HAMAMATSU
PHOTON IS OUR BUSINESS

NEW

InAsSb photovoltaic detector

P17442-011MS

High sensitivity and high-speed IR detectors (up to 5 µm band) Large photosensitive area type

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 (CH_4, CO_2, CO, etc)**
- **Radiation thermometers**
- **Flame detection (CO_2 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	Topr	-40 to +85	°C
Storage temperature*1	Tstg	-40 to +85	°C
Incident light level	-	1	W/mm^2

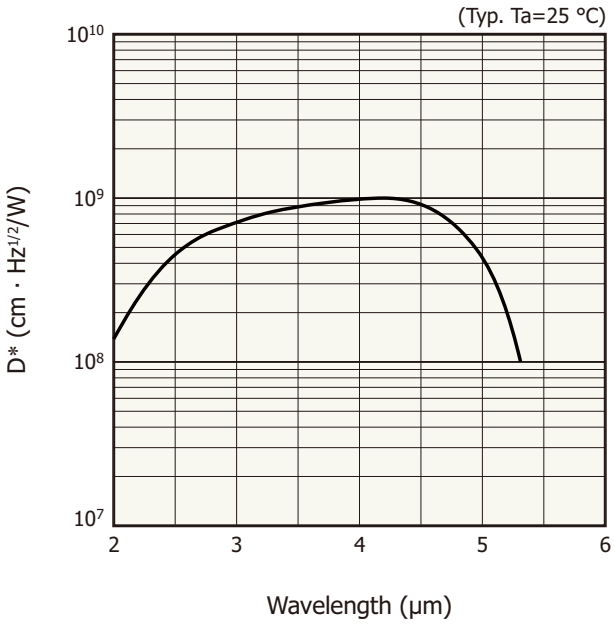
*1: No dew condensation
When there is a temperature difference between a product and the surrounding area in high humidity environment, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.

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)

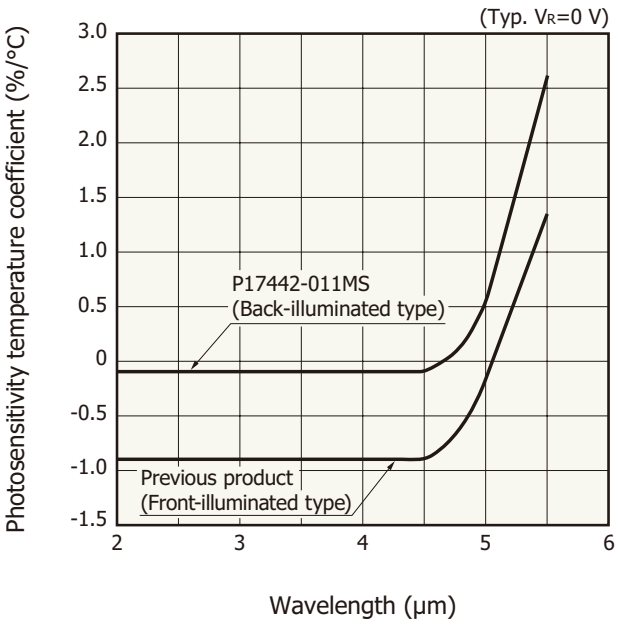
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Peak sensitivity wavelength	λp		-	4.1	-	µm
Cutoff wavelength	λc		5.0	5.3	-	µm
Photosensitivity	S	λ=λp	50	65	-	mA/W
Shunt resistance	Rsh	V_R=10 mV	210	470	-	Ω
Detectivity	D*	(λp, 1200, 1)	7.4×10^8	1.0×10^9	-	$cm \cdot Hz^{1/2}/W$
Noise equivalent power	NEP	λ=λp	-	1.0×10^{-10}	2.0×10^{-10}	$W/Hz^{1/2}$
Rise time	tr	V_R=0 V, R_L=50 Ω 10 % to 90 %	-	15	25	ns
Terminal capacitance	Ct	V_R=0 V, f=1 MHz	-	100	-	pF

Spectral response (D*)



