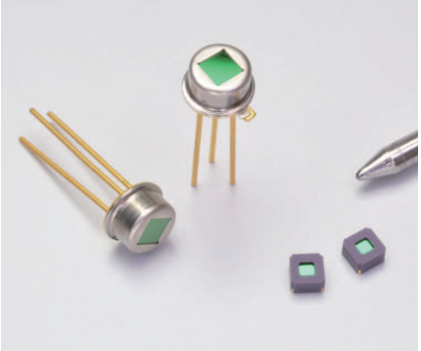
HAMAMATSU
PHOTON IS OUR BUSINESS

InAsSb photovoltaic detectors

P13243 series



High-speed response and high sensitivity in the spectral band up to 5 µm, non-cooled type infrared detectors

The P13243 series are photovoltaic type infrared detectors that have achieved high sensitivity in the spectral band up to 5 µm without cooling using Hamamatsu unique crystal growth technology and process technology. Because it is non-cooled, it is compact and easy to handle.

Features

- **High sensitivity**
- **High-speed response**
- **High shunt resistance**
- **Non-cooled, small package**

Applications

- **Gas detection (CH_4, CO_2, CO, etc.)**
- **Radiation thermometers**

Structure

Parameter	P13243-011CA	P13243-011MA	Unit
Window material	Anti-reflective coating Si		-
Package	Ceramic	TO-46	-
Cooling	Non-cooled		-
Photosensitive area	0.7 × 0.7		mm
Field of view (FOV)	55	82	degrees

Absolute maximum ratings

Parameter	Symbol	Condition	P13243-011CA	P13243-011MA	Unit
Reverse voltage	V_R		1		V
Operating temperature	Topr	No dew condensation*1	-40 to +85		°C
Storage temperature	Tstg	No dew condensation*1	-40 to +85		°C
Soldering conditions			Peak temperature 240 °C max.	Up to 260 °C, up to 10 s	-

*1: 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.

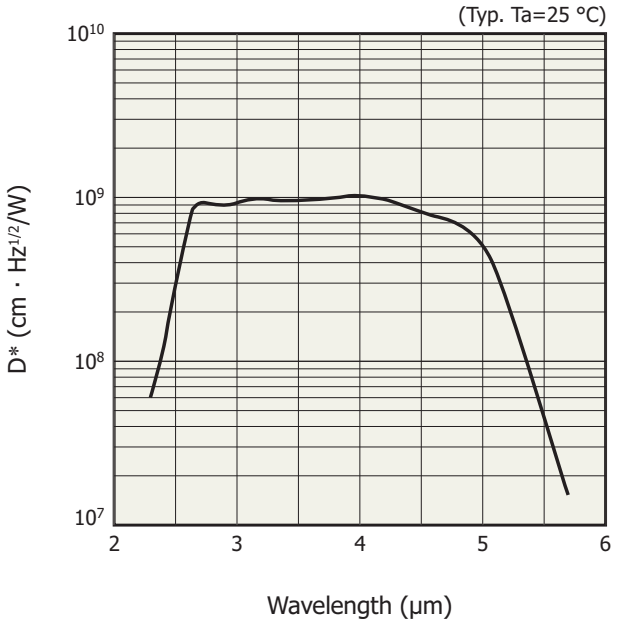
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

Electrical and optical characteristics (Ta=25 °C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Peak sensitivity wavelength	λp		-	3.5	-	μm
Cutoff wavelength	λc		5.0	5.3	-	μm
Photosensitivity	S	λ=λp*2	4.0	4.5	-	mA/W
Shunt resistance	Rsh	VR=10 mV	120	300	-	kΩ
Detectivity	D*	(λp, 600, 1)	8.0×10^{8}	1.0×10^{9}	-	cm·Hz$^{1/2}$/W
Noise equivalent power	NEP	λ=λp*2	-	7.0×10^{-11}	8.8×10^{-11}	W/Hz$^{1/2}$
Rise time	tr	10 to 90%, without light input window, λ=1.55 μm	-	6	12	ns

