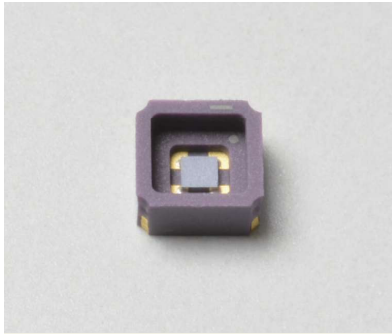


InAsSb photovoltaic detector



P16613-011CN

Infrared detector capable of room temperature operation (up to 8 μm band)

The P16613-011CN is infrared detector that have high sensitivity in the spectral band up to 8 μm. This high sensitivity has been achieved due to Hamamatsu unique crystal growth technology and process technology. By using a back-illuminated structure, we achieved excellent sensitivity temperature characteristics. This product is an environmentally friendly infrared detector and does not use lead, mercury, or cadmium, which are substances restricted by the RoHS directive. This product replaces conventional products containing these substances.

Features

- High sensitivity
- High-speed response
- High shunt resistance
- Compact, surface mount type ceramic package
- Compatible with lead-free solder reflow
- RoHS compliant (lead, mercury, cadmium free)

Applications

- Gas detection (SO_x, NO_x, etc.)
- Radiation thermometers
- Mid infrared spectroscopy

Option (sold separately)

- Amplifier for infrared detector **C4159-01**

Structure

Parameter	Specification	Unit
Window material	None	-
Package	Ceramic	-
Photosensitive area	0.7 × 0.7	mm
Field of view	86	degrees

Absolute maximum rating (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	Pin	1	W/mm ²
Soldering temperature	T _{sol}	240 (once)*2	°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.

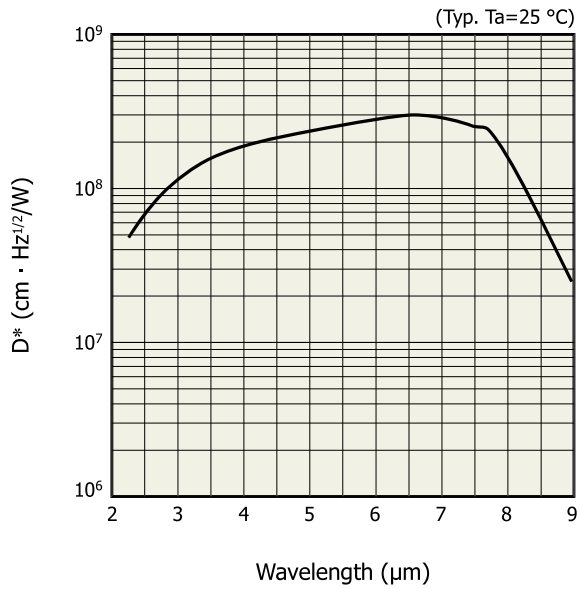
*2: Reflow soldering, JEDEC J-STD-020 MLS 2, see P.5

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)

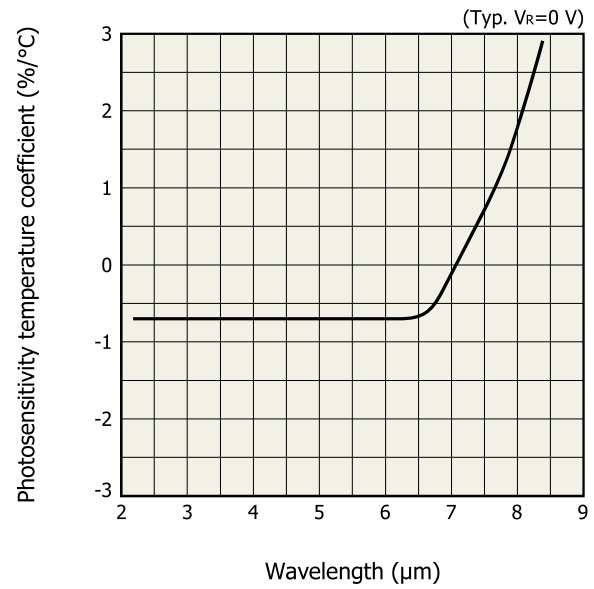
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Peak sensitivity wavelength	λ_p		-	6.5	-	μm
Cutoff wavelength	λ_c		8.0	8.3	-	μm
Photosensitivity	S	$\lambda=\lambda_p$	5.3	6.1	-	mA/W
Shunt resistance	Rsh	$V_R=10\text{ mV}$	4.9	8.3	-	$\text{k}\Omega$
Terminal capacitance	Ct	$V_R=0\text{ V}, f=1\text{ MHz}$	-	0.8	-	pF
Detectivity	D^*	$(\lambda_p, 1200, 1)$	2.0×10^8	3.0×10^8	-	$\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$
Noise equivalent power	NEP	$\lambda=\lambda_p$	-	2.0×10^{-10}	2.7×10^{-10}	$\text{W}/\text{Hz}^{1/2}$
Rise time	t_r	$V_R=0\text{ V}, R_L=50\ \Omega,$ $10\text{ to }90\%$	-	3	10	ns

