HAMAMATSU
PHOTON IS OUR BUSINESS

InAsSb photovoltaic detector

P11120-201

High-speed response and high sensitivity in the 5 µm spectral band Thermoelectrically cooled infrared detector with no liquid nitrogen required

The P11120-201 is an infrared detector that provides high sensitivity in the 5 µm spectral band due to our unique crystal growth technology. The InAsSb photovoltaic detector has a PN junction that ensures high-speed response and high reliability. Typical applications include gas analysis such as CO_2, SOx, CO and NOx. Unlike the P11120-901 metal dewar type detector, the P11120-201 is easy to use as it uses a compact package (TO-8) not requiring liquid nitrogen.

Features

- **High-speed response**
- **High sensitivity**
- **High reliability**
- **Compact, thermoelectrically cooled TO-8 package**
- **Environment-friendly due to use of InAsSb**
- **Suitable for detecting infrared rays emitted from QCL**

Applications

- **Gas analysis**
- **Radiation thermometers**
- **Thermal imaging**
- **Remote sensing**
- **FTIR**
- **Spectrophotometry**

Options (sold separately)

- **Heatsink for two-stage TE-cooled type A3179-01**
- **Temperature controller C1103-04**
- **Infrared detector module with preamp C4159-07**

Structure

Parameter	Specification	Unit
Window material	Sapphire	-
Package	TO-8	-
Cooling	Two-stage TE-cooled	-
Photosensitive area	ϕ1.0	mm

Absolute maximum ratings

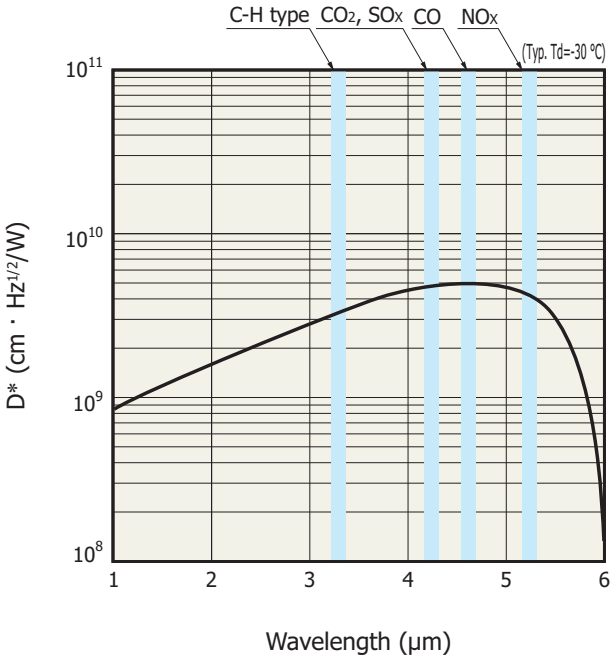
Parameter	Symbol	Value	Unit
Thermistor power dissipation	-	0.2	mW
Reverse voltage	V_R	0.1	V
Operating temperature	Topr	-40 to +60	°C
Storage temperature	Tstg	-55 to +60	°C

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 (Td=-30 °C)

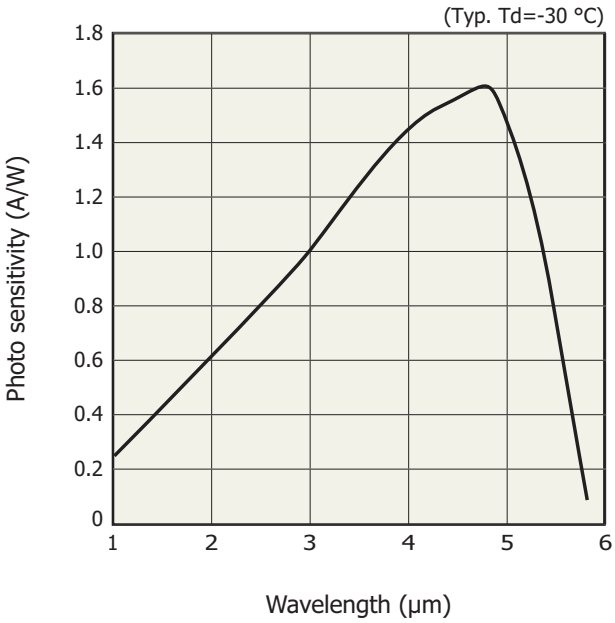
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Peak sensitivity wavelength	λp		4.0	4.9	-	μm
Cutoff wavelength	λc		5.6	5.9	-	μm
Photo sensitivity	S	λ=λp	0.8	1.6	-	A/W
Shunt resistance	Rsh	V_R=10 mV	10	13	-	Ω
Detectivity	D*	(λp, 600, 1)	3.5×10^9	5.0×10^9	-	cm·$Hz^{1/2}$/W
Noise equivalent power	NEP	λ=λp	-	1.8×10^{-11}	2.5×10^{-11}	W/$Hz^{1/2}$
Rise time	tr	V_R=0 V, R_L=50 Ω 0 to 63%	-	0.4	-	μs

