MCT photoconductive detector
P2748/P5274 series, P3257-50

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
- Micro-cooled type available
  This type of cooling does not require pour-filled liquid nitrogen.
- 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 spectrophotometer
- Thermal imaging
- Remote sensing
- CO_2 laser detection

Accessories (Optional)

- Valve operator A3515
- Amplifiers for dewar type MCT photoconductive detector C5185
- Infrared detector module with preamp P7752-10

■ General rating / Absolute maximum ratings

Type No.	Dimensional outline/ Window material *1	Package	Cooling	Active area (mm)	Nitrogen maintenance time Min. (h)	Absolute maximum ratings		
						Allowable current (mA)	Operating temperature Topr (°C)	Storage temperature Tstg (°C)
P2748-40	①/Z	Side-on type metal dewar	LN_2	1 × 1	12	40	-40 to +60	-55 to +60
P2748-41	②/Z	Head-on type metal dewar		1 × 1		40		
P2748-42	①/Z	Side-on type metal dewar		0.25 × 0.25		20		
P5274				1 × 1		40		
P5274-01	①/K			1 × 1		20		
P3257-50	③/Z	Stirling type metal	Micro-cooled	1 × 1	-	40	-40 to +55	-45 to +55

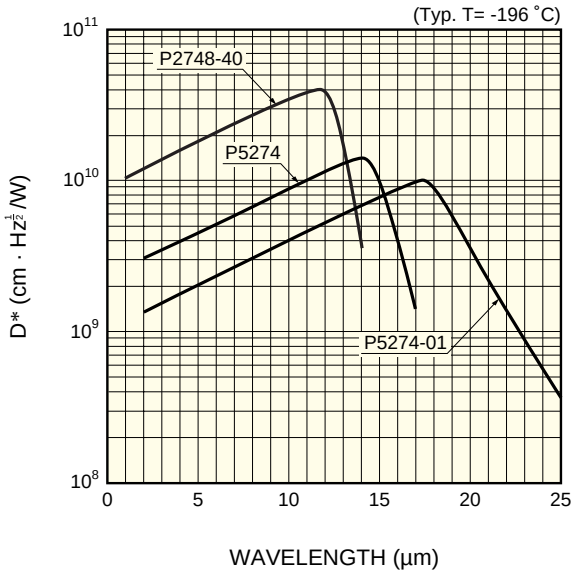
■ Electrical and optical characteristics (Typ. unless otherwise noted)

Type No.	Measurement condition Element temperature T (°C)	Peak sensitivity wavelength λp (µm)	Cut-off wavelength λc (µm)	Photo sensitivity *2 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
P3257-50		12	14	1000	1×10^{10}	2×10^{10}	4.0×10^{10}	2.5×10^{-12}	0.6	40

*1: Window material K: KRS-5, Z: ZnSe
*2: Photo sensitivity changes with the bias current. The values in the above table are measured with the optimum bias current.

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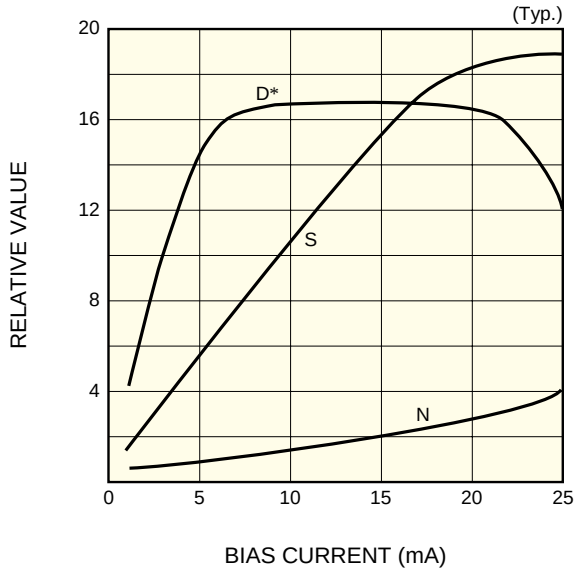
■ Spectral response



KIRDB0072EC

Spectral response can be shifted upon request.