Spectral response (D^*)



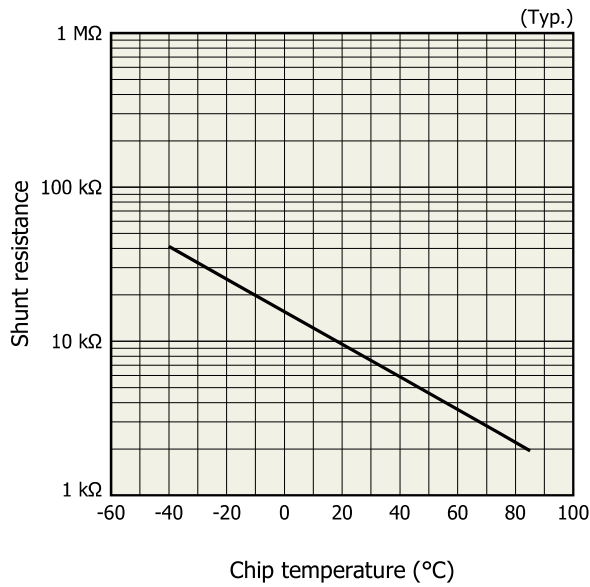
KIRD80720EA

Photosensitivity temperature characteristics



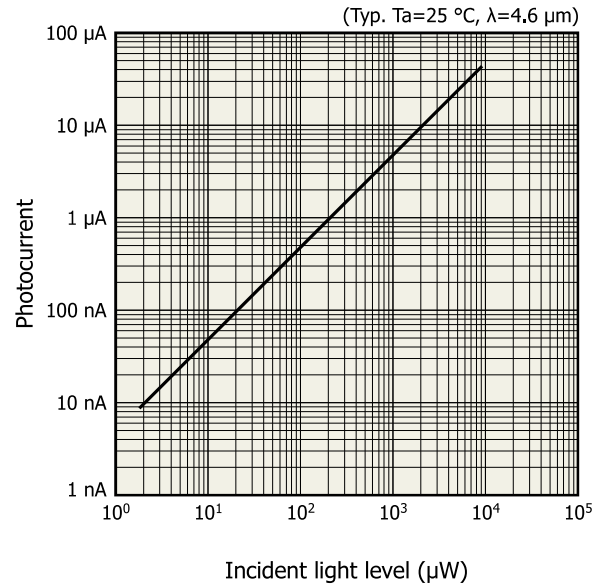
KIRD80721EA

Shunt resistance vs. chip temperature



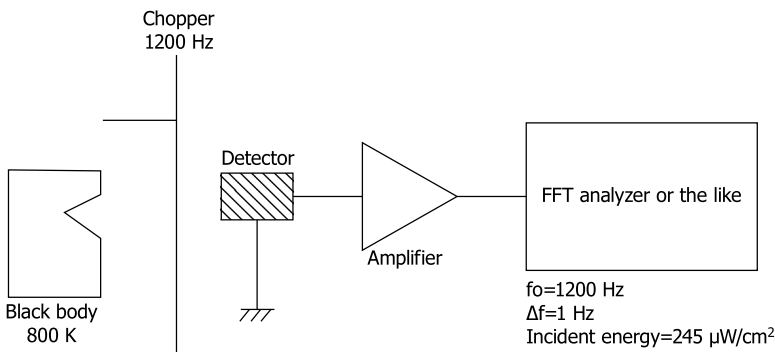
KIRD80722EA

Linearity



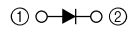
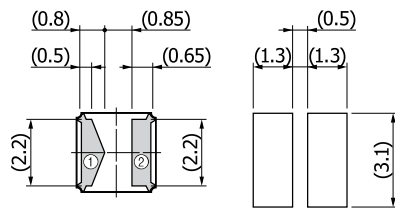
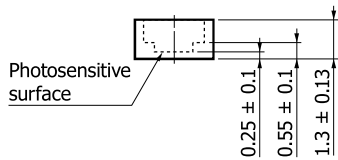
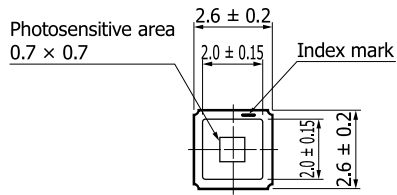
KIRD80723EA

Block diagram for characteristic measurement



KIRD00125EA

Dimensional outline (unit: mm)



Recommended land pattern
Values in parentheses
indicate reference values.

