

# InAsSb photodiode

P11120-901



**Infrared detector in the 5  $\mu\text{m}$  spectral band, with high sensitivity and high reliability**

The P11120-901 is an infrared detector that provides high sensitivity in the 5  $\mu\text{m}$  spectral band due to our unique crystal growth technology. The InAsSb photodiode used in the detector has a planar structure that ensures high-speed response and high reliability. Typical applications include gas analysis such as CO<sub>2</sub>, SO<sub>x</sub>, CO and NO<sub>x</sub>. HAMAMATSU also manufactures detector elements with peak sensitivity at longer wavelengths by changing the composition ratio of As and Sb.

## Features

- High speed response
- High sensitivity
- High reliability

## Applications

- Gas analysis
- Thermometers (radiometers)
- Thermal imaging
- Remote sensing
- FTIR
- Spectrophotometry

## Specifications

Parameter	Specification	Unit
Window material	Si with AR coated	-
Package	Metal dewar	-
Cooling	Liquid nitrogen	-
Active area	$\phi 1.0$	mm

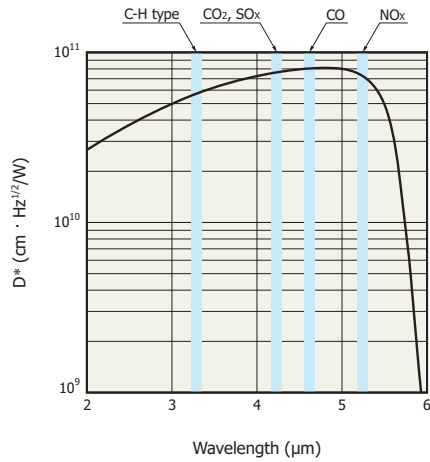
## Absolute maximum ratings

Parameter	Symbol	Value	Unit
Reverse voltage	V <sub>R</sub>	0.1	V
Operating temperature	T <sub>opr</sub>	-40 to +60	°C
Storage temperature	T <sub>stg</sub>	-55 to +60	°C

## Electrical and optical characteristics

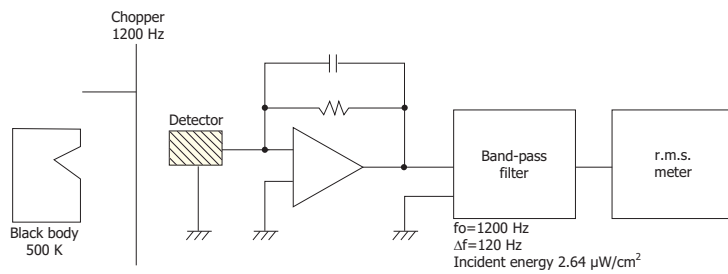
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Peak sensitivity wavelength	$\lambda_p$		4.6	4.8	5.2	$\mu\text{m}$
Cut-off wavelength	$\lambda_c$		5.6	5.8	-	$\mu\text{m}$
Photo sensitivity	S		0.7	0.8	-	A/W
Shunt resistance	R <sub>sh</sub>		$7 \times 10^4$	$1 \times 10^5$	-	$\Omega$
Detectivity	D*	( $\lambda_p$ , 1200, 1)	$6.0 \times 10^{10}$	$8.5 \times 10^{10}$	-	$\text{cm} \cdot \text{Hz}^{1/2}/\text{W}$
Noise equivalent power	NEP	$\lambda = \lambda_p$	-	$1.1 \times 10^{-12}$	$1.5 \times 10^{-12}$	$\text{W}/\text{Hz}^{1/2}$
Rise time	tr		-	200	300	ns

### Spectral response



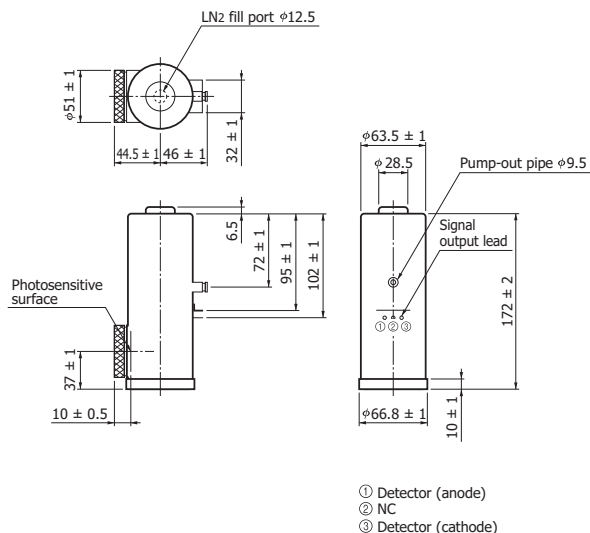
KIRDB0430EA

### Measurement circuit example



KIRDC0004EA

### Dimensional outline (unit: mm)



KIRDA0190EC

Information furnished by HAMAMATSU is believed to be reliable. However, no responsibility is assumed for possible inaccuracies or omissions.

Specifications are subject to change without notice. No patent rights are granted to any of the circuits described herein.

Type numbers of products listed in the specification sheets or supplied as samples may have a suffix "(X)" which means tentative specifications or a suffix "(Z)" which means developmental specifications. ©2010 Hamamatsu Photonics K.K.

# HAMAMATSU

[www.hamamatsu.com](http://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, P.O.Box 6910, Bridgewater, N.J. 08807-0910, 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: Smidesvägen 12, SE-171 41 Solna, Sweden, Telephone: (46) 8-509-031-00, Fax: (46) 8-509-031-01

Italy: Hamamatsu Photonics Italia S.R.L.: Strada della Moia, 1/E, 20020 Arese, (Milano), Italy, Telephone: (39) 02-935-81-733, Fax: (39) 02-935-81-741