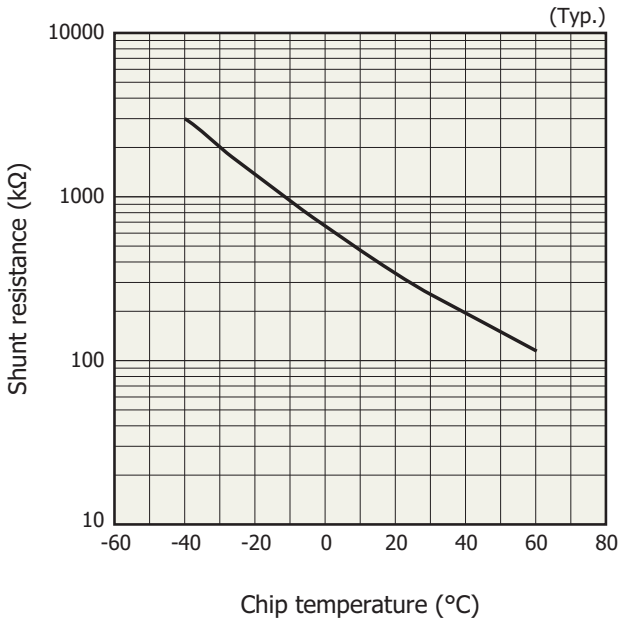
*2: Uniform irradiation on the entire photosensitive area
Note: Uniform irradiation must be applied to the entire photosensitive area during use.

Spectral response (D*)



