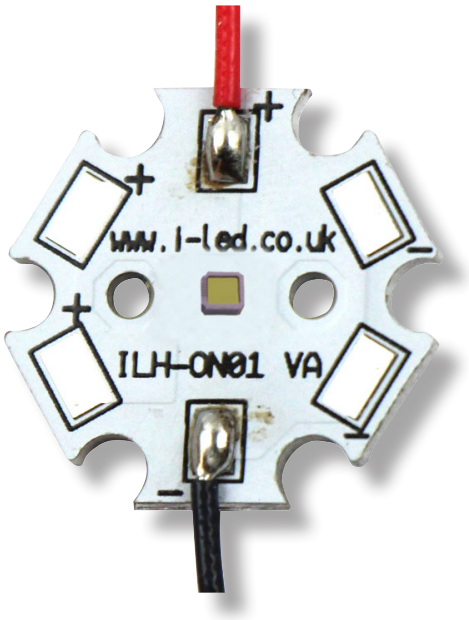
ILS 1 InAsSb photovoltaic detector PowerStar

ILH-P13243-SC201-WIR200.

From Intelligent LED Solutions, 1 Hamamatsu P13243 InAsSb Photovoltaic Detector PowerStar. The P13243 series are photovoltaic type infrared detectors that have achieved high sensitivity in the spectral band up to 5µm without cooling using Hamamatsu unique crystal growth technology and process technology. Because it is non-cooled, it is compact and easy to handle. The surface mount ceramic type supports lead-free reflow soldering, which makes automation easy. And, its compact size allows reduction in the mount area.

Available with 200mm wires as standard.



FEATURES

- High sensitivity
- High-speed response
- High shunt resistance
- Non-cooled, small package
- Ceramic package for surface mount
- Applicable to lead-free solder reflow
- Size (L x W x H): 20mm x 20mm x 3.85mm
- 200mm wires
- High quality LED from Hamamatsu

APPLICATIONS

- Gas detection (CH4, CO2, CO, etc.)
- Radiation thermometers

All photographs shown are for illustration purpose only. Actual product may vary.

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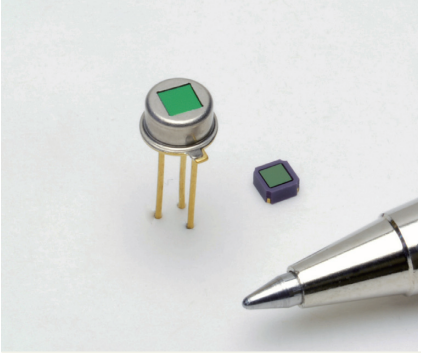
InAsSb photovoltaic detectors



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. The surface mount ceramic type supports lead-free reflow soldering, which makes automation easy. And, its compact size allows reduction in the mount area.

Features

- **High sensitivity**
- **High-speed response**
- **High shunt resistance**
- **Non-cooled, small package**
- **Ceramic package for surface mount (P13243-013CA)**
- **Applicable to lead-free solder reflow (P13243-013CA)**

Applications

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

Structure

Parameter	P13243-011MA	P13243-013CA	Unit
Window material	Anti-reflective coating Si		-
Package	TO-46	Ceramic	-
Cooling	Non-cooled		-
Photosensitive area	0.7 × 0.7		mm
Field of view (FOV)	82	102	degrees

Absolute maximum ratings

Parameter	Symbol	Condition	P13243-011MA	P13243-013CA	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	-		Up to 260 °C, up to 10 s	Peak temperature 240 °C max.*2	-
Incident light level	-	CW light	1		mW/cm^2

