HAMAMATSU
PHOTON IS OUR BUSINESS

InSb photovoltaic detectors

P5968/P4247 series



High-speed response, low-noise photovoltaic detectors

The P5968/P4247 series are photovoltaic detectors having high sensitivity in the so-called atmospheric window at 3 to 5 µm. Custom devices are also available to meet your special request.

Features

- **Cooling hold time: 8 hours**
  Repumpable metal dewars (liquid nitrogen cooling) allow 8-hour hold time.
- **Built-in preamp type available**
  Built-in preamp allows high precision photometry.
  P7751-01 (Uses P5968-060.)
  P7751-02 (Uses P5968-200.)

Applications

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

Accessories (sold separately)

- **Amplifier for InSb photovoltaic detector**
  C4159-01 (photosensitive aera: smaller than ϕ1 mm)
  C4159-04 (photosensitive area: ϕ2 mm)
  [Custom amplifier is also available for use with P5968-300 (ϕ3 mm type).]

Structure/Absolute maximum ratings

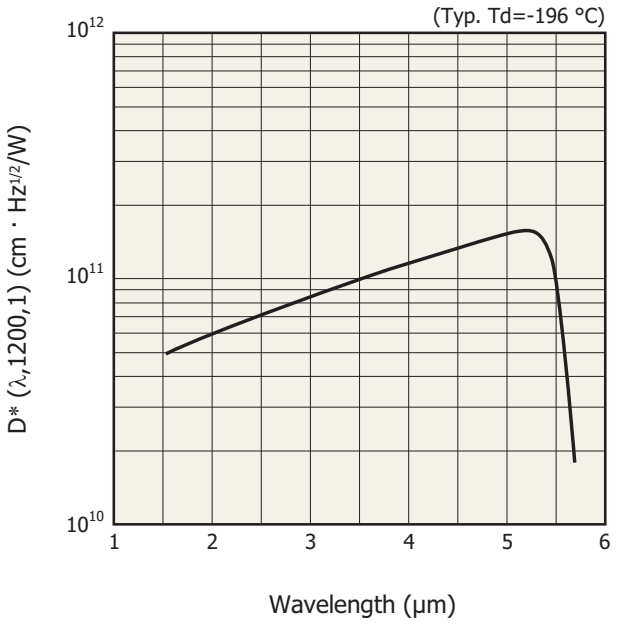
Type no.	Dimensional outline/ Window material *1	Package	Cooling	Active area (mm)	Number of element	Absolute maximum ratings		
						Reverse voltage V_R (V)	Operating temperature Topr (°C)	Storage temperature Tstg (°C)
P5968-060	①/Si	Metal dewar	Liquid nitrogen	ϕ0.6	1	0.5	-40 to +60	-55 to +60
P5968-100				ϕ1	1			
P5968-200				ϕ2	1			
P5968-300				ϕ3	1			
P4247-16	②/Si			0.25 × 1.4*2	1 × 16			
P4247-44				0.45 × 0.45*3	4 × 4			

*1: Window material Si=silicon (with AR coated)
*2: Size per 1 element (16 element array)
*3: Size per 1 element (4 × 4 element array)
Note: Absolute maximum ratings are the values that must not be exceeded at any time. If even one of the absolute maximum ratings is exceeded even for a moment, the product quality may be impaired. Always be sure to use the product within the absolute maximum ratings.

Electrical and optical characteristics (Typ. unless otherwise noted)

