HAMAMATSU
PHOTON IS OUR BUSINESS

MCT photoconductive detectors

P2748/P5274 series

Dewar type detector with high sensitivity and high-speed response in long wavelength range

Features

- **Choice of spectral response range (up to 25 µm)**
  The band gap can be adjusted by controlling the composition ratio of HgTe and CdTe. Utilizing this fact, various types are available in different spectral characteristics.
- **Photoconductive element that decreases its resistance by input of infrared light**
- **Custom devices available**
  Custom devices not listed in this catalog are also available with different spectral response, active area sizes and number of elements.
  Glass dewar type not requiring repumping is also provided.

Applications

- **FTIR**
- **Infrared spectrophotometers**
- **Thermal imaging**
- **Remote sensing**
- **CO_2 laser detection**

Options

- **Valve operator** **A3515**
- **Amplifiers for dewar type MCT photoconductive detector** **C5185-02**

Structure / Absolute maximum ratings

Type no.	Dimensional outline/ Window material	Package	Cooling	Photosensitive area (mm)	Nitrogen hold time Min. (h)	Absolute maximum ratings		
						Allowable bias current (mA)	Operating temperature Topr (°C)	Storage temperature Tstg (°C)
P2748-40	(1)/ZnS	Side-on type metal dewar	Liquid nitrogen	1 × 1	12	40	-40 to +60	-55 to +60
P2748-41	(2)/ZnS	Head-on type metal dewar		1 × 1		40		
P2748-42	(1)/ZnS	Side-on type metal dewar		0.25 × 0.25		20		
P5274	(1)/ZnSe			1 × 1		40		
P5274-01	(1)/KRS-5			1 × 1		20		

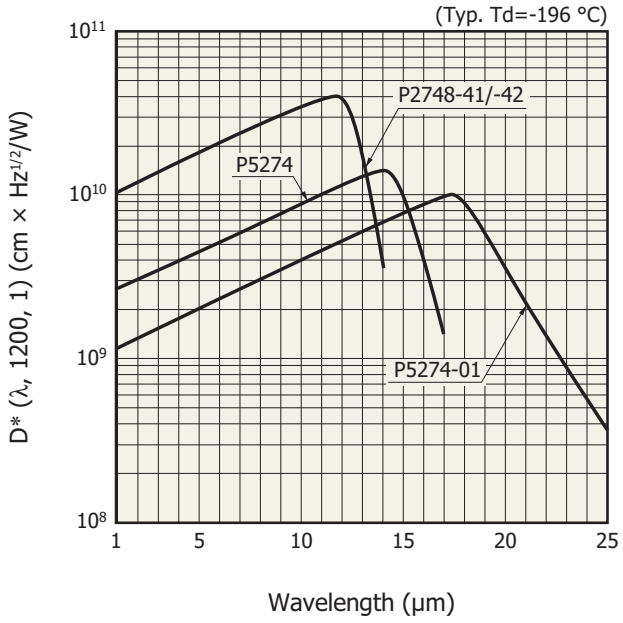
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

Electrical and optical characteristics (Typ. unless otherwise noted)

Type no.	Measurement condition Element temperature Td (°C)	Peak sensitivity wavelength λp (µm)	Cutoff wavelength λc (µm)	Photo-sensitivity*1 S λ=λp (V/W)	D* (500, 1200, 1) Min. (cm · $Hz^{1/2}$/W)	D* (500, 1200, 1) Typ. (cm · $Hz^{1/2}$/W)	D* (λp, 1200, 1) (cm · $Hz^{1/2}$/W)	NEP λ=λp (W/$Hz^{1/2}$)	Rise time tr 0 to 63% (µs)	Dark resistance Rd (Ω)
P2748-40	-196	12	14	1000	1×10^{10}	2×10^{10}	4.0×10^{10}	2.5×10^{-12}	0.6	40
P2748-41				1000				2.5×10^{-12}		
P2748-42				10000				6.3×10^{-12}		
P5274		14	17	500	2×10^{9}	1×10^{10}	1.5×10^{10}	6.7×10^{-12}	0.6	30
P5274-01		17	22	250	1×10^{9}	5×10^{9}	1.0×10^{10}	1.0×10^{-11}	0.4	100

*1: Photosensitivity changes with the bias current. The values in the above table are measured with the optimum bias current.