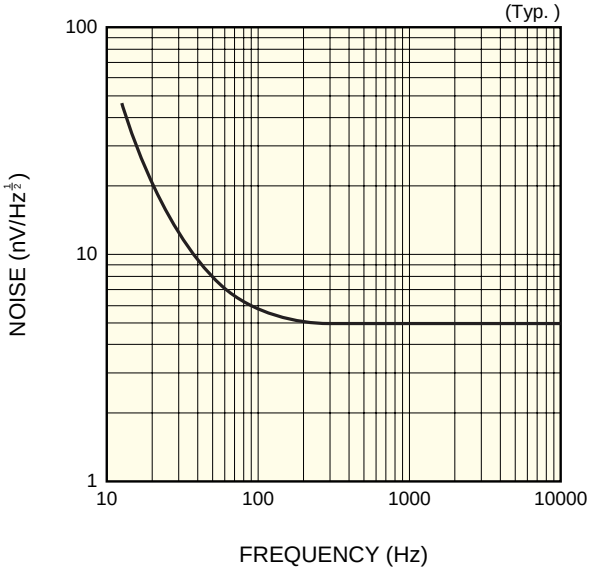
■ S/N vs. bias current



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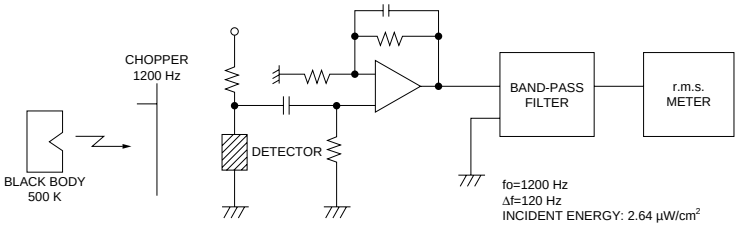
The detector must be operated in a range where the D* becomes Max.

■ Noise frequency characteristic



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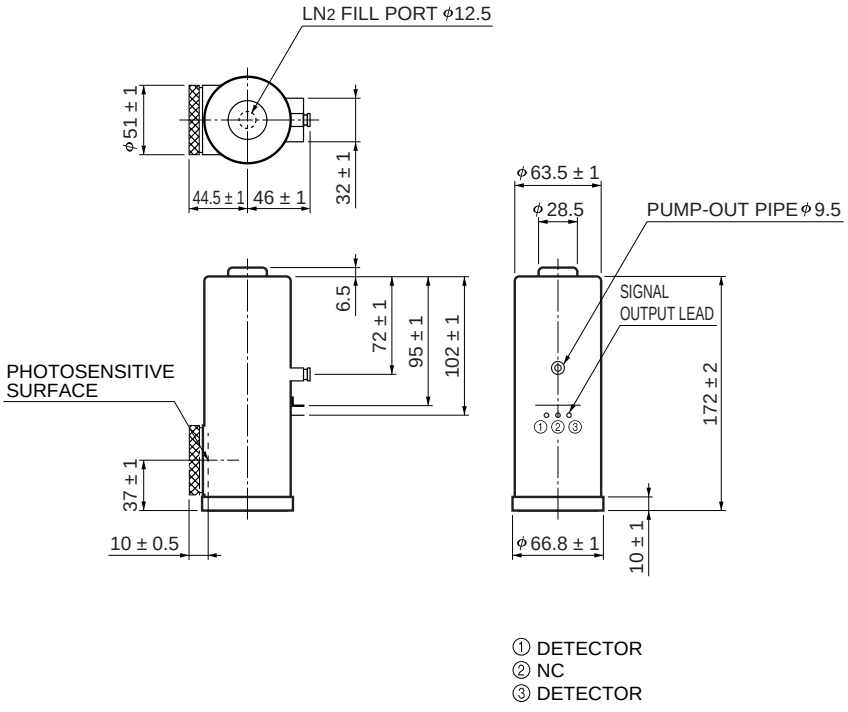
■ Measurement circuit