Spectral response (D*)



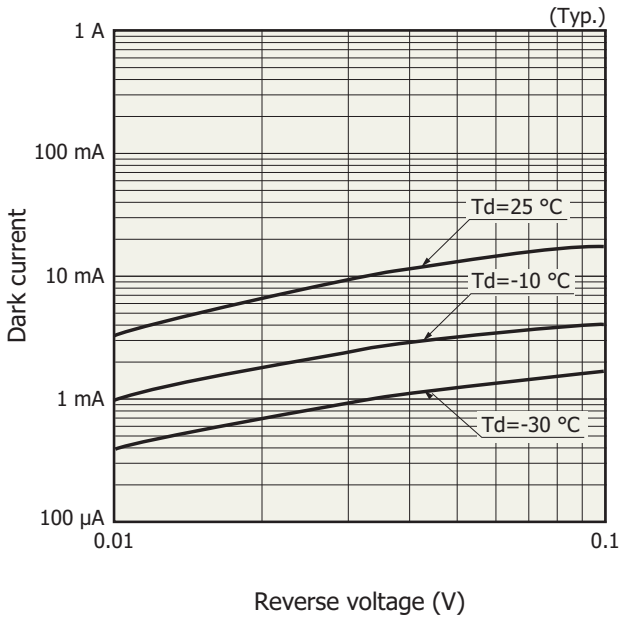
KIRDB0452EA

Spectral response



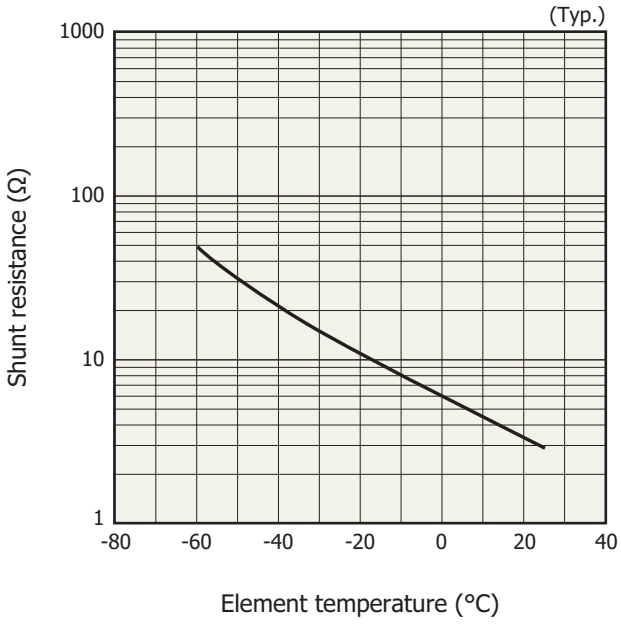
KIRDB0453EA

Dark current vs. reverse voltage



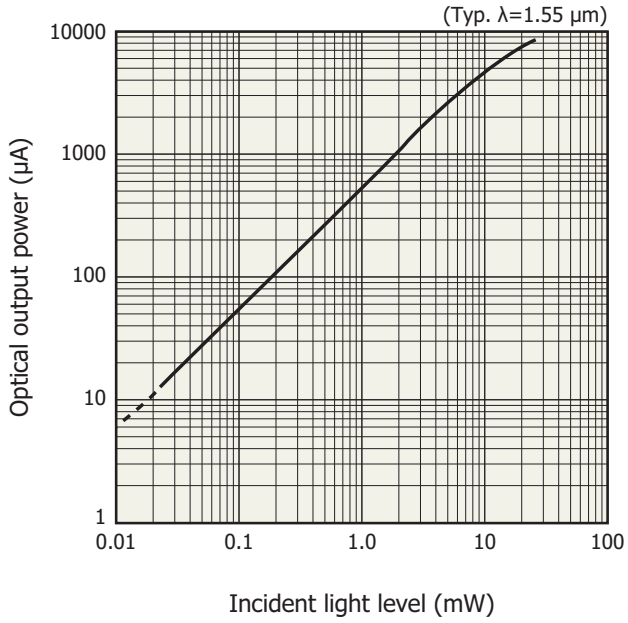
KIRDB0454EA

Shunt resistance vs. element temperature



KIRDB0455EA

Linearity

