

InAsSb photovoltaic detector



P17442-011MS

Infrared detector with large photosensitive area (up to 5 μm band)

The P17442-011MS is an infrared detector that have high sensitivity in the spectral band up to 5 μm. This high sensitivity has been achieved due to Hamamatsu's unique crystal growth technology and process technology. By using a back-illuminated structure, we greatly improved the sensitivity temperature coefficient compared to the front-illuminated type. The output signal has been increased by enlarging the photosensitive area compared to the P16112/P16612 series. This product is an environmentally friendly infrared detector and do not use lead, mercury, or cadmium, which are substances restricted by the RoHS directive.

Features

- High sensitivity
- High-speed response
- RoHS compliant (lead, mercury, cadmium free)

Applications

- Gas detection (CH₄, CO₂, CO, etc)
- Radiation thermometers
- Flame detection (CO₂ resonance radiation)

Structure

Parameter	Specification	Unit
Number of elements	1	-
Photosensitive area	1.0 × 1.0	mm
Window material	Sapphire	-
Package	TO-5	-
Cooling	Non-cooled	-
Field of view	100	degrees

Absolute maximum ratings (Ta=25 °C, unless otherwise noted)

Parameter	Symbol	Value	Unit
Reverse voltage	V _R	1	V
Operating temperature*1	T _{opr}	-40 to +85	°C
Storage temperature*1	T _{stg}	-40 to +85	°C
Incident light level	-	1	W/mm ²

*1: No dew condensation

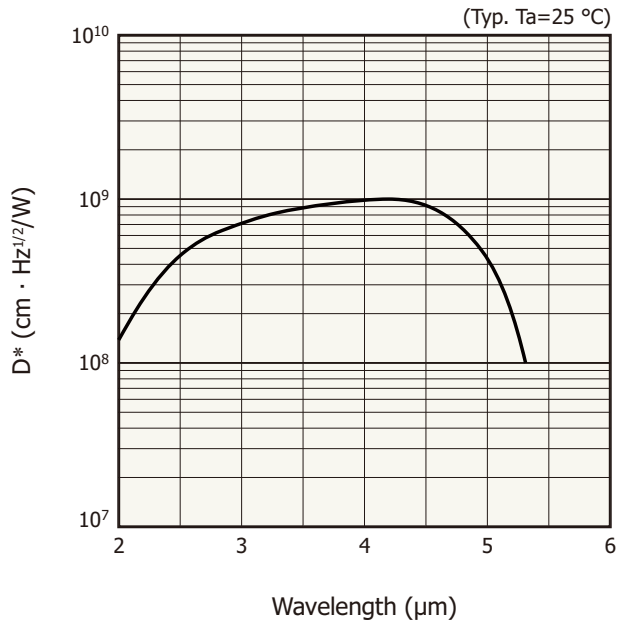
When there is a temperature difference between a product and the surrounding area in high humidity environment, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.

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)

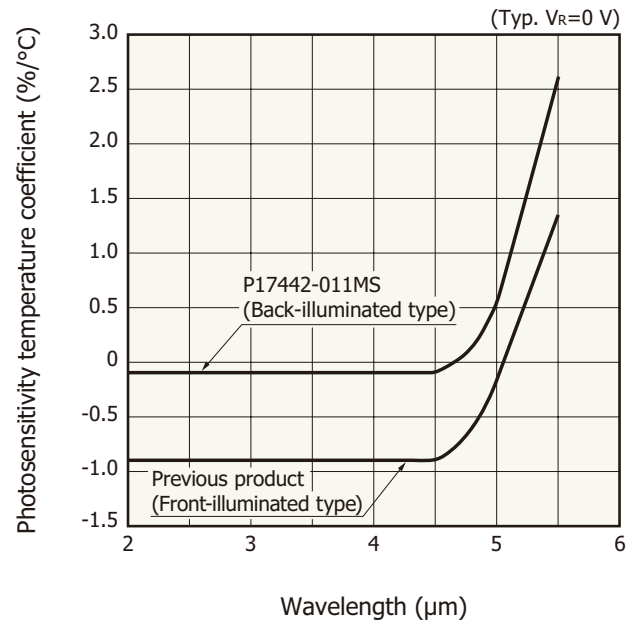
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Peak sensitivity wavelength	λ _p		-	4.1	-	μm
Cutoff wavelength	λ _c		5.0	5.3	-	μm
Photosensitivity	S	λ=λ _p	50	65	-	mA/W
Shunt resistance	R _{sh}	V _R =10 mV	210	470	-	Ω
Detectivity	D*	(λ _p , 1200, 1)	7.4 × 10 ⁸	1.0 × 10 ⁹	-	cm·Hz ^{1/2} /W
Noise equivalent power	NEP	λ=λ _p	-	1.0 × 10 ⁻¹⁰	2.0 × 10 ⁻¹⁰	W/Hz ^{1/2}
Rise time	t _r	V _R =0 V, R _L =50 Ω 10 % to 90 %	-	15	25	ns
Terminal capacitance	C _t	V _R =0 V, f=1 MHz	-	100	-	pF