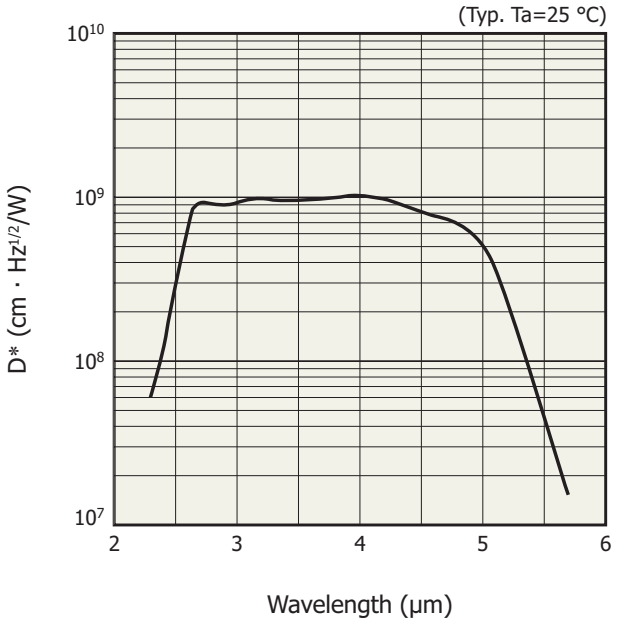
*1: When there is a temperature difference between a product and the surrounding area in high humidity environment, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.
*2: Refer to P.4
Note: Exceeding the absolute 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*2	4.0	4.5	-	mA/W
Shunt resistance	Rsh	VR=10 mV	120	300	-	kΩ
Detectivity	D*	(λp, 1200, 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*)



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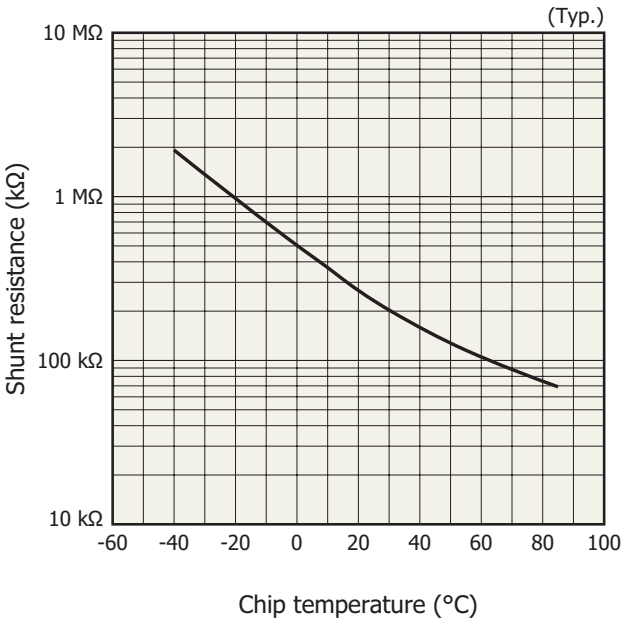
Shunt resistance vs. chip temperature



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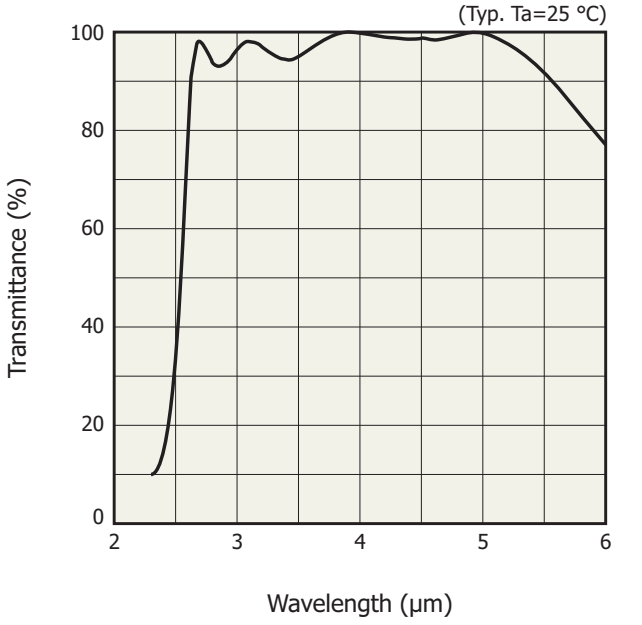
Spectral transmittance of window material



