
Required supply voltages (board)	nom	3.3V, $\pm 5\text{V}$, 12V, 30...90V
Digital interface (board)		UART, 1MBd, 3.3 V
Detector output signal, conditioned (board)		0 ... 3.3 V
Order sorting filter	nom	WBP
Out of band blocking UV to	min	25 μm
Pyroelectric detector	nom	LME-337 based type
Element size / type	nom	2.0 $\times$ 2.0 mm ² lithium-tantalate with black layer
Thermal time constant	typ	150 ms
Feedback resistor	nom	100 G Ω $\pm 20 \%$
Feedback capacitor	nom	50 fF $\pm 10 \text{ fF}$
Polarity	nom	Negative signal by positive IR flux change
Voltage responsivity (rms) {400 °C, 10 Hz, 25 °C}	typ	1,000 V/W @ CWL = 4.0 $\pm$ 0.05 μm
Noise density (rms) {10 Hz, BW 1 Hz, 25 °C}	max	75 $\mu\text{V}/\sqrt{\text{Hz}}$
Detectivity {400 °C, 10 Hz, 1 Hz, 25 °C}	typ	3.0E+06 cmVHz/W @ CWL = 4.0 $\pm$ 0.05 μm
Operating / Storage temperature	nom	+15 ... 65 °C / -25 ... +85 °C

¹ Spectral measurement conditions: FTIR (resolution 4/cm; cone angle $\pm 7^\circ$; AOI 0°)² typical variation within the tuning range (see application note)

InfraTec reserves the right to change these specifications at any time without notification.



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