Spectral response (D^*)



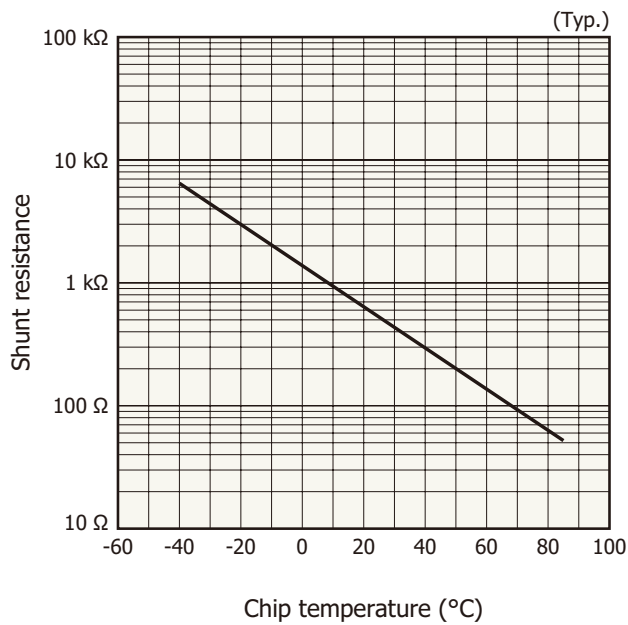
KIRD80748EA

Photosensitivity temperature characteristics



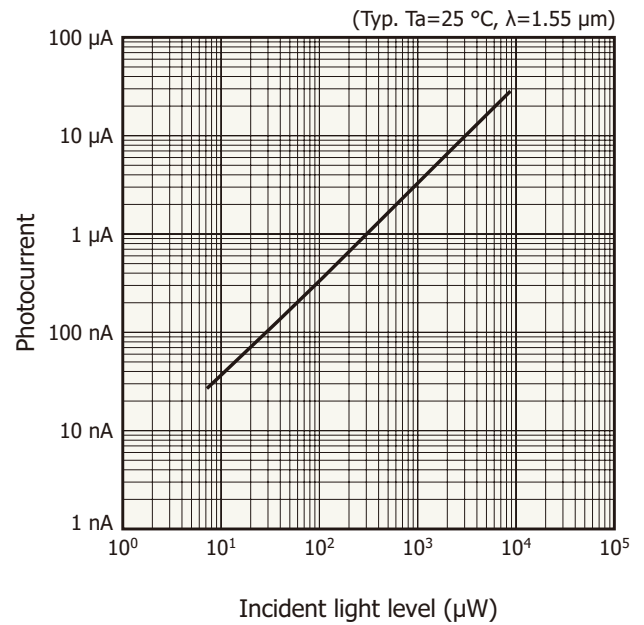
KIRD80749EA

Shunt resistance vs. chip temperature



KIRD80750EA

Linearity



KIRD80751EA

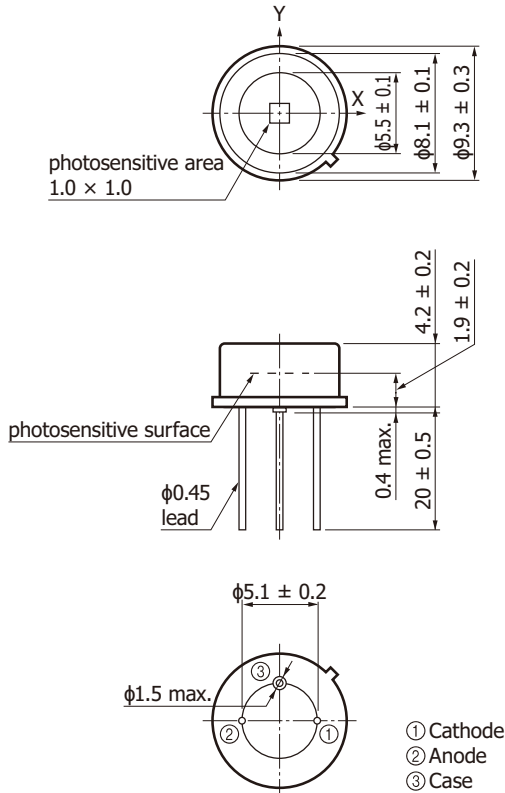
Recommended soldering conditions

Solder temperature: 260 °C (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.

Dimensional outline (unit: mm)



KIRDA0299EA

Related information

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

■ Precautions

- Disclaimer
- Safety consideration / Opto-semiconductor products
- Precautions / Compound opto-semiconductors (photosensors, light emitters)

■ Catalogs

- Selection guide / Infrared detectors
- Technical note / Compound semiconductor photosensors

Related products

- Amplifier for infrared detector C4159-07

Information described in this material is current as of June 2026.

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.