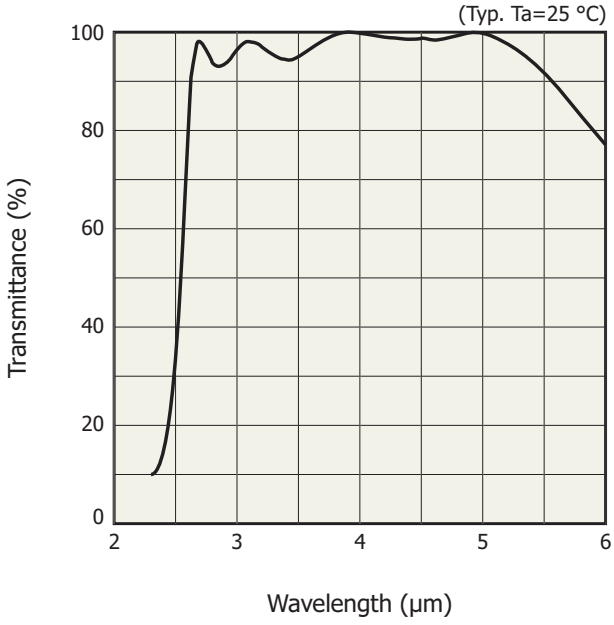
KIRDB0610EA

Shunt resistance vs. chip temperature



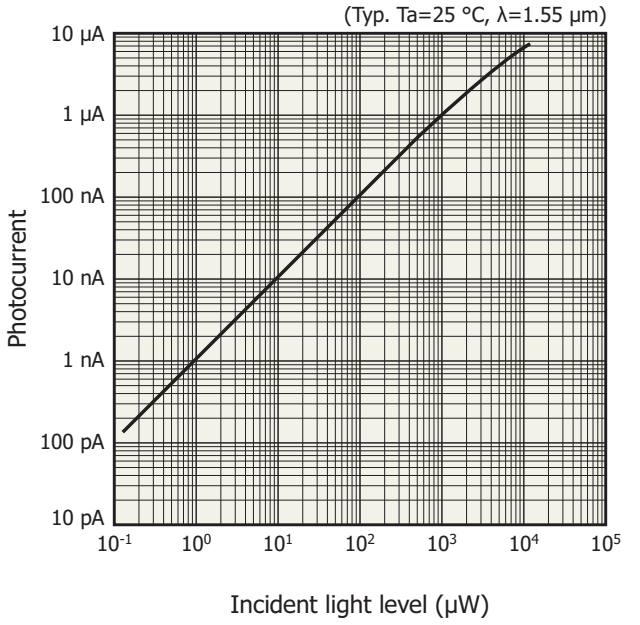
KIRDB0611EB

Spectral transmittance of window material



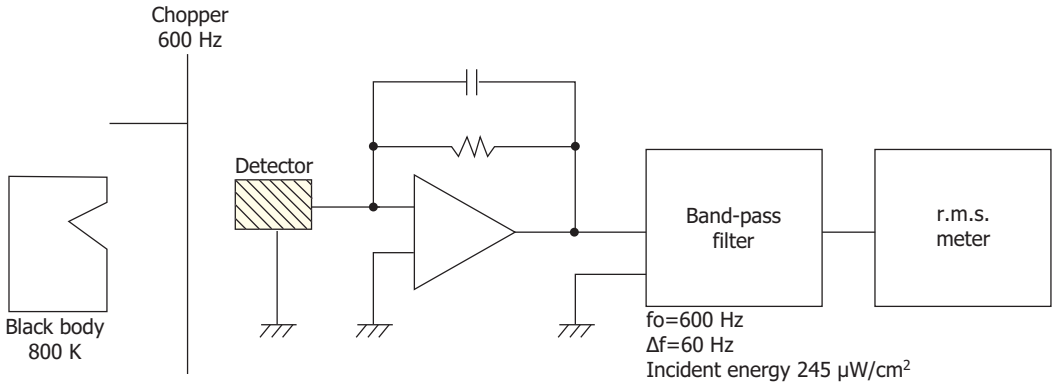
KIRDB0614EA

Linearity



KIRDB0615EA

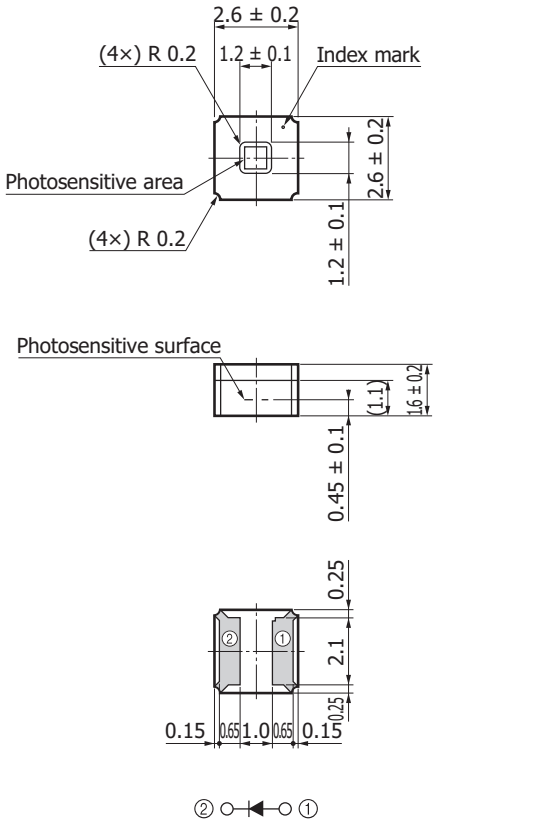
Measurement circuit example



KIRDC0094EA

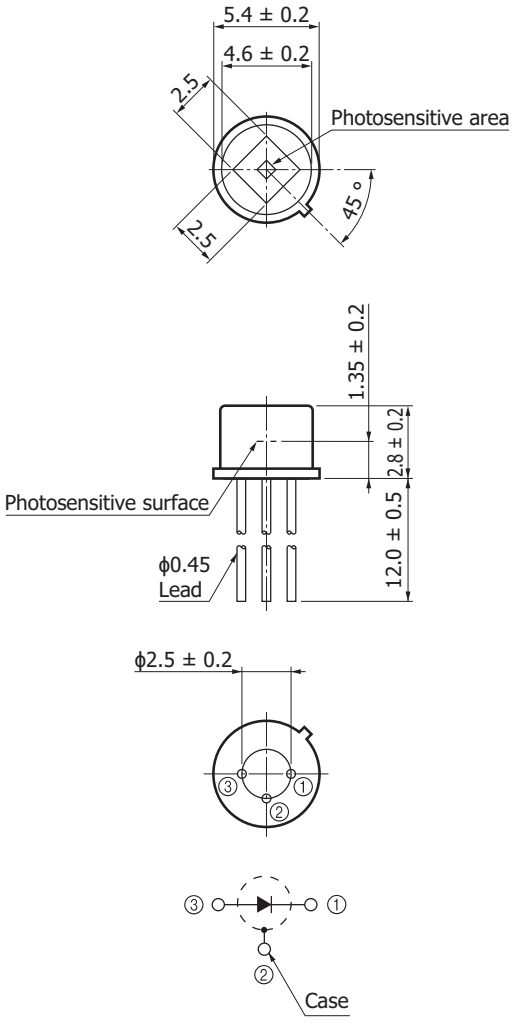
Dimensional outlines (unit: mm)

P13243-011CA



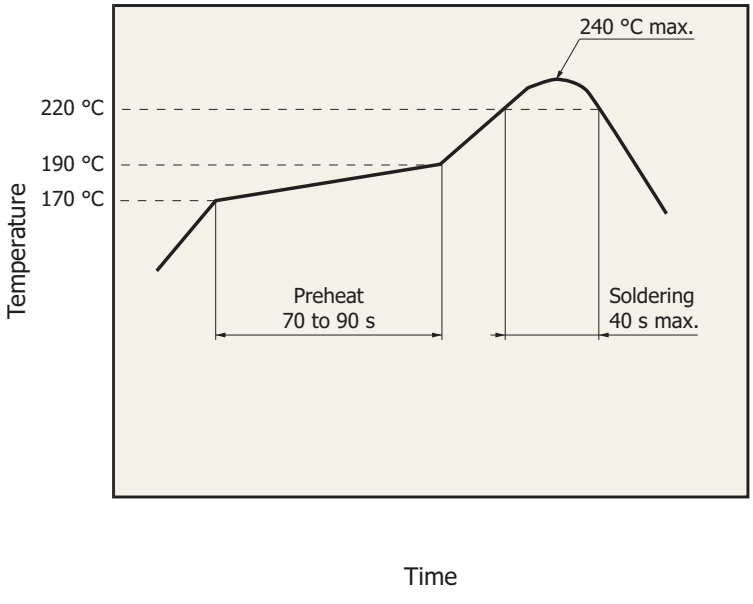
KIRDA0248EB

P13243-011MA



KIRDA0249EB

Recommended temperature profile for reflow soldering (P13243 series)



The effect that the product is subject to during reflow soldering varies depending on the circuit board and reflow furnace that are used. Before actual reflow soldering, check for any problems by testing out the reflow soldering methods in advance.

Related information

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

■ Precautions
· Disclaimer

■ Technical information
· Infrared detectors

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
Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49) 8152-375-0, Fax: (49) 8152-265-8
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
United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court, 10 Tewin Road, Welwyn Garden City, Hertfordshire AL7 1BW, United Kingdom, Telephone: (44) 1707-294888, Fax: (44) 1707-325777
North Europe: Hamamatsu Photonics Norden AB: Torshamnsgatan 35 16440 Kista, Sweden, Telephone: (46) 8-509-031-00, Fax: (46) 8-509-031-01
Italy: Hamamatsu Photonics Italia S.r.l.: Strada della Moia, 1 int. 6, 20020 Arese (Milano), Italy, Telephone: (39) 02-93581733, Fax: (39) 02-93581741
China: Hamamatsu Photonics (China) Co., Ltd.: B1201, Jiaming Center, No.27 Dongsanhuan Beilu, Chaoyang District, Beijing 100020, China, Telephone: (86) 10-6586-6006, Fax: (86) 10-6586-2866

Cat. No. KIRD1130E03 Jan. 2017 DN