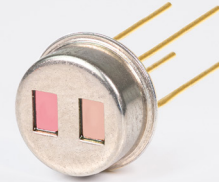


MPS2SENS LiTaO₃

Two channel lithium tantalate pyro detector



Applications

- NDIR gas analysis
- Gas monitoring

Product benefits

- Less sensitive to external interference due to internal signal amplification
- Read-out rate up to 25 Hz
- Well known technology in NDIR gas analysis

Features

- 2 chips with LiTaO₃ crystal
- Broad spectral sensitivity from UV to LWIR
- High responsivity with modulation frequency 2 - 25 Hz
- Microphonics reduction as standard
- Amplified signal in current mode

Additional product information

Lithium tantalate (LiTaO₃) is a ferroelectric crystal with pyroelectrical properties. Lithium tantalate detectors are used for optical sensors to detect infrared radiation. When infrared radiation is impinging the detector, it will be absorbed by the LiTaO₃ crystal via a high effective absorption layer. The absorbed radiation causes the LiTaO₃ layer to heat up. The electrical polarization of the lithium tantalate changes accordingly. This change generates an

electrical charge at the electrodes of the LiTaO₃ crystal, the measurement signal. A preamplifier circuit amplifies the weak pyroelectric signal. The amplified signal can then be analyzed and evaluated. Lithium tantalate pyroelectric detectors provide a reliable and effective method of detecting infrared radiation, making them important in a wide range of gas analysis applications.

Online shop for IR components and sensors
Filter products simply by selecting the desired properties and request your quotation.

 microhybrid.com/shop



Technical data

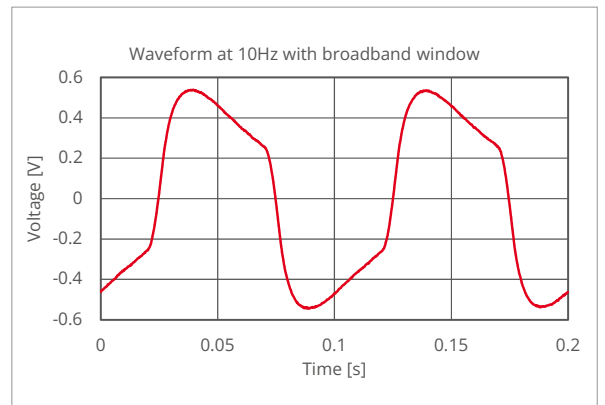
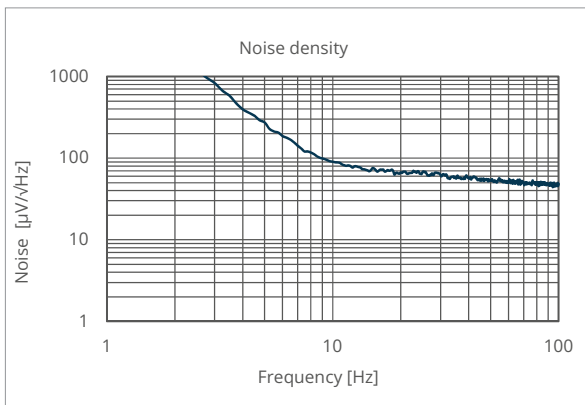
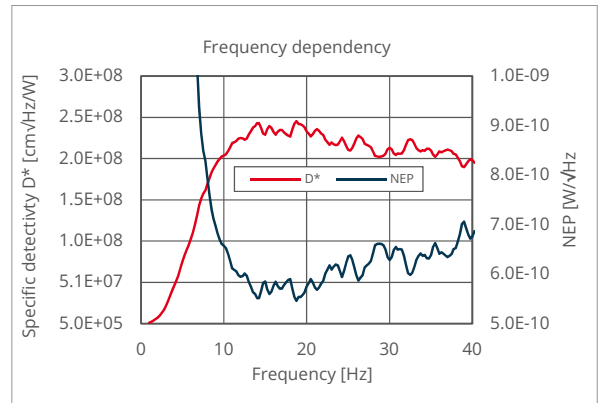
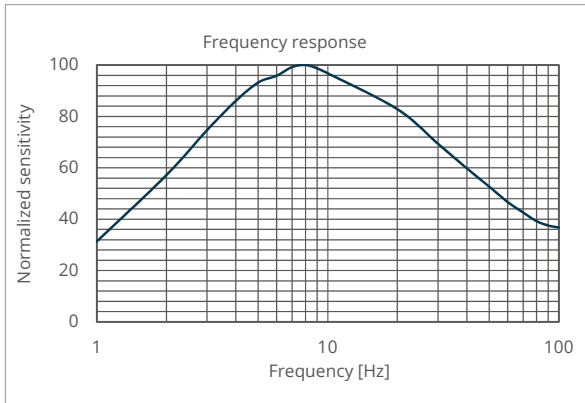
Technical parameter		Unit
Active area	2 x (1.8 x 1.0)	mm ²
Aperture	2x (2.7 x 1.8)	mm ²
Mode	Current	
Time constant $t_{(0-63\%)}^{\text{thermal}}$	typ. 57	ms
Time constant $t_{(0-63\%)}^{\text{electrical}}$	typ. 6	ms
AC sensitivity ^{1,2,3}	typ. 120 000	V/W
Noise density voltage	typ. 90	μV/√Hz
Noise equivalent power NEP ^{1,2,3}	typ. 7.00×10^{-10}	W/√Hz
Specific detectivity D^* ^{1,2,3}	typ. 2×10^8	cm √Hz/W
Acceleration response	typ. 550	μV/g
Filters	See document „Infrared filters“, customized filters on request.	
Operation voltage VDD+	1.8 ... 5.5 (3 V recommended)	V DC
Operation temperature	-20 ... +85	°C
Housing	TO39	

