

Type II superlattice infrared detector



P15409-901

High sensitivity, high-speed response infrared detector up to 14 μm band

P15409-901 is a Type II superlattice infrared detector with a sensitivity extended up to 14 μm band using Hamamatsu unique crystal growth technology and process technology. This product is environmentally friendly; it does not use lead, mercury or cadmium which are substances restricted by the RoHS Directive. Therefore, it is the replacement for conventional products that contain these substances.

Feature

- ➔ High sensitivity
- ➔ High-speed response
- ➔ Excellent linearity

Applications

- ➔ FTIR
- ➔ Gas detection
- ➔ Radiation thermometers

Option (sold separately)

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

Structure

Parameter	Specification	Unit
Window material	ZnSe	-
Package	Metal dewar	-
Cooling	Liquid nitrogen	-
Photosensitive area	φ0.1	mm

Absolute maximum ratings

Parameter	Symbol	Value	Unit
Reverse voltage	V _R	0.1	V
Operating temperature*1	T _{opr}	-40 to +60	°C
Storage temperature*1	T _{stg}	-55 to +60	°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.

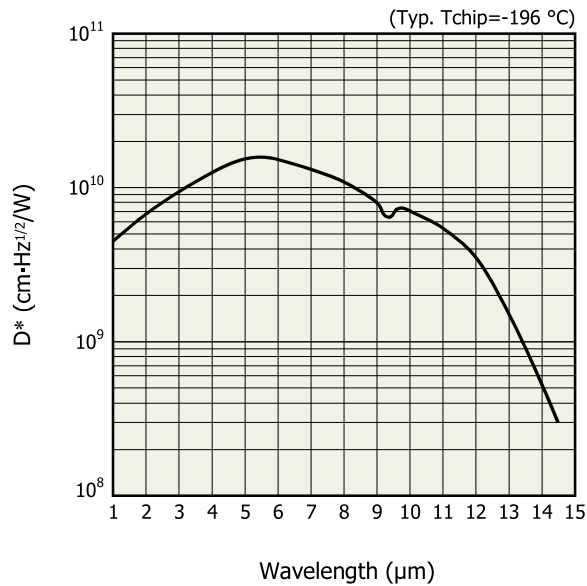
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

Electrical and optical characteristics (Tchip=-196 °C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Peak sensitivity wavelength	λ_p		-	5.4	-	μm
Cutoff wavelength*2	λ_c		-	14.5	-	μm
Photosensitivity	S	$\lambda=\lambda_p$	-	2.6	-	A/W
Shunt resistance	Rsh	$V_R=10\text{ mV}$	-	2.5	-	k Ω
Terminal capacitance	Ct	$V_R=0\text{ V}, f=1\text{ MHz}$	-	50	-	pF
Detectivity	D*	$(\lambda_p, 1200, 1)$	5.0×10^9	1.6×10^{10}	-	$\text{cm}\cdot\text{Hz}^{1/2}/\text{W}$
Noise equivalent power	NEP	$\lambda=\lambda_p$	-	5.5×10^{-12}	1.8×10^{-11}	$\text{W}/\text{Hz}^{1/2}$
Rise time	tr	$V_R=0\text{ V}, R_L=50\ \Omega,$ 0 to 63%	-	150	-	ns

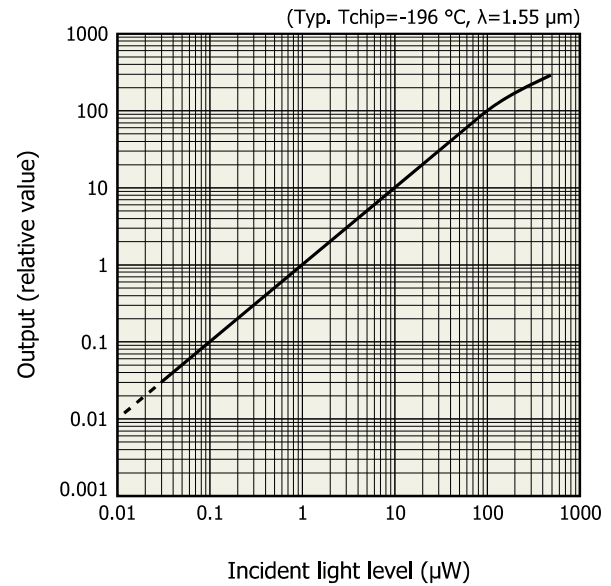
*2: Wavelength at which signal/noise=1

Spectral response (D*)



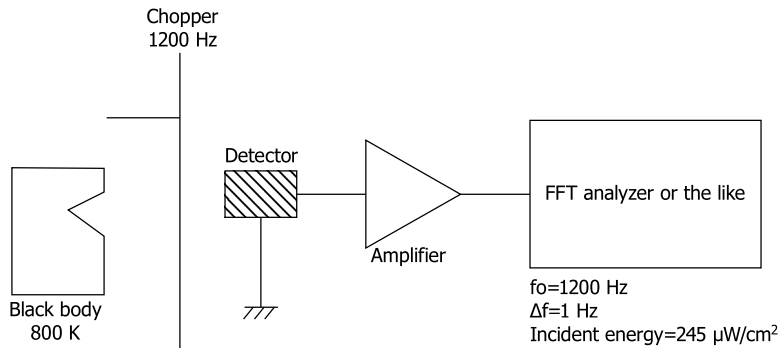
KIRD80673EB

Linearity



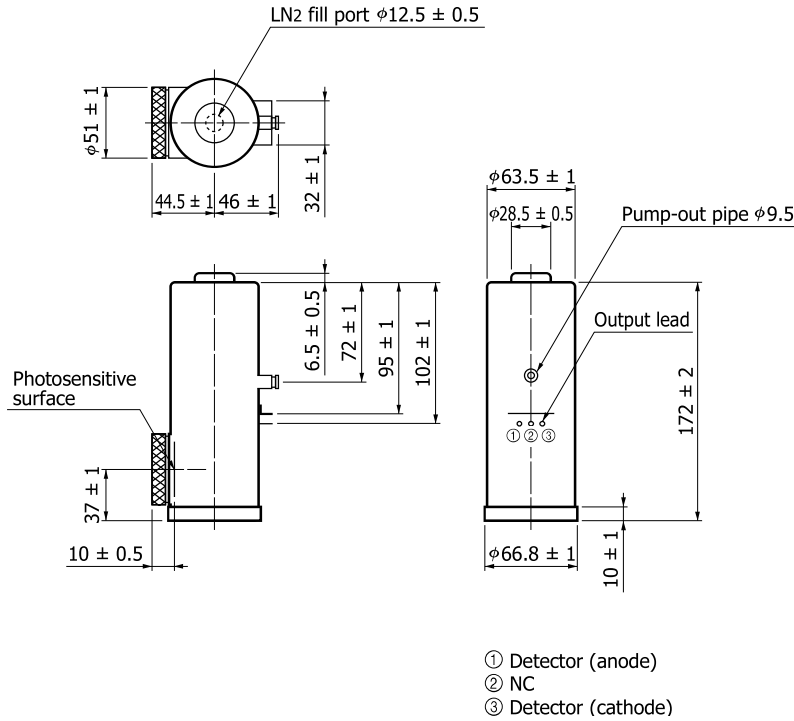
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Block diagram for characteristics measurement



KIRD0127EA

■ Dimensional outline (unit: mm)



KIRDA0190ED

■ Related information

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

■ Precaution

- Disclaimer

■ Technical information

- Compound semiconductor photosensors / Technical note



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Information described in this material is current as of December 2021.

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