KIRDC0007EA

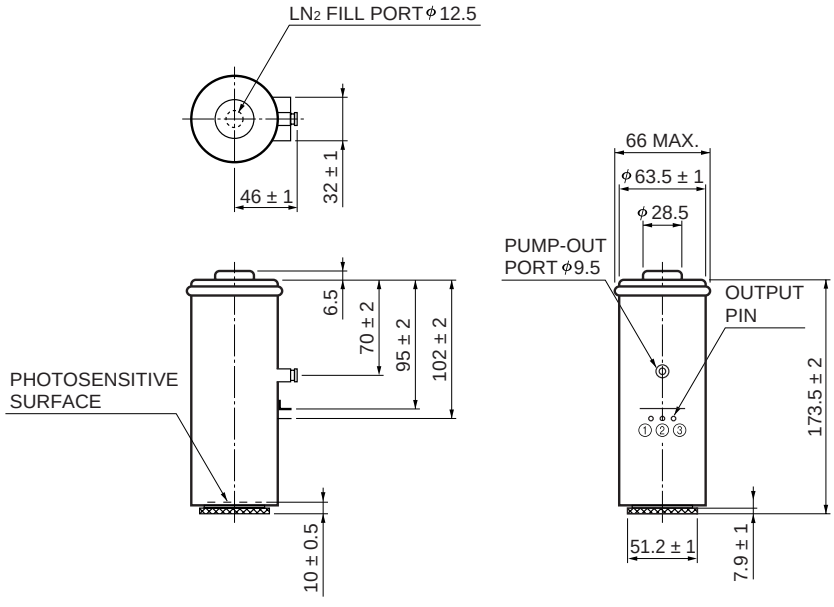
■ Dimensional outlines (unit: mm)

① P2748-40/-42, P5274 series



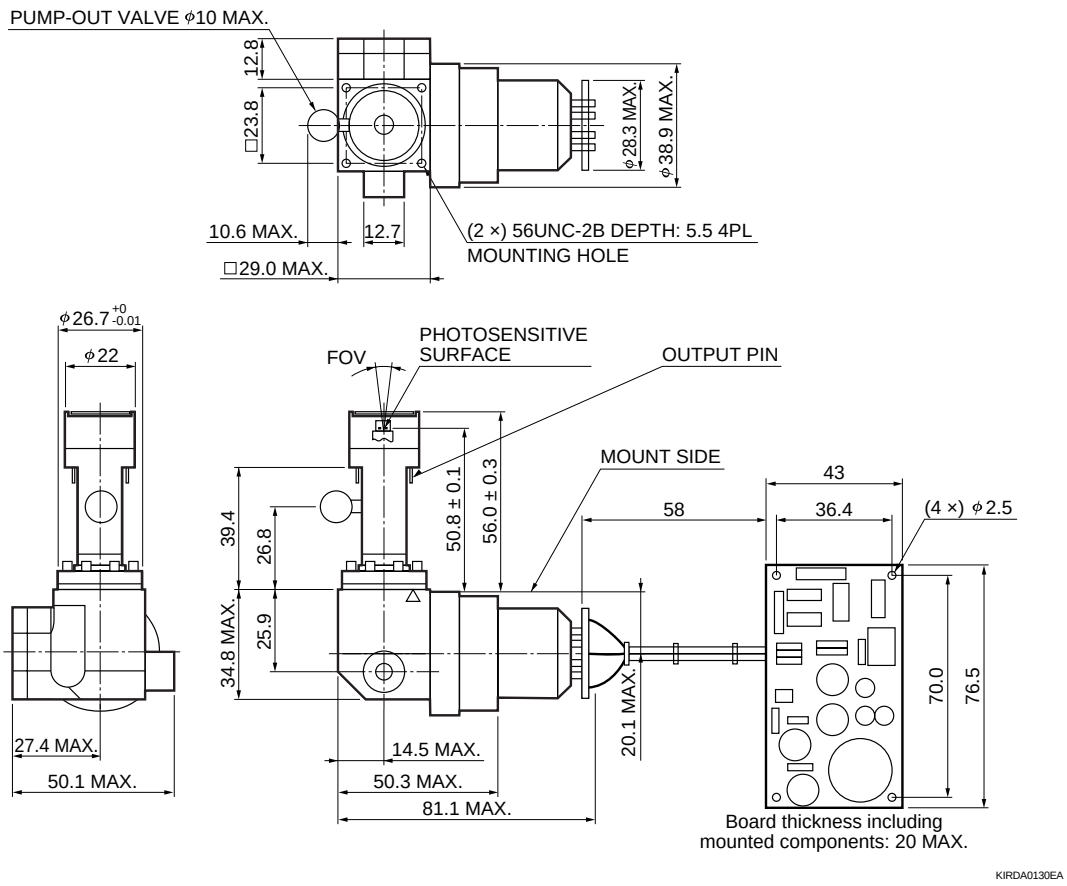
KIRDA0131ED

② P2748-41



KIRDA0129EB

③ P3257-50



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