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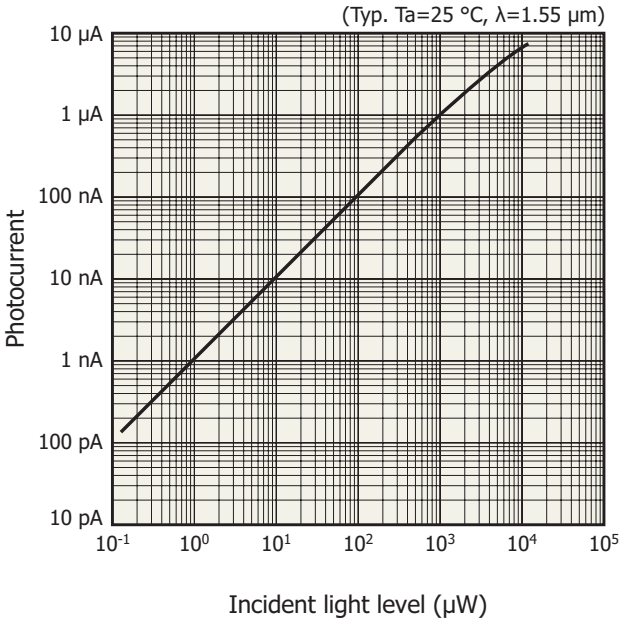
Linearity



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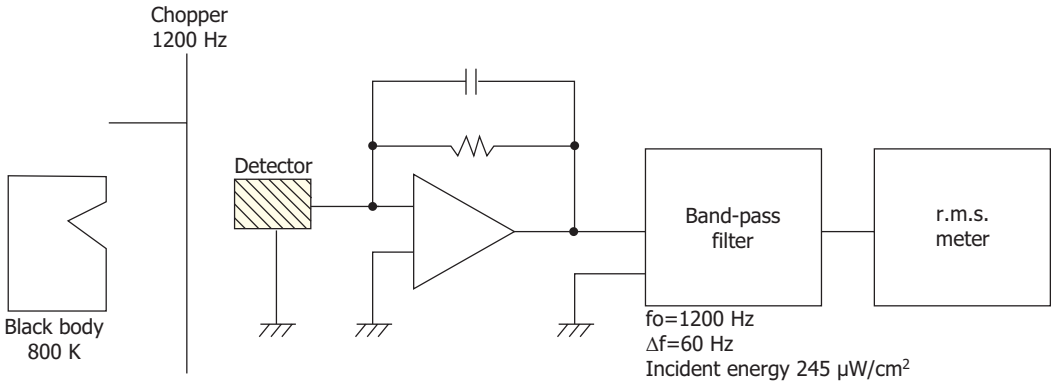
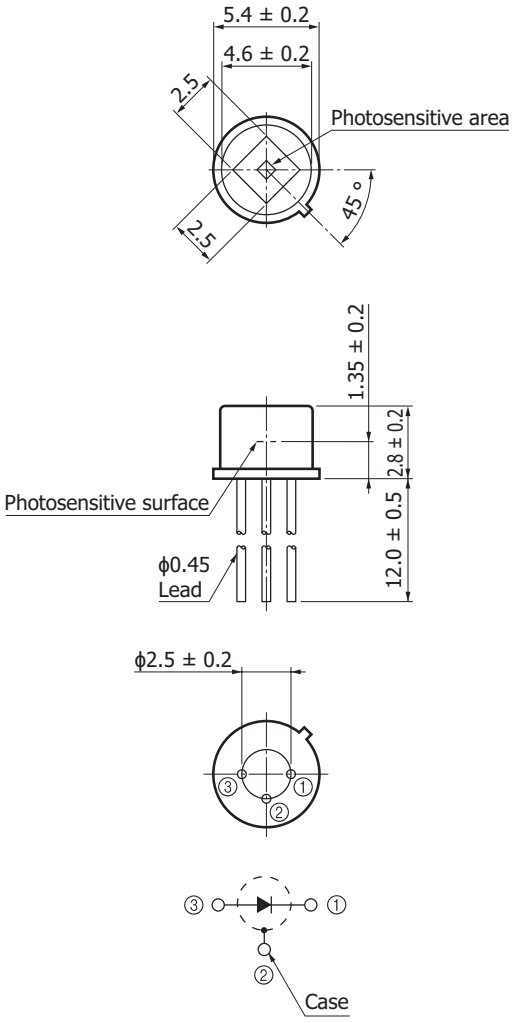
Measurement circuit example

