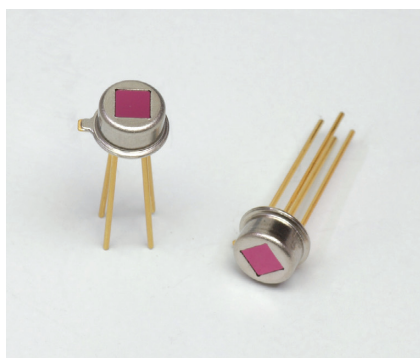


Thermopile detector



T11361-01

High-sensitivity thermopile detectors with thermistor For gas density measurements

The T11361-01 is a thermopile detector equipped with an internal thermistor for compensating for output variations caused by changes in the ambient temperature. It uses a TO-18 package with a window having high transmittance in the 3 to 5 μm spectral band. By attaching an external band-pass filter to the thermopile detector, it can be applied to various types of gas density measurements.

Features

- Spectral response: 3 to 5 μm
- TO-18 package
- High sensitivity
- Built-in thermistor

Applications

- Gas density measurement, etc.

Structure

Parameter	Symbol	Specification	Unit
Photosensitive area	A	1.2 × 1.2	mm
Package	-	TO-18	-
Window material	-	AR coating Si with 3 to 5 μm high-transmittance	-

Absolute maximum ratings

Parameter	Symbol	Value	Unit
Operating temperature*1	Topr	-30 to +85	°C
Storage temperature*1	Tstg	-40 to +100	°C
Thermistor power dissipation	Pth	0.2	mW

*1: No dew condensation.

When there is a temperature difference between a product and the surrounding area in high humidity environments, dew condensation may occur on the product surface. Dew condensation on the product surface may cause deterioration in characteristics and reliability.

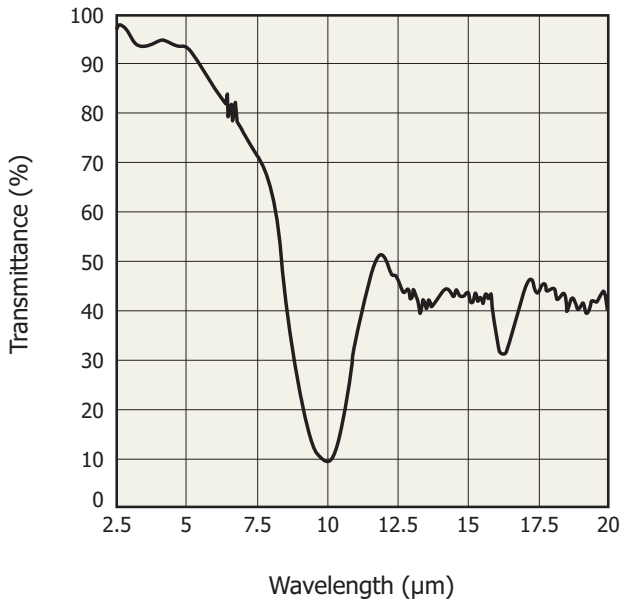
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

Electrical and optical characteristics (Ta=25 °C)

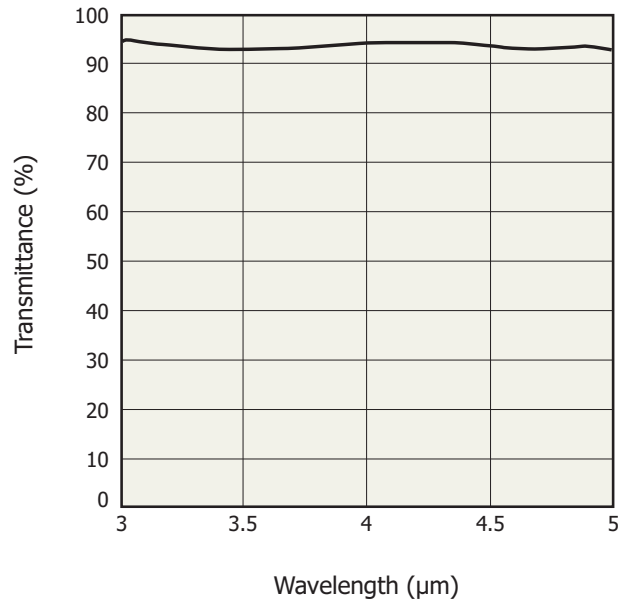
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Spectral response	λ		-	3 to 5	-	μm
Photosensitivity*2	S	1 Hz, 500 K	40	50	60	V/W
Element resistance	Re		100	125	150	k Ω
Noise voltage	Vn	Johnson noise	-	45	50	nV/Hz ^{1/2}
Noise equivalent power*2	NEP		-	0.9	1.3	nW/Hz ^{1/2}
Detectivity*2	D*		0.9×10^8	1.3×10^8	-	cm·Hz ^{1/2} /W
Rise time	tr	0 to 63%	-	20	30	ms
Temperature coefficient of element resistance	TCR		-	±0.1	-	%/°C
Field of view	FOV	Photosensitivity 50%	-	90	-	degrees
Thermistor resistance	Rth		9	10	11	k Ω

*2: Without filter

Spectral transmittance of window material (typical example)