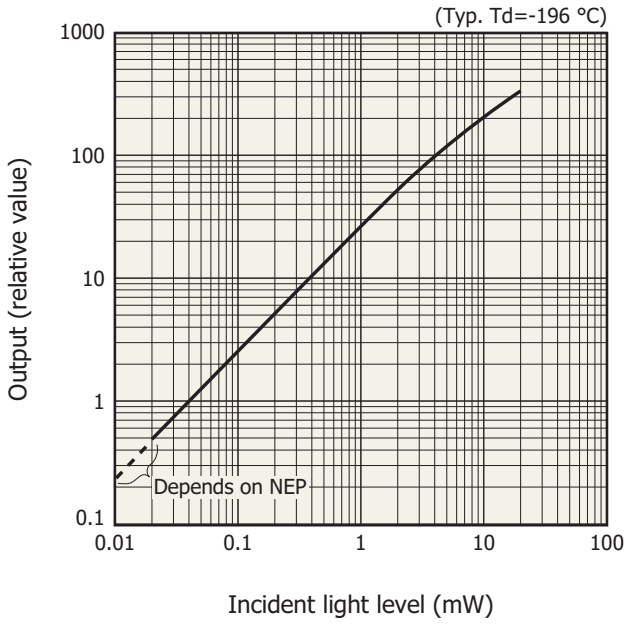
Type no.	Measurement condition Element temperature Td (°C)	Peak sensitivity wavelength λp (μm)	Cutoff wavelength λc (μm)	Photo sensitivity S λ=λp (A/W)	Shunt resistance Rsh (Ω)	D* (500 K, 1200, 1) Min. (cm · Hz$^{1/2}$/W)	D* (500 K, 1200, 1) Typ. (cm · Hz$^{1/2}$/W)	D* (λp, 1200, 1) (cm · Hz$^{1/2}$/W)	NEP λ=λp (W/Hz$^{1/2}$)	Rise time tr VR=0 V RL=50 Ω 0 to 63 % (ns)	Terminal capacitance Ct VR=0 V f=1 MHz (pF)
P5968-060	-196	5.3	5.5	2.5	1×10^{7}	2×10^{10}	3×10^{10}	1.6×10^{11}	3.3×10^{-13}	30	30
P5968-100					1×10^{6}				5.5×10^{-13}	70	100
P5968-200					1×10^{5}				1.1×10^{-12}	150	200
P5968-300					5×10^{4}				1.6×10^{-12}	600	900
P4247-16					1×10^{7}				6.5×10^{-13}	70	100
P4247-44					1×10^{7}				5.0×10^{-13}	60	60

Spectral response



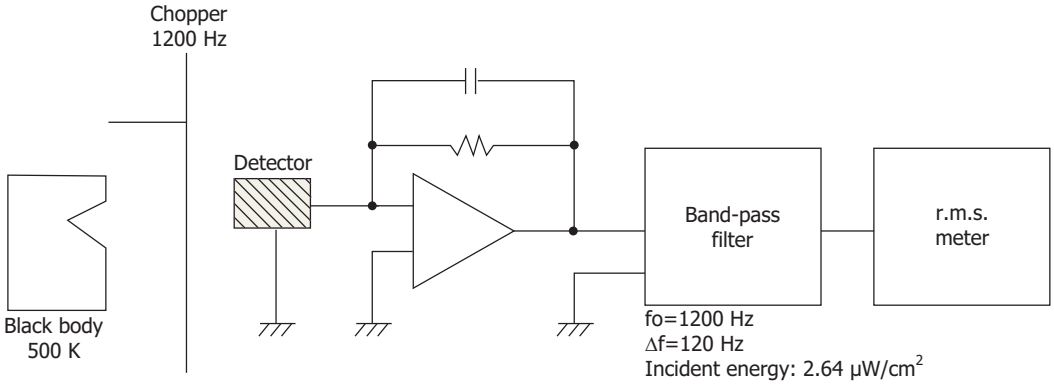
KIRDB0063EC

Linearity (P5968-100)