¹ Without filter

² Blackbody T = 500 K; E = 38 W/m²

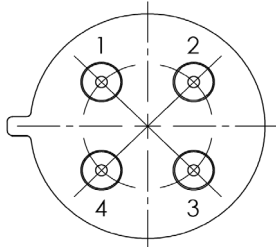
³ At T_{amb} = 25 °C, 10 Hz, band with 1 Hz

Typical operating characteristics



Electrical schemata

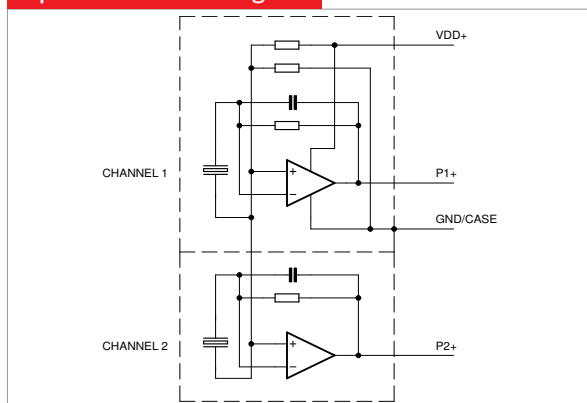
Pin out (bottom view)



- Pin 1 – P1+
- Pin 2 – VDD+
- Pin 3 – P2+
- Pin 4 – GND/ Case

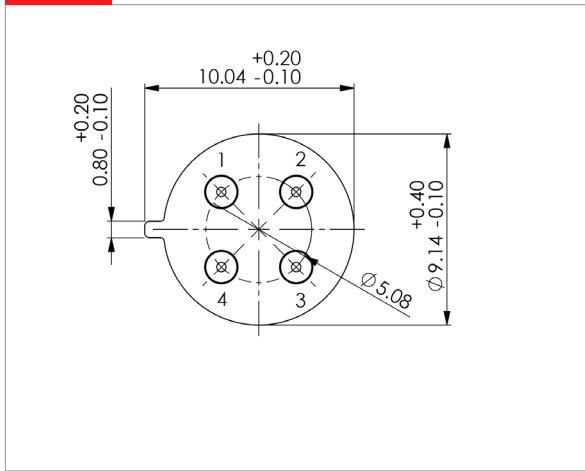
Circuits

Equivalent circuit diagram

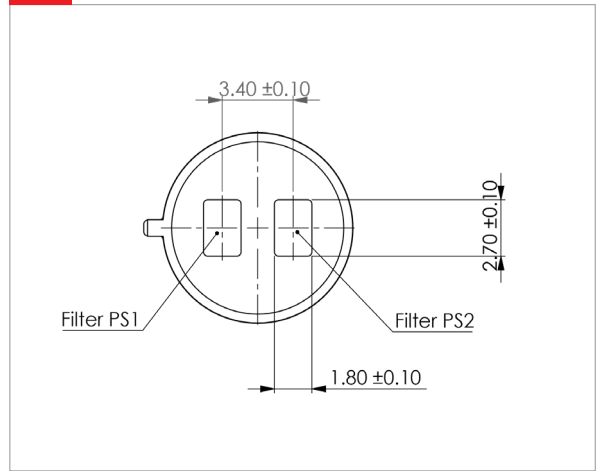


Mechanical drawings

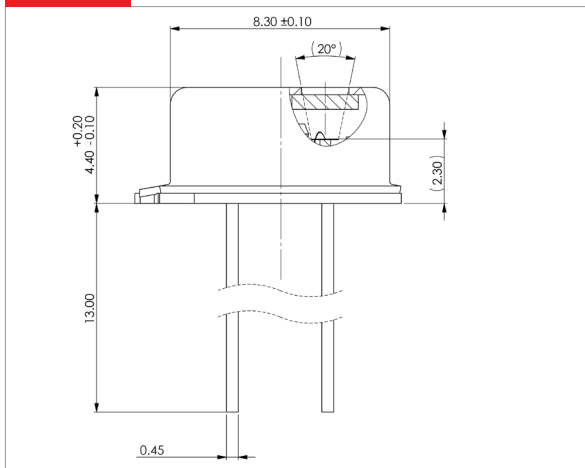
Bottom



Top



Sectional



➔ All geometrical dimensions in mm

Product overview

Article	Type	Filling gas	Temp. min	Temp. max	Aperture	Gas to measure
<u>PS2x9C3-A-U-R2.7-N2-E1/D2</u>	TO39 with cap	N ₂	-20 °C	85 °C	2.7 x 1.8 mm ²	CO ₂
<u>PS2x9C3-A-U-R2.7-N2-G2/D2</u>	TO39 with cap	N ₂	-20 °C	85 °C	2.7 x 1.8 mm ²	HC

Disclaimer

All rights reserved. All information in this data sheet are based on latest knowledge, results of practical experience and tests carried out. Earlier specifications are hereby invalid. All specifications – technical included – are subject to change without notice. It is the customer's responsibility to ensure that the performance of the product is suitable for customer's specific application. No liability is accepted for indirect damage, in particular for the use or inability to use the product. Any liability we may have is limited to the value of the product itself.