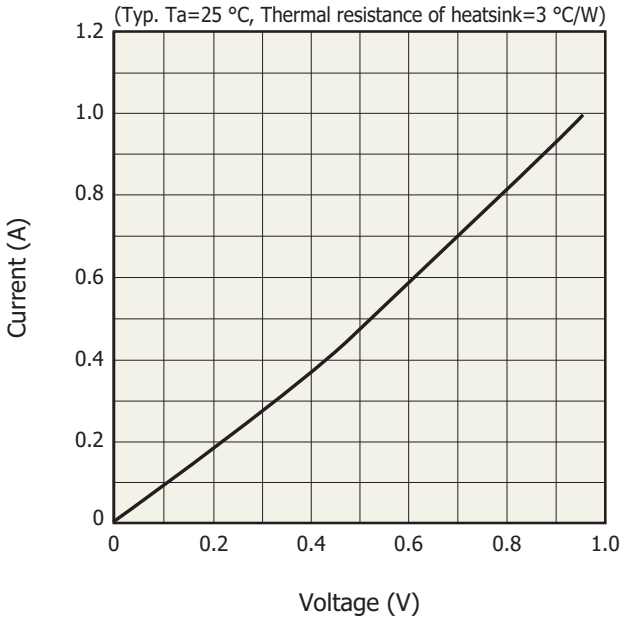


KIRDB0456EA

Specifications of two-stage TE-cooler (Ta=25 °C)

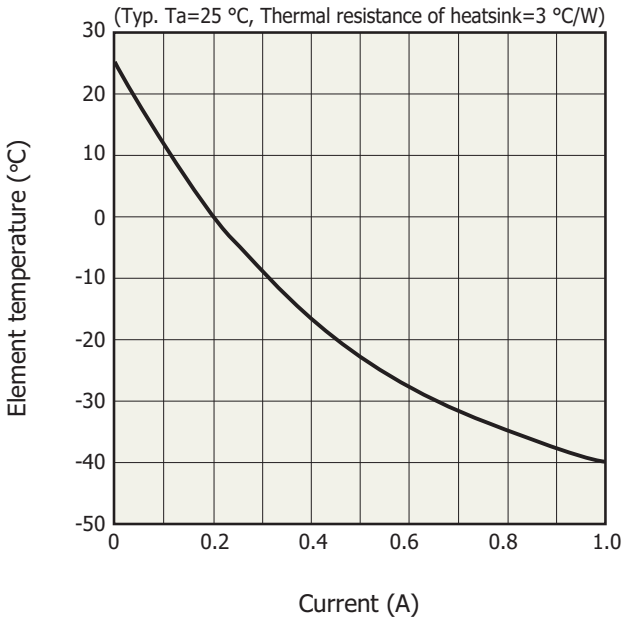
Parameter	Symbol	Min.	Typ.	Max.	Unit
Allowable current	Ic	-	-	1.0	A
Allowable voltage	Vc	-	-	0.95	V
Thermistor resistance	Rth	8.1	9.0	9.9	kΩ
Thermistor power dissipation	Pth	-	-	0.2	mW