Spectral response



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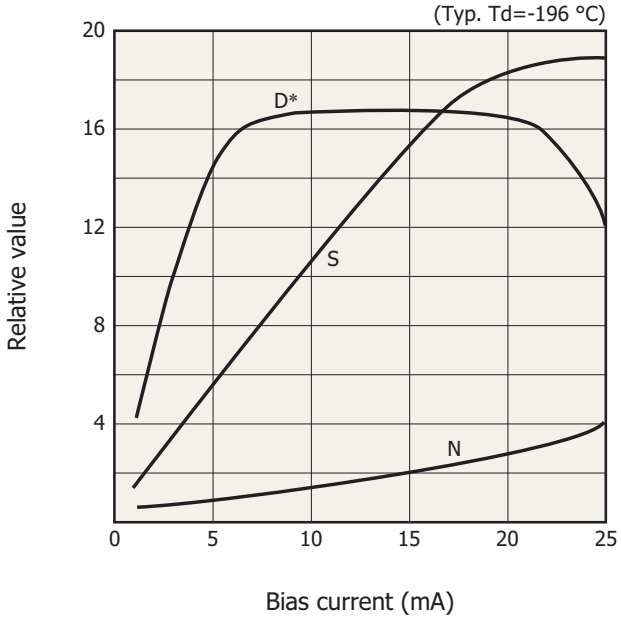
Spectral response can be shifted upon request.

S/N vs. bias current



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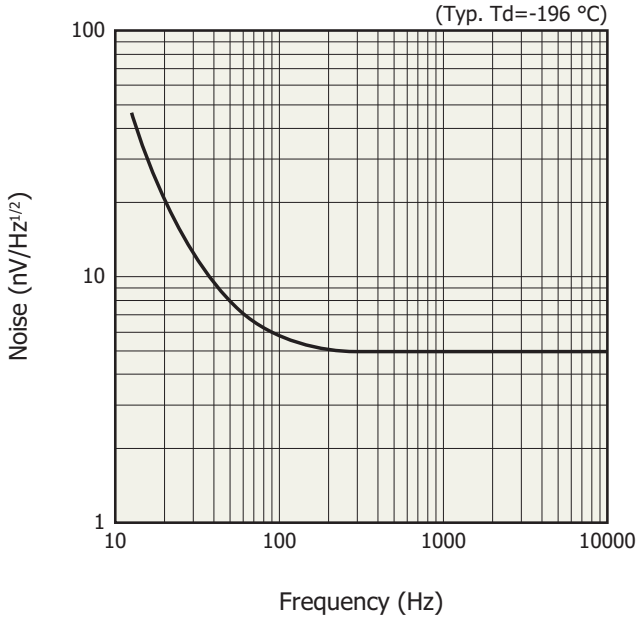
The detector must be operated in a range where the D* becomes Max.

Noise vs. frequency



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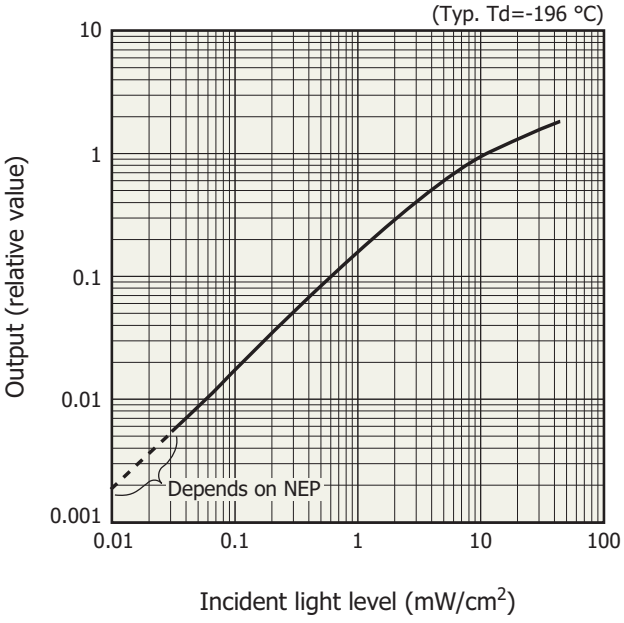
Linearity (P2748-40)



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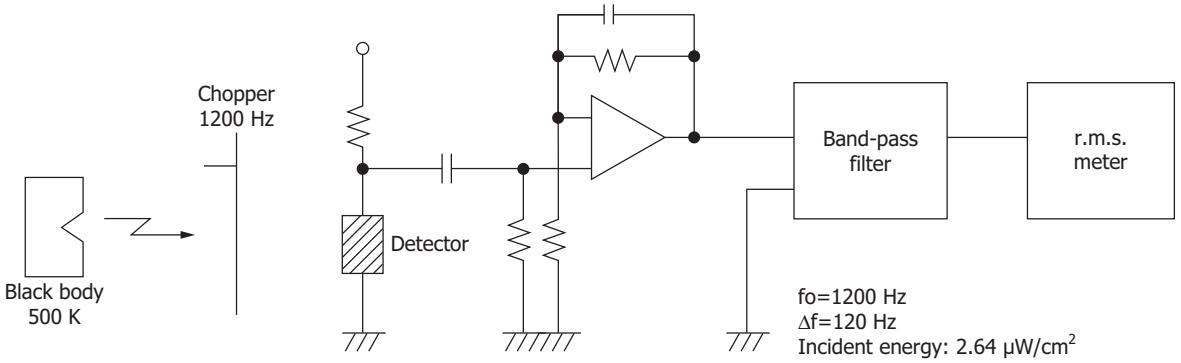
Measurement circuit