KIRDB0748EA

Photosensitivity temperature characteristics



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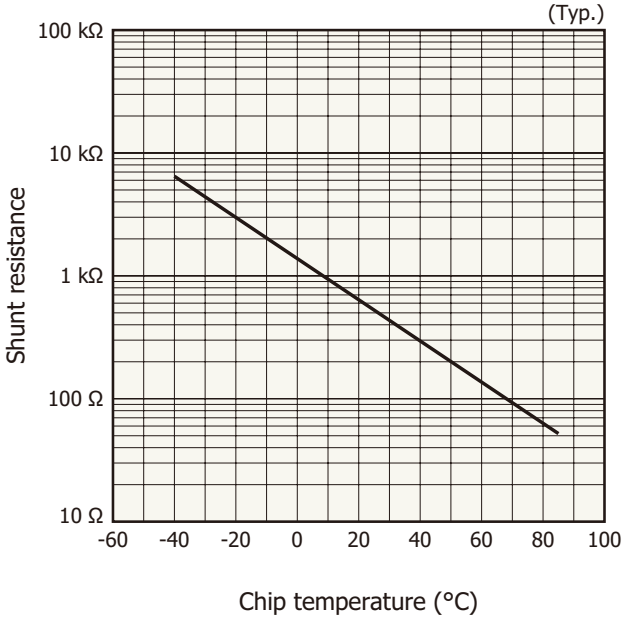
Shunt resistance vs. chip temperature



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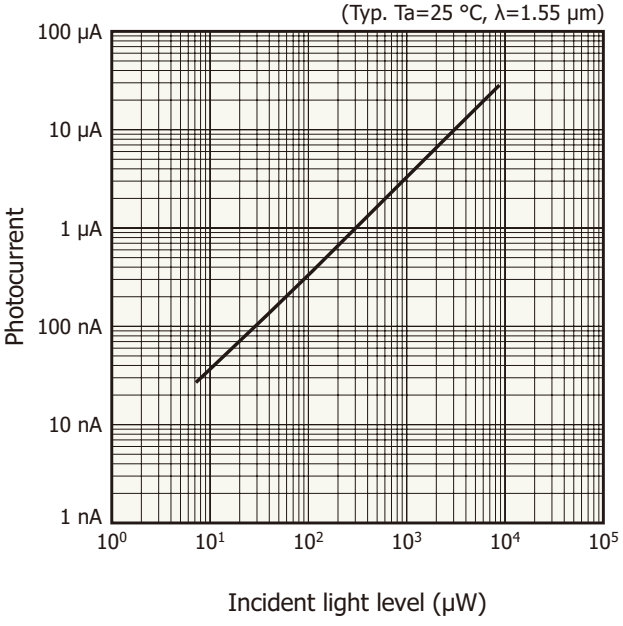
Linearity



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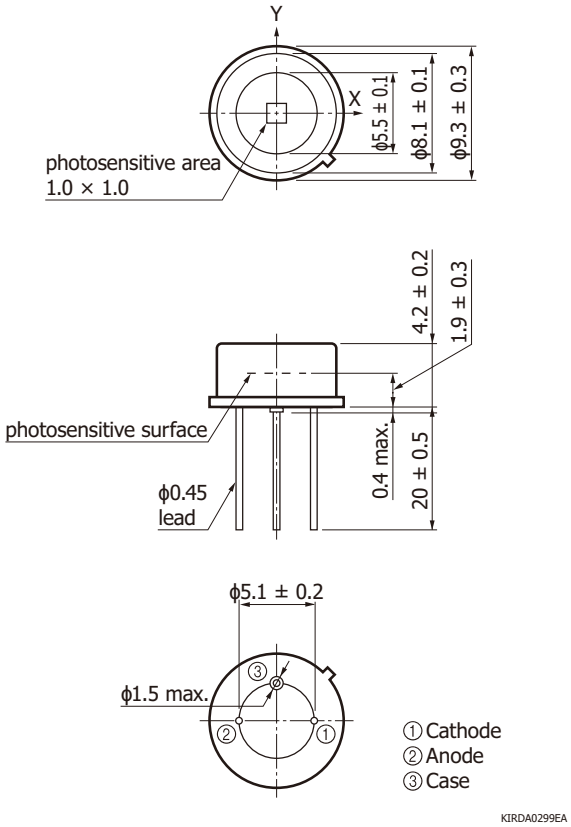
Recommended soldering conditions

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)



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

HAMAMATSU PHOTONICS K.K.
Visit our website for product and contact information.
www.hamamatsu.com
Cat. No. KIRD1155E01
Jun. 2026 DN
Created in Japan