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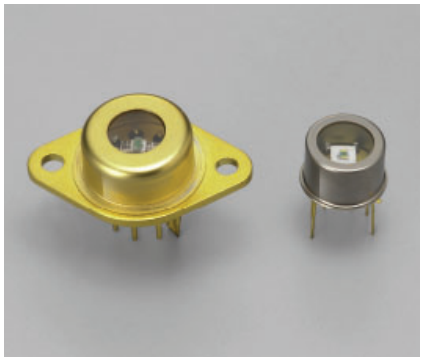
PHOTON IS OUR BUSINESS

InSb photoconductive detectors



P6606 series

Thermoelectrically cooled detectors capable of long-term measurements

Features

- **Thermoelectric cooling ensures high speed and high sensitivity up to 6.5 µm.**
- **Photoconductive element that changes electrical resistance by input of IR radiation**
- **Easy-to-use detector/preamp modules are also available.**

Applications

- **Environment measurements (gas analysis, etc.)**
- **Radiation thermometers (5 µm band)**
- **FTIR**
- **IR laser detection**

Related products (sold separately)

- **Heatsink for one/two-stage TE-cooled type A3179-01**
- **Heatsink for three-stage TE-cooled type A3179-04**
- **Temperature controller C1103-05 (-75 to -25 °C) C1103-07 (-30 to +20 °C)**
- **Preamp C5185-02**
- **Infrared detector module with preamp P4631-03 (P6606-310)**

Specifications / Absolute maximum ratings

Type no.	Dimensional outline/ Window material*1	Package	Cooling	Photosensitive area (mm)	Absolute maximum ratings					
					Incideut light level (mW)	Thermistor power dissipation (mW)	TE-cooler power dissipation (A)	Allowable current (mA)	Operating temperature Topr (°C)	Storage temperature Tstg (°C)
P6606-110	①/S	TO-8	One-stage TE-cooled	1 × 1	400	0.2	1.5	40	-40 to +60	-55 to +60
P6606-210			Two-stage TE-cooled		100		1.0			
P6606-305	②/S	TO-3	Three-stage TE-cooled	0.5 × 0.5	10		1.0	20		
P6606-310				1 × 1				40		
P6606-320				2 × 2				60		

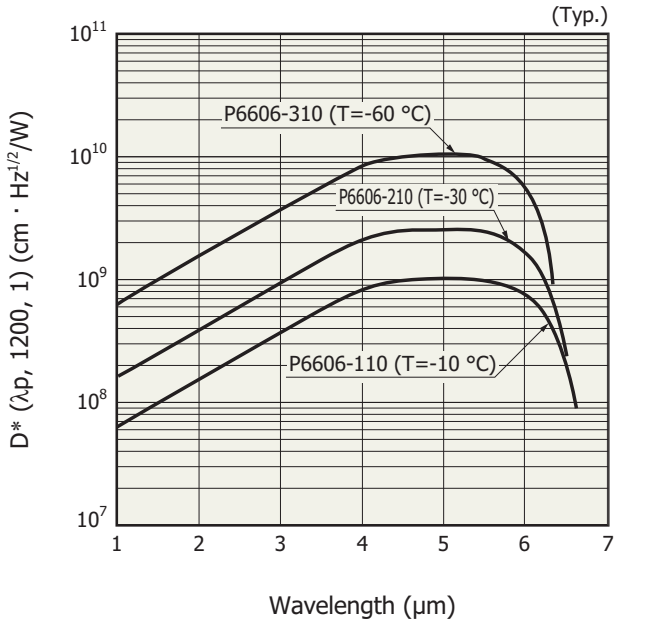
*1: Window material S=Sapphire glass
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

Electrical and optical characteristics (Typ. unless otherwise noted)

Type no.	Measurement condition Element temperature T (°C)	Peak sensitivity wavelength λp (µm)	Cutoff wavelength λc (µm)	Photo-sensitivity*2 S λ=λp (V/W)	D* (500, 1200, 1)		D* (λp, 1200, 1) (cm · Hz$^{1/2}$/W)	Rise time tr 0 to 63% (µs)	Dark resistance Rd (Ω)	Thermistor resistance Tc=25 °C (kΩ)
					Min. (cm · Hz$^{1/2}$/W)	Typ. (cm · Hz$^{1/2}$/W)				
P6606-110	-10	5.5	6.7	10	7 × 10^7	2 × 10^8	1 × 10^9	0.4	20	1.3
P6606-210	-30		6.5	50	1.5 × 10^8	5 × 10^8	2.5 × 10^9		25	
P6606-305	-60		6.3	2500	1 × 10^9	2 × 10^9	1 × 10^{10}		150	
P6606-310				650	1 × 10^9	2 × 10^9	1 × 10^{10}		80	
P6606-320				150	5 × 10^8	1 × 10^9	5 × 10^9		80	