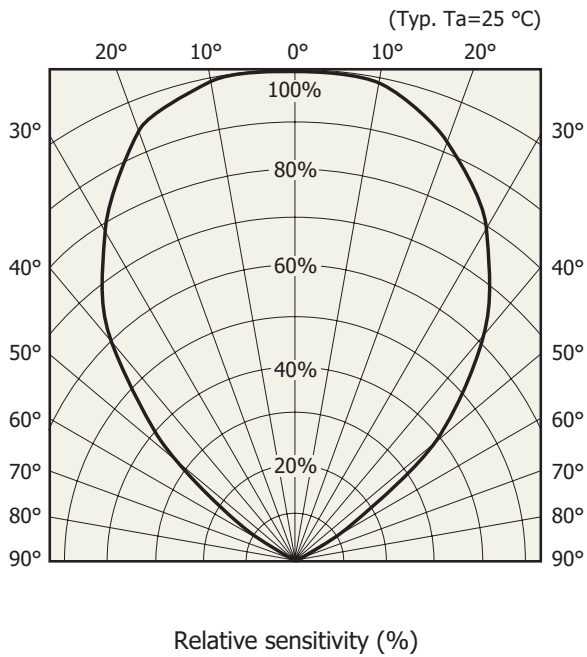


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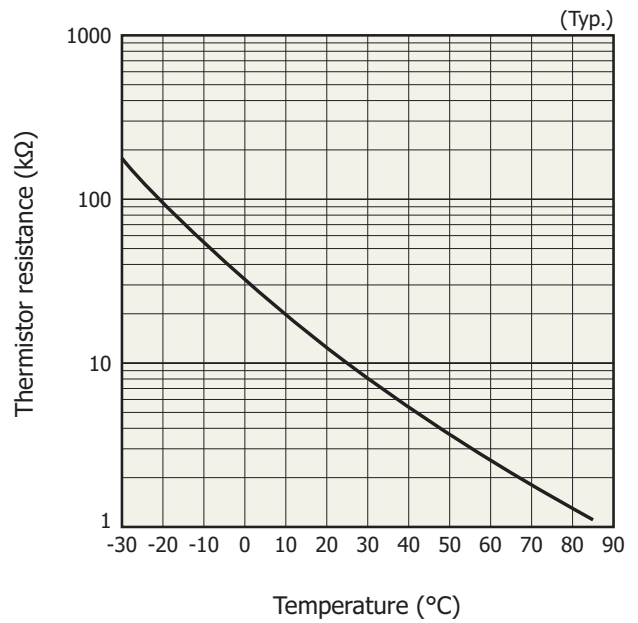
KIRD80609EB

Directivity



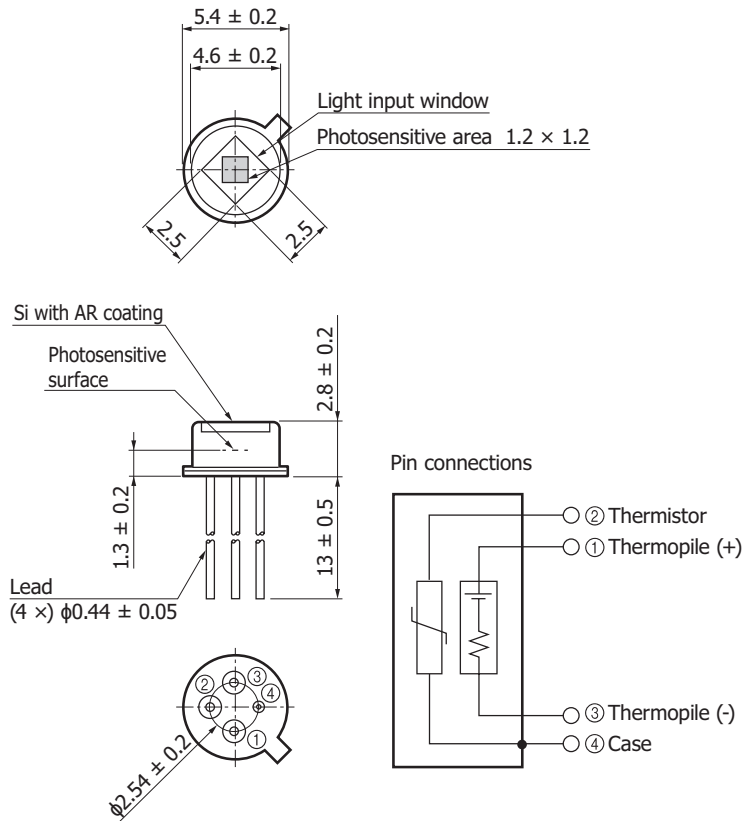
KIRD80451EA

Thermistor temperature characteristics



KIRD80712EA

Dimensional outline (unit: mm)



KIRDA0280EA

Recommended soldering conditions

- Solder temperature: 260 °C max. (10 s or less, once)

Solder the leads at a point at least 1 mm away from the package body.

Note: When you set soldering conditions, check that problems do not occur in the product by testing out the conditions in advance.

Precautions

When the temperature of the thermopile detector changes rapidly, output changes greatly. Be careful during design so that element temperature does not change suddenly. We recommend you take the following steps to measure incident light level with high accuracy.

- Do not place an IC that has large current consumption near this product.
- Do not use a structure that makes this product directly contact the heating element.
- If necessary, enclose the product with a material that has high heat capacity, so that element temperature changes gradually.

Excessive light entering the thermopile detector can damage the photosensitive area. Depending on the operating conditions, incident light $\phi 500 \mu\text{m}$ and 40 mW (approximately 200 mW/mm²) into the photosensitive area may cause failure or degradation of characteristics.

Related information

www.hamamatsu.com/sp/ssd/doc_en.html

■ Precautions

- Disclaimer
- Metal, ceramic, plastic package products

■ Technical information

- Thermopile detectors / Technical note

Information described in this material is current as of July 2021.

Product specifications are subject to change without prior notice due to improvements or other reasons. This document has been carefully prepared and the information contained is believed to be accurate. In rare cases, however, there may be inaccuracies such as text errors. Before using these products, always contact us for the delivery specification sheet to check the latest specifications.

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