Current vs. voltage of TE-cooled type



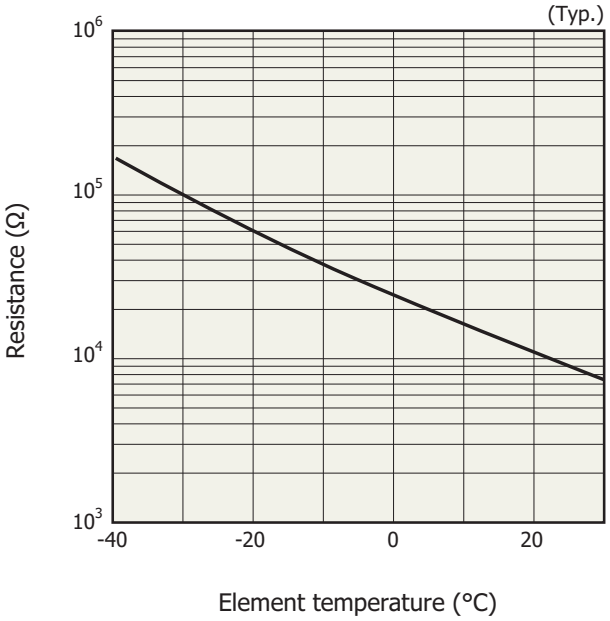
KIRDB0459EA

Cooling characteristics of TE-cooled type



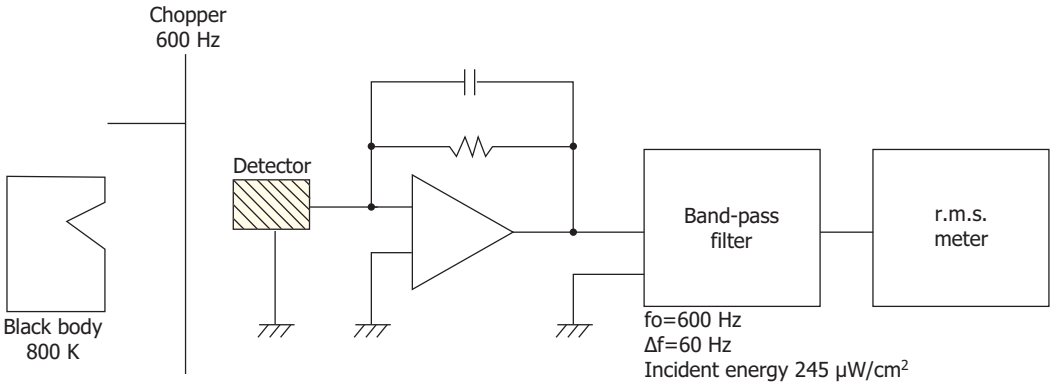
KIRDB0464EA

Thermistor temperature characteristic



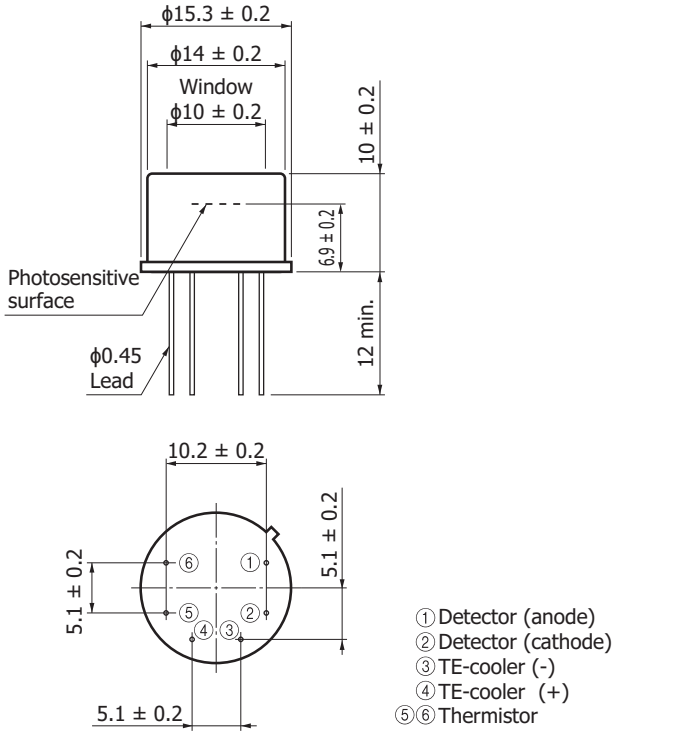
KIRDB0116EA

Measurement circuit example



KIRDC0094EA

Dimensional outline (unit: mm)



KIRDA0212EA

Related information

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

■ Precautions
- · Dislaimer
- · Metal, ceramic, plastic products

■ Technical information
- · Infrared detectors

HAMAMATSU 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, Bridgewater, N.J. 08807, 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: Torshamnsgatan 35 16440 Kista, Sweden, Telephone: (46) 8-509-031-00, Fax: (46) 8-509-031-01
Italy: Hamamatsu Photonics Italia S.r.l.: Strada della Moia, 1 int. 6, 20020 Arese (Milano), Italy, Telephone: (39) 02-93581733, Fax: (39) 02-93581741
China: Hamamatsu Photonics (China) Co., Ltd.: B1201, Jiaming Center, No.27 Dongsanhuan Beilu, Chaoyang District, Beijing 100020, China, Telephone: (86) 10-6586-6006, Fax: (86) 10-6586-2866

Cat. No. KIRD1113E04 May 2015 DN