HAMAMATSU
PHOTON IS OUR BUSINESS

Thermopile detector

T15962-01

High sensitivity, built-in thermistor

The T15962-01 is a high-sensitivity thermopile detector suitable for radiation thermometers. Silicon is used for the window material and light with a wide range of wavelengths (1.1 µm to far infrared light) can be transmitted, so the T15962-01 can measure the amount of infrared light generated by the measurement target. This product comes with a built-in thermistor, so it can correct sensitivity changes caused by changes in ambient temperature.

Features

- **Spectral response: 1.1 µm or longer**
- **TO-18 package**
- **High sensitivity**
- **Built-in thermistor**

Applications

- **Radiation thermometers**

Structure

Parameter	Symbol	Specification	Unit
Photosensitive area	A	1.2 × 1.2	mm
Package	-	TO-18	-
Window material	-	Si	-

Absolute maximum ratings

Parameter	Symbol	Specification	Unit
Operating temperature*1	Topr	-30 to +85	°C
Storage temperature*1	Tstg	-40 to +100	°C

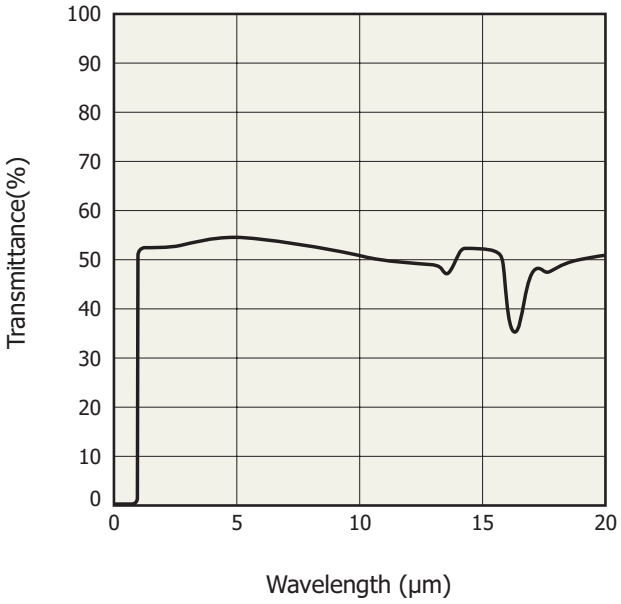
*1: No dew condensation
When there is a temperature difference between a product and the surrounding area in high humidity environments, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.
Note: Exceeding the absolute 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		-	1.1 or longer	-	µm
Photosensitivity*2	S	1 Hz, 500 K	40	50	60	V/W
Element resistance	Re		100	125	150	kΩ
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	-	$cm \cdot Hz^{1/2}/W$
Rise time	tr	0 to 63%	-	20	30	ms
Temperature coefficient of element resistance	TCR		-	±0.1	-	%/°C
Field of view	FOV	Photosensitivity 50%	-	96	-	degrees
Thermistor resistance	Rth		9	10	11	kΩ

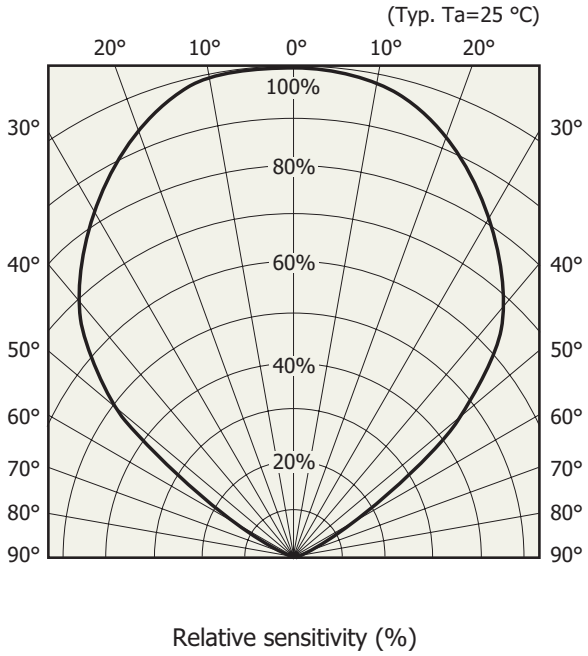
*2: Without filter

Spectral transmittance characteristics of window material (typical example)