*2: 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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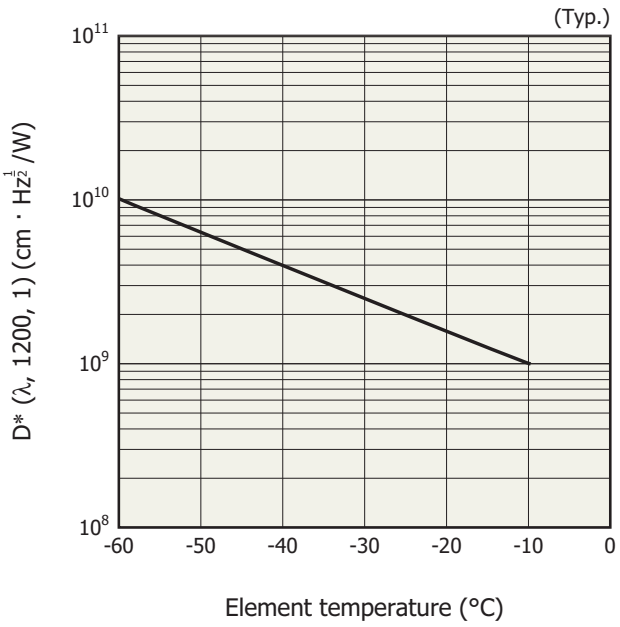
D* vs. element temperature (P6606-310)



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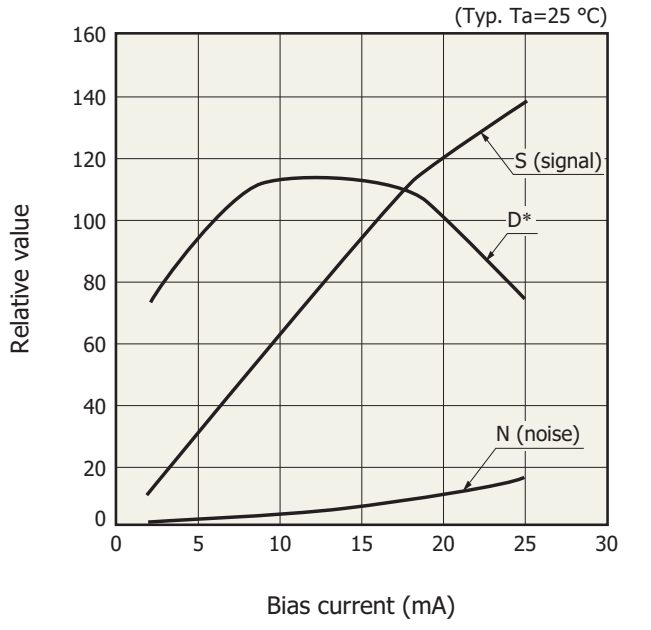
S/N vs. bias current (P6606-310)



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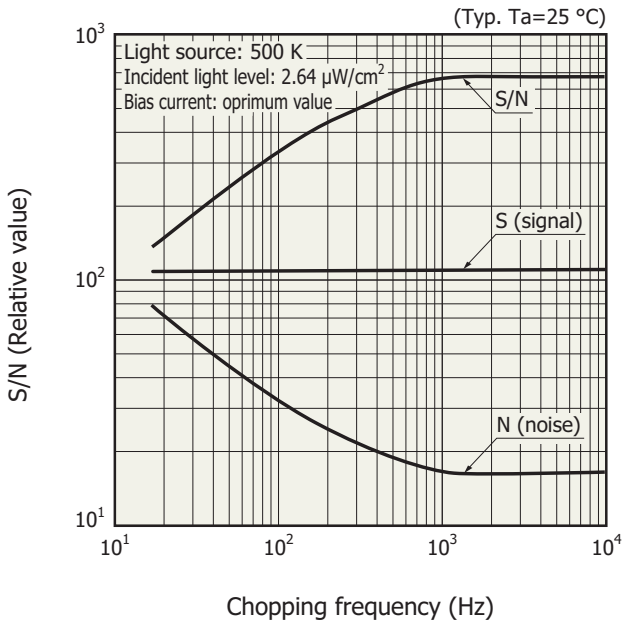
Bias current must be in the range where D* is constant.

