HAMAMATSU
PHOTON IS OUR BUSINESS

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	Topr	-40 to +60	°C
Storage temperature*1	Tstg	-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.

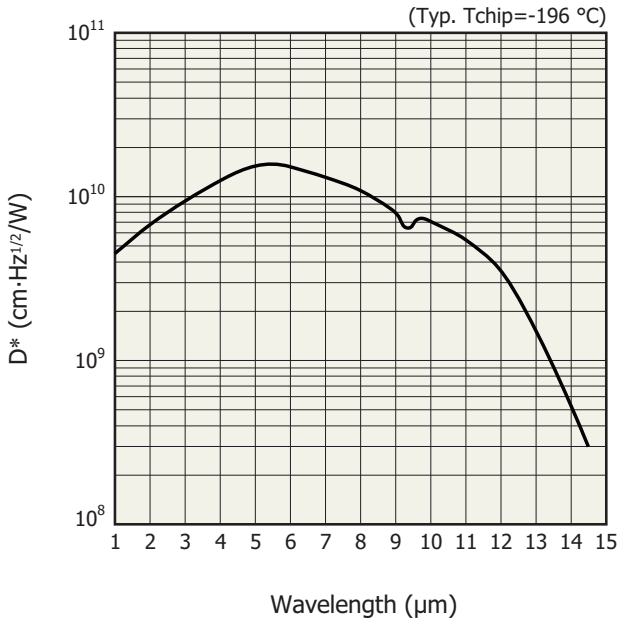
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

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

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

*2: Wavelength at which signal/noise=1

Spectral response (D*)



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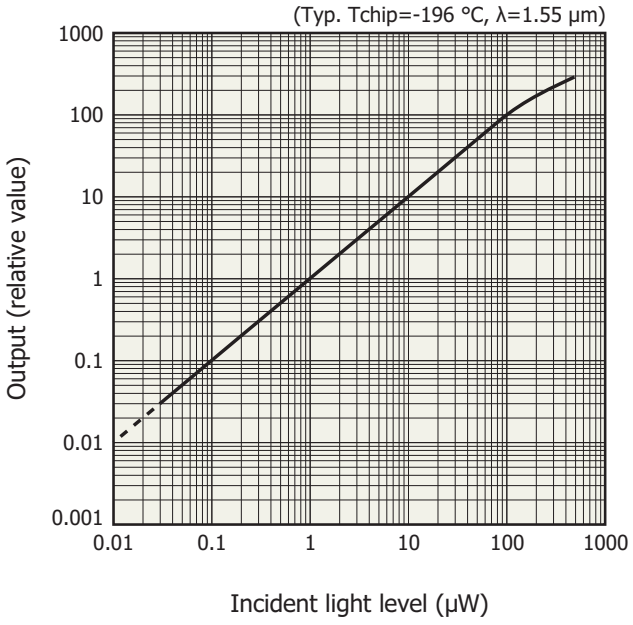
Linearity



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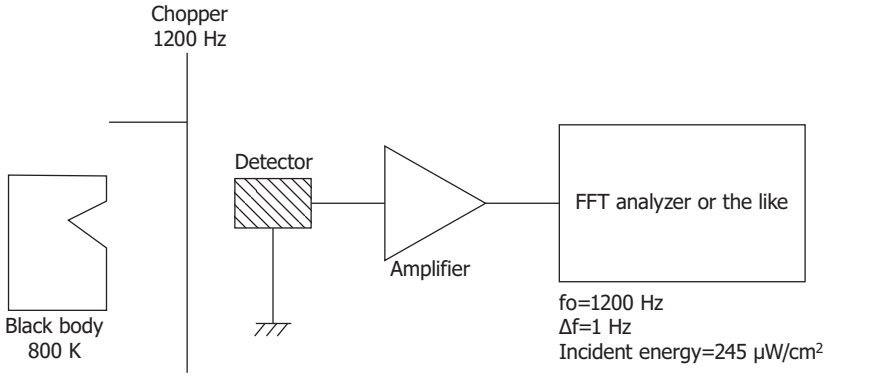
Block diagram for characteristics measurement



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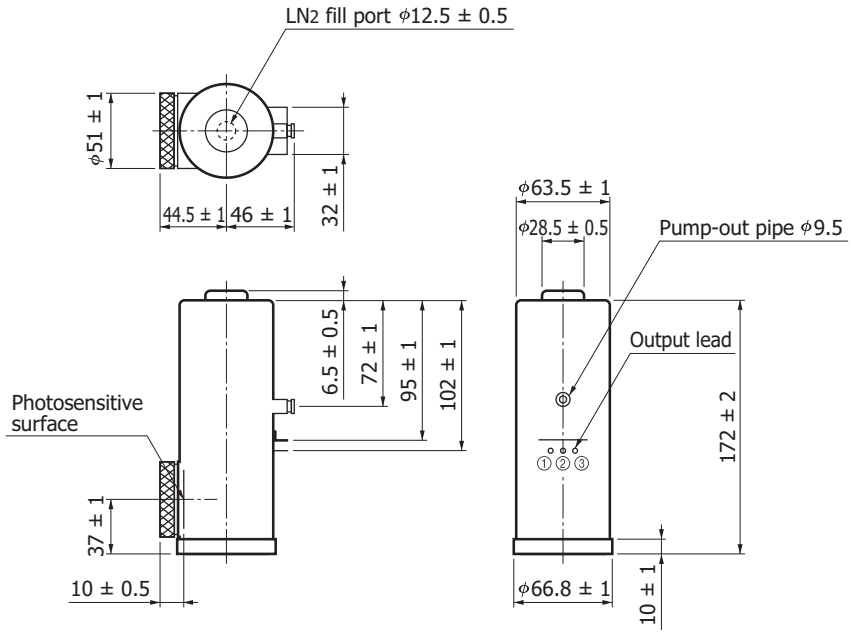
Dimensional outline (unit: mm)



Related information

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

■ Precaution
· Disclaimer

■ Technical information
· Compound semiconductor photosensors / Technical note

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