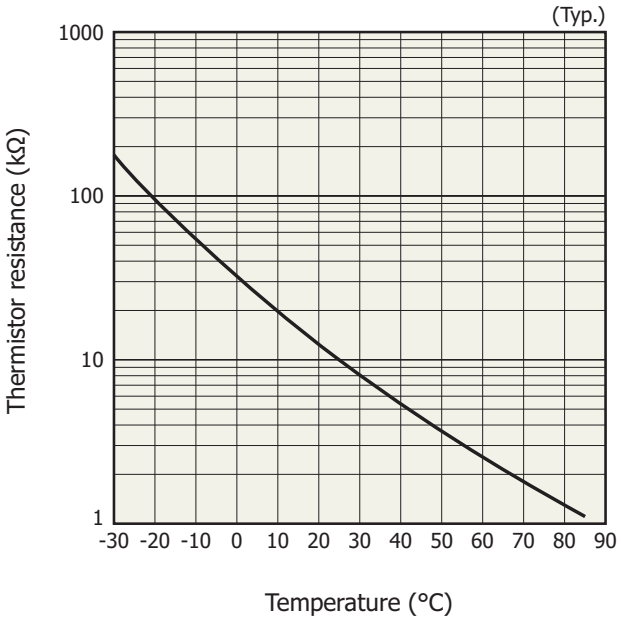
KIRDB0696EA

Directivity



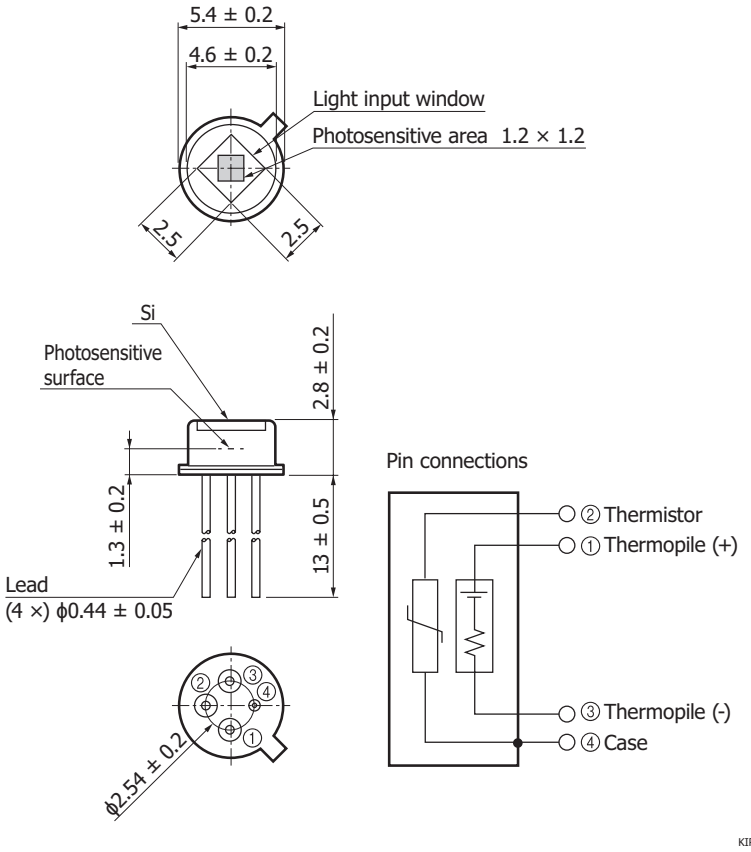
KIRDB0702EA

Thermistor temperature characteristics



KIRDB0712EB

Dimensional outline (unit: mm)



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 of ϕ500 µm and 40 mW (approximately 200 mW/mm^2) 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.
The product warranty is valid for one year after delivery and is limited to product repair or replacement for defects discovered and reported to us within that one year period. However, even if within the warranty period we accept absolutely no liability for any loss caused by natural disasters or improper product use.
Copying or reprinting the contents described in this material in whole or in part is prohibited without our prior permission.

HAMAMATSU www.hamamatsu.com

HAMAMATSU PHOTONICS K.K., Solid State Division
1126-1 Ichino-cho, Higashi-ku, Hamamatsu City, 435-8558 Japan, Telephone: (81)53-434-3311, Fax: (81)53-434-5184
U.S.A.: Hamamatsu Corporation: 360 Foothill Road, Bridgewater, N.J. 08807, U.S.A., Telephone: (1)908-231-0960, Fax: (1)908-231-1218, E-mail: usa@hamamatsu.com
Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49)8152-375-0, Fax: (49)8152-265-8, E-mail: info@hamamatsu.de
France: Hamamatsu Photonics France S.A.R.L.: 19, Rue du Saule Trapu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: (33)1 69 53 71 00, Fax: (33)1 69 53 71 10, E-mail: infos@hamamatsu.fr
United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court, 10 Tewin Road, Welwyn Garden City, Hertfordshire AL7 1BW, UK, Telephone: (44)1707-294888, Fax: (44)1707-325777, E-mail: info@hamamatsu.co.uk
North Europe: Hamamatsu Photonics Norden AB: Torshamnsgatan 35 16440 Kista, Sweden, Telephone: (46)8-509 031 00, Fax: (46)8-509 031 01, E-mail: info@hamamatsu.se
Italy: Hamamatsu Photonics Italia S.r.l.: Strada della Moia, 1 int. 6, 20044 Arese (Milano), Italy, Telephone: (39)02-93 58 17 33, Fax: (39)02-93 58 17 41, E-mail: info@hamamatsu.it
China: Hamamatsu Photonics (China) Co., Ltd.: 1201 Tower B, Jiaming Center, 27 Dongsanhuan Beilu, Chaoyang District, 100020 Beijing, P.R.China, Telephone: (86)10-6586-6006, Fax: (86)10-6586-2866, E-mail: hpc@hamamatsu.com.cn
Taiwan: Hamamatsu Photonics Taiwan Co., Ltd.: 8F-3, No. 158, Section2, Gongdao 5th Road, East District, Hsinchu, 300, Taiwan R.O.C. Telephone: (886)3-659-0080, Fax: (886)3-659-0081, E-mail: info@hamamatsu.com.tw

Cat. No. KIRD1141E02 Jul. 2021 DN