KIRDB0466EA

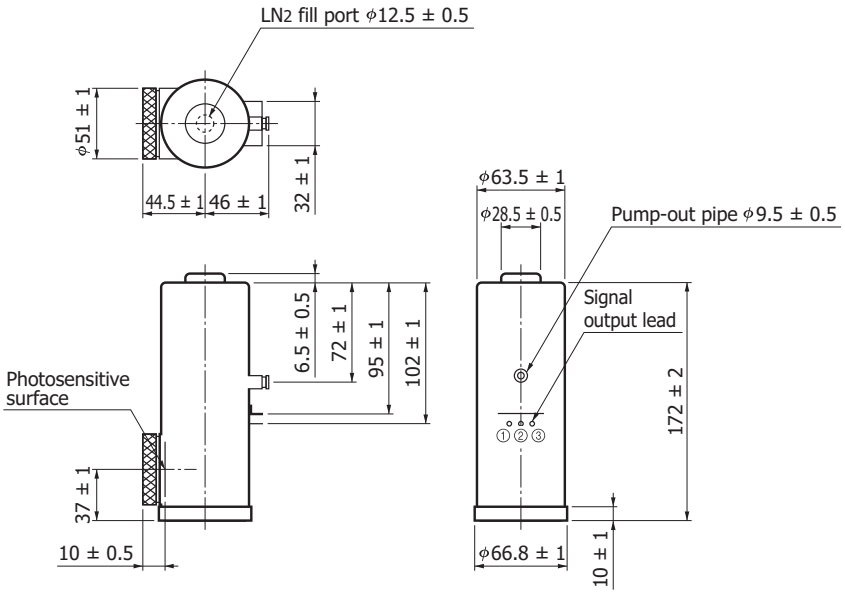
Measurement circuit



KIRDC0004EA

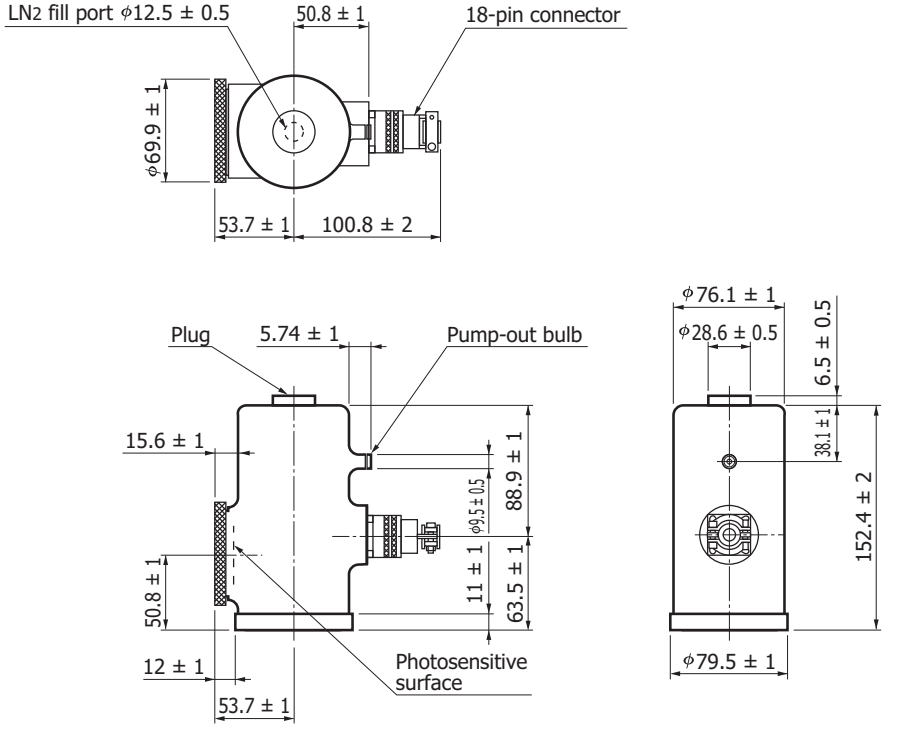
Dimensional outline (unit: mm)

① P5968-060/-100/-200/-300



KIRDA0190ED

② P4247 series

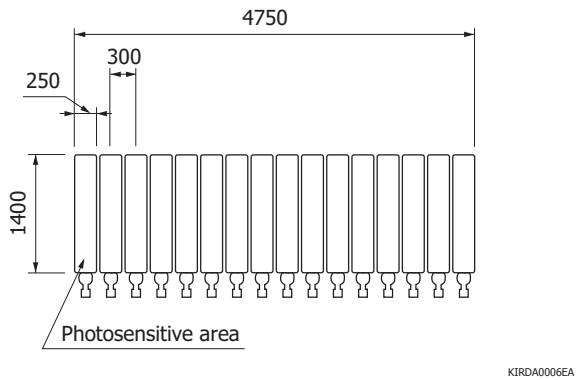


KIRDA0132EB

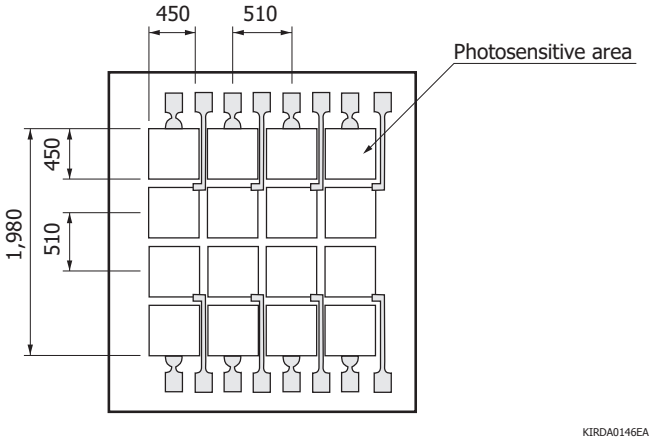
Details of multi-element detectors (unit: µm)

For custom devices with different number of elements, size and package, please consult our sales office.

P4247-16



P4247-44



Information described in this material is current as of December, 2011.
Product specifications are subject to change without prior notice due to improvements or other reasons. Before assembly into final products, please contact us for the delivery specification sheet to check the latest information.

The product warranty is valid for one year after delivery and is limited to product repair or replacement for defects discovered and reported to us within that one year period. However, even if within the warranty period we accept absolutely no liability for any loss caused by natural disasters or improper product use.
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