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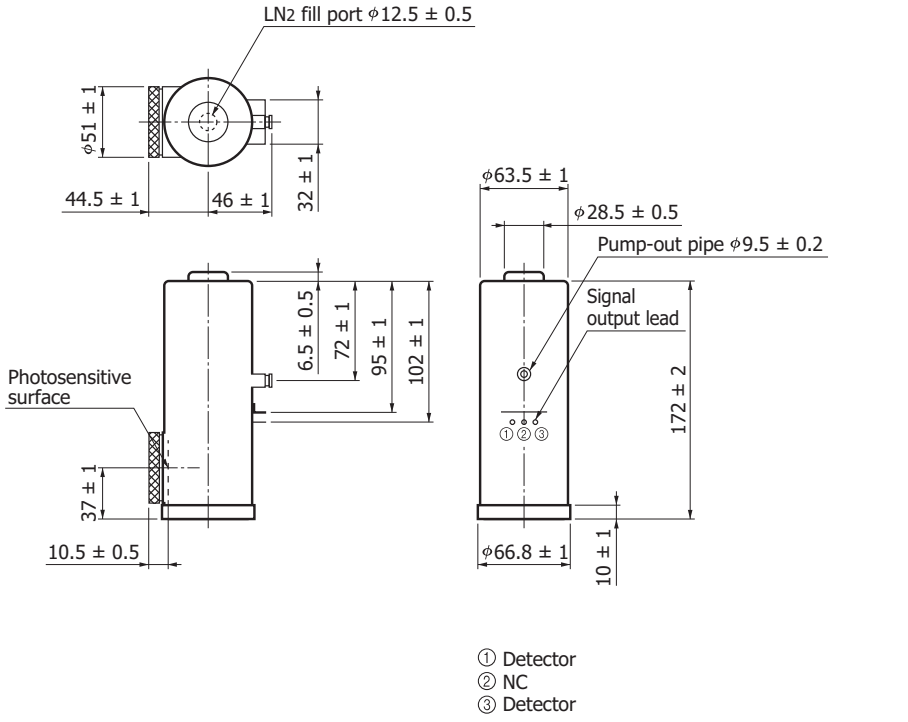
Dimensional outline (unit: mm)

(1) P2748-40/-42, P5274 series



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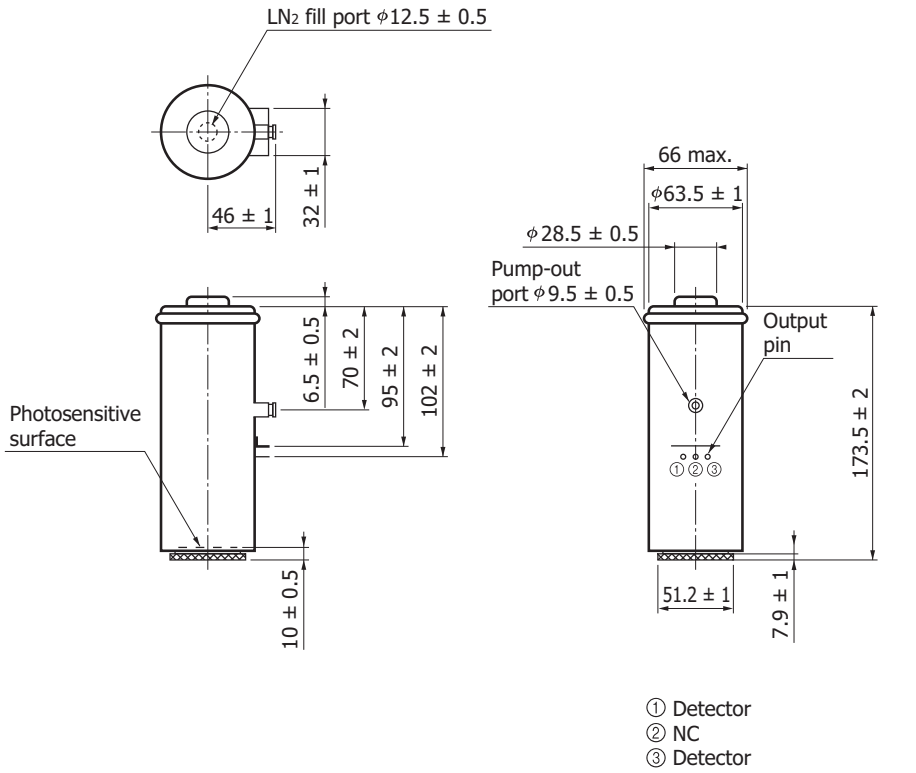
(2) P2748-41



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, 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: Thorshamnsgatan 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) 02-935-81-733, Fax: (39) 02-935-81-741
China: Hamamatsu Photonics (China) Co., Ltd.: 1201 Tower B, Jiaming Center, No.27 Dongsanhuan Beilu, Chaoyang District, Beijing 100020, China, Telephone: (86) 10-6586-6006, Fax: (86) 10-6586-2866

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