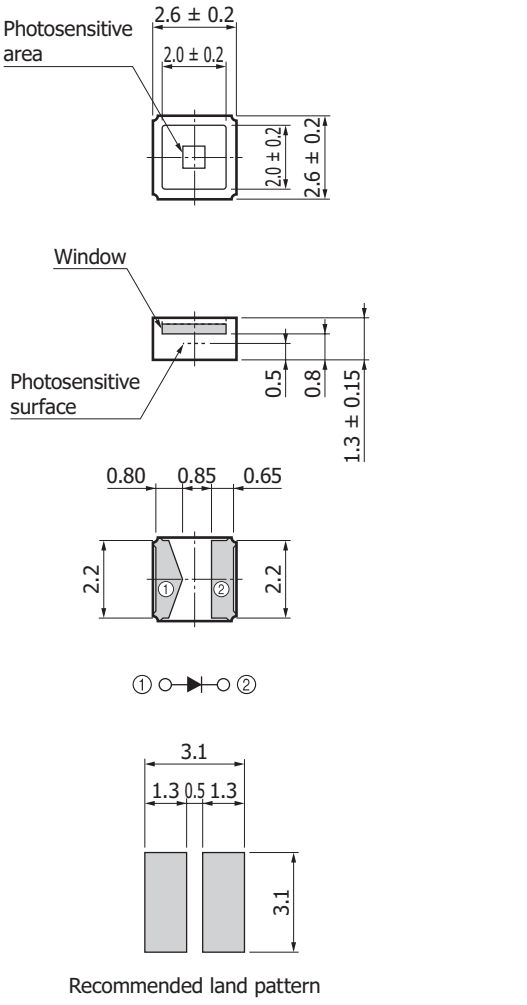


Dimensional outlines (unit: mm)

P13243-011MA



P13243-013CA



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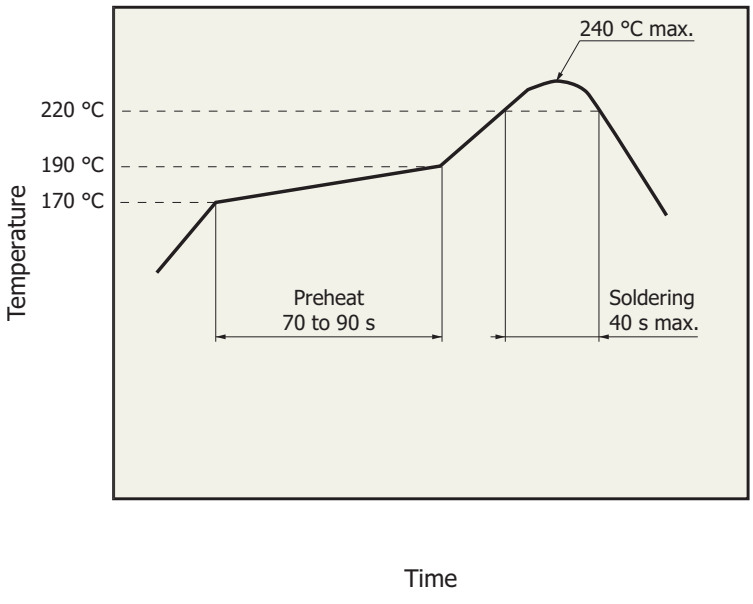
Recommended temperature profile for reflow soldering (P13243-013CA)



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

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