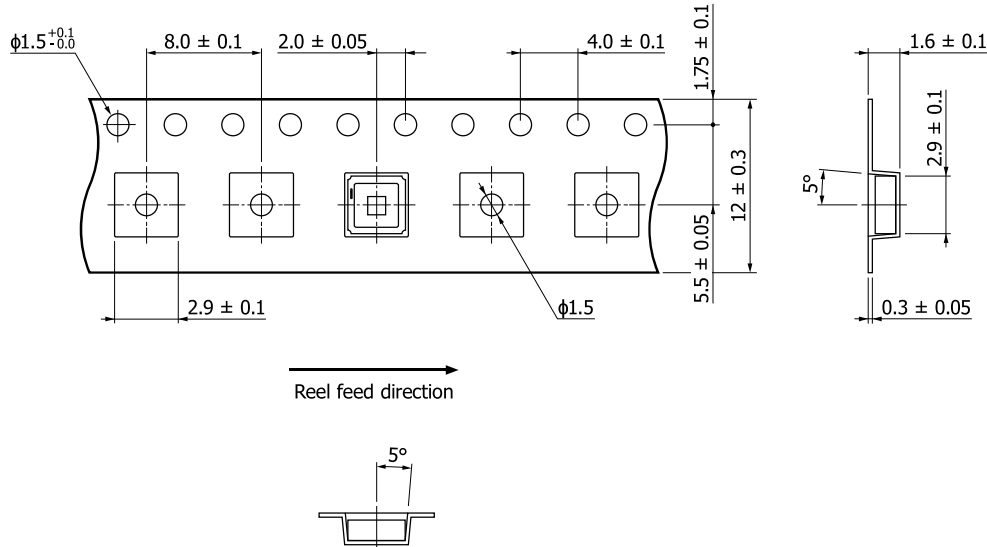
KIRDA0285EB

Standard packing specifications

■ Reel (conforms to JEITA ET-7200)

Outer diameter	Hub diameter	Tape width	Material	Electrostatic characteristics
φ180 mm	φ60 mm	12 mm	PS	Conductive

■ Embossed tape (unit: mm, material: PS, conductive)



KLED0143EA

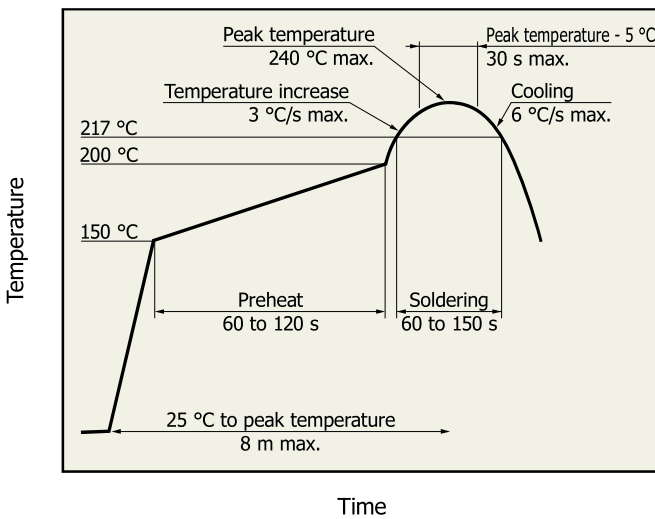
■ Packing quantity

100 pcs/reel

■ Packing state

Reel and desiccant in moisture-proof packaging (vacuum-sealed)

Recommended reflow soldering conditions



KSPD0418EA

- After unpacking, keep it in an environment at 5 to 30 °C and a humidity of 60% or less, and perform reflow soldering within 1 year.
- The effect that the product receives during reflow soldering varies depending on the circuit board and reflow oven that are used. When you set reflow soldering conditions, check that problems do not occur in the product by testing out the conditions in advance.

Related information

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

- Precautions
 - Disclaimer
 - Safety consideration
 - Surface mount type products
 - Unsealed products
 - Compound opto-semiconductors (photosensors, light emitters)
- Technical note
 - Compound semiconductor photosensors



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