S/N vs. chopping frequency



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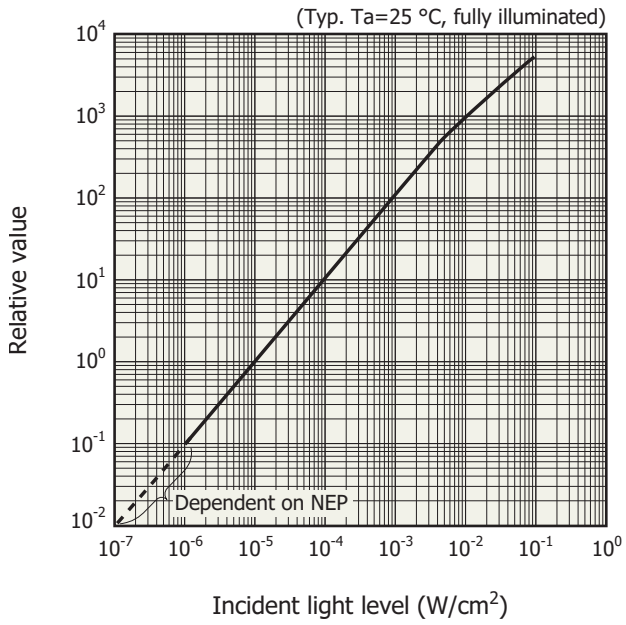
Increasing the chopping frequency reduces the 1/f noise and results in an S/N improvement. The S/N can also be improved by narrowing the noise bandwidth using a lock-in amplifier.

Linearity



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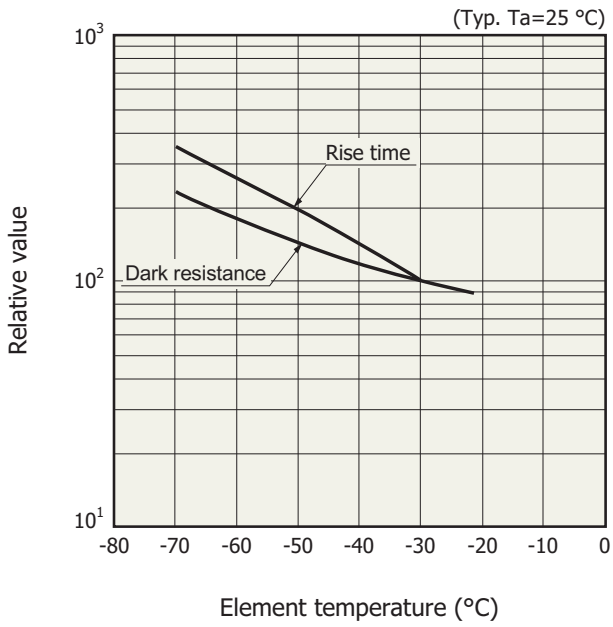
Dark resistance, rise time vs. element temperature



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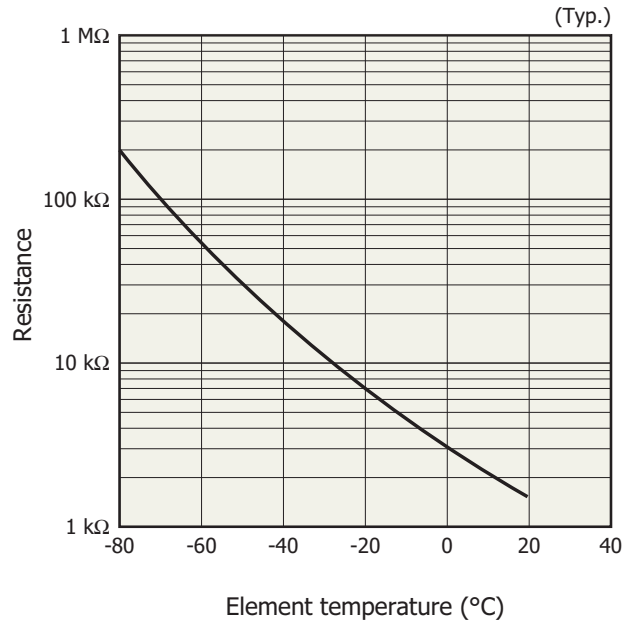
Thermistor temperature characteristic



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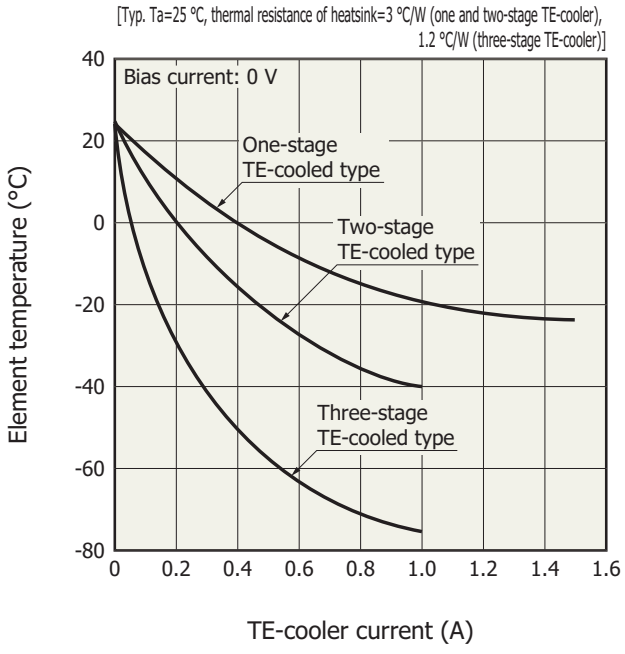
Cooling characteristics of TE-cooler



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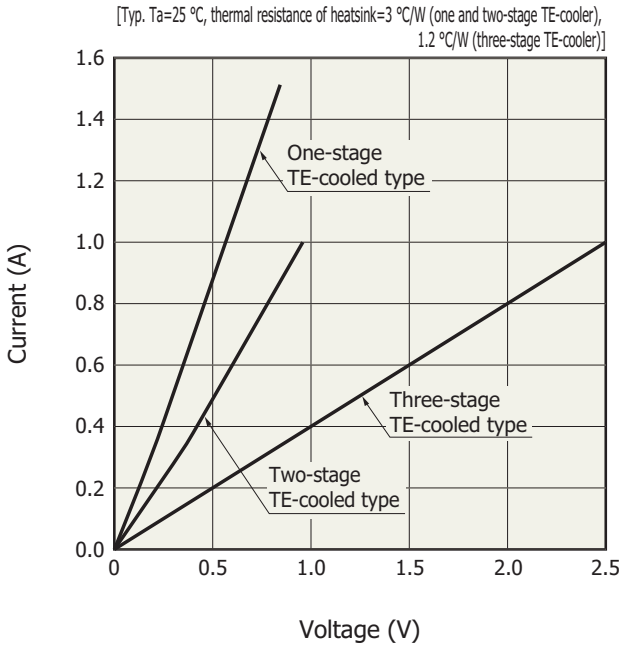
Current vs. voltage of TE-cooler



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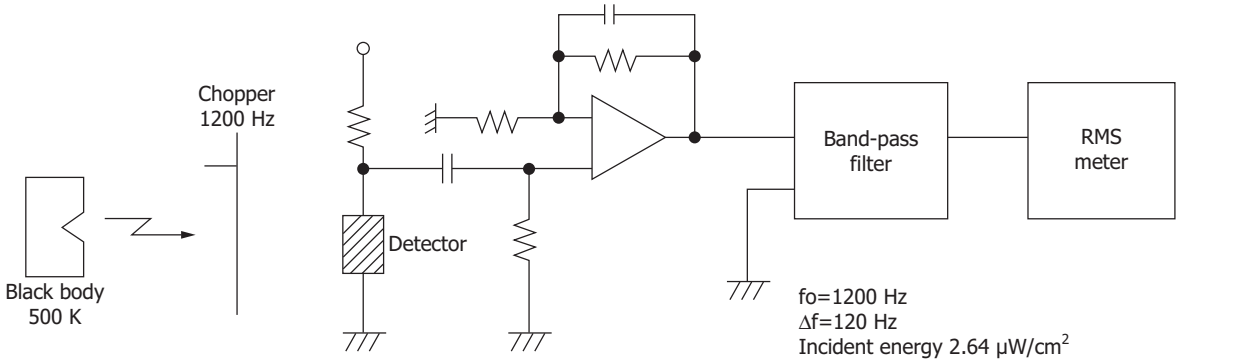
Measurement circuit



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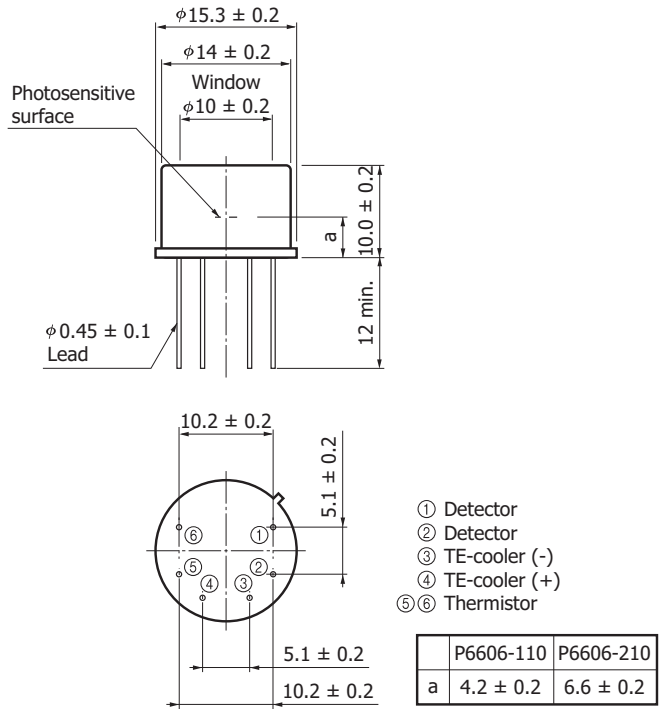
Dimensional outlines (unit: mm)

① P6606-110/-210



	P6606-110	P6606-210
a	4.2 ± 0.2	6.6 ± 0.2

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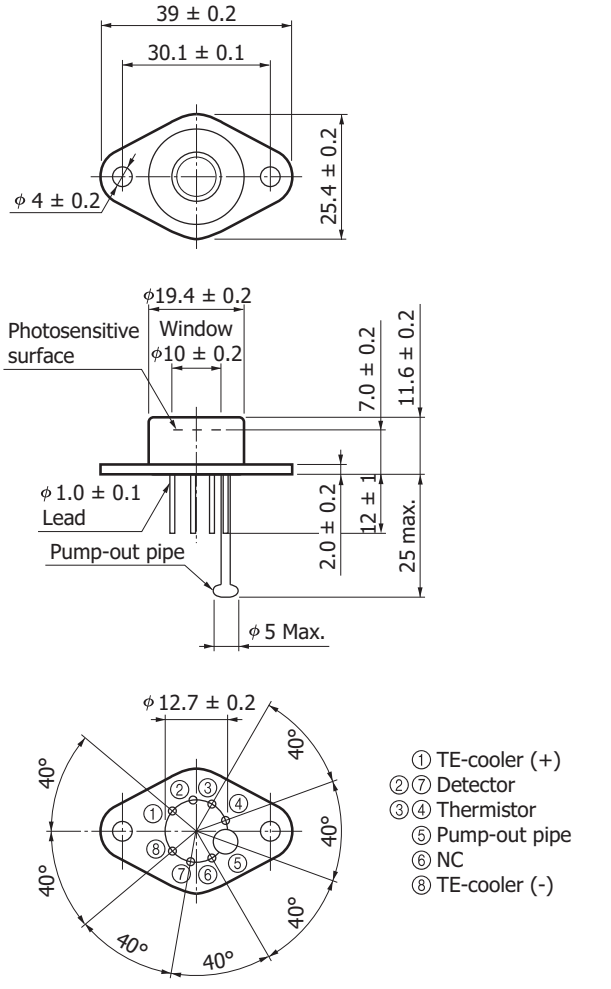
② P6606-305/-310/-320



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Information described in this material is current as of July, 2012.
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.

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