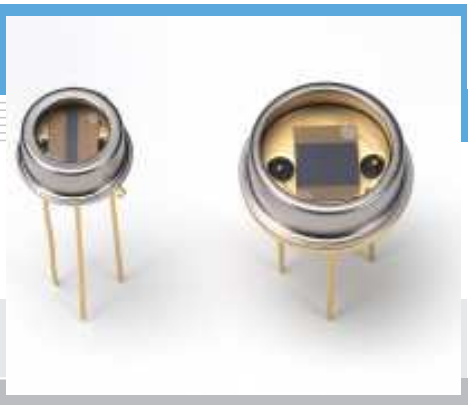
PbS photoconductive detector
P9217 series

Room-temperature detectors capable of detecting up to 2.9 µm



P9217 is a PbS photoconductive detector with greatly improved stability and resistance to high temperatures as compared with conventional types.

Features

- High reliability: high temperature resistant

Applications

- Radiation thermometers
- Flame monitors
- Water content analyzers
- Food ingredient analysis
- Spectrophotometers

Accessories (Optional)

- Preamplifier for PbS/PbSe photoconductive detector C3757-02

■ Specification/Absolute maximum ratings

Type No.	Dimensional Outline/ Window material *1	Package	Cooling	Active area (mm)	Absolute maximum ratings		
					Supply voltage (V)	Operating temperature Topr (°C)	Storage temperature Tstg (°C)
P9217	①/K	TO-5	Non-cooled	1 × 5	100	-30 to +65	-55 to +65
P9217-02	①/K			2 × 2			
P9217-03	①/K			3 × 3			
P9217-04	②/K	TO-8		4 × 5			

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

Type No.	Peak sensitivity wavelength λp (µm)	Cut-off wavelength λc (µm)	Photo sensitivity *2 S λ=λp Vs=15 V		D* (500, 600, 1)		D* (λp, 600, 1) (cm·Hz$^{1/2}$/W)	Rise time tr 0 to 63 % Max. (µs)	Dark resistance Rd (MΩ)
			Min. (V/W)	Typ. (V/W)	Min. (cm·Hz$^{1/2}$/W)	Typ. (cm·Hz$^{1/2}$/W)			
P9217	2.2	2.9	4 × 10^4	1 × 10^5	5 × 10^8	1 × 10^9	1 × 10^{11}	200	0.05 to 1
P9217-02			5 × 10^4						0.25 to 2.5
P9217-03			2 × 10^4	5 × 10^4					
P9217-04			1 × 10^4	3 × 10^4	2 × 10^8	5 × 10^8	5 × 10^{10}		0.2 to 2.0

*1: Window material K: Borosilicate glass

*2: Chopping frequency: 600 Hz, load resistance: nearly equal to detector element dark resistance.

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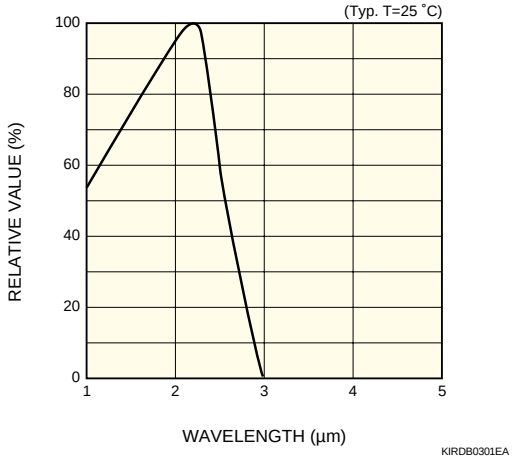
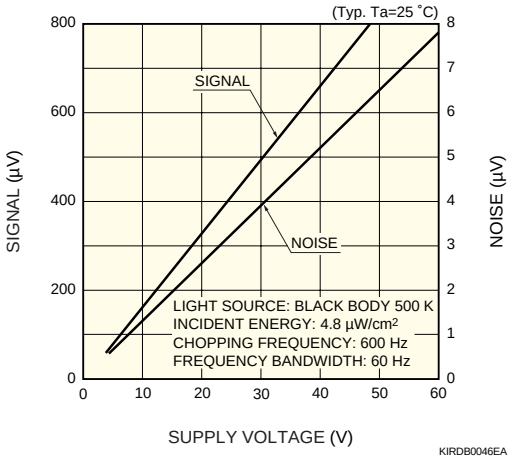
■ Spectral response

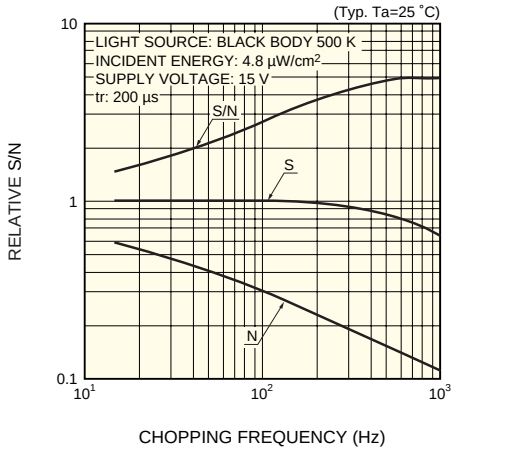


■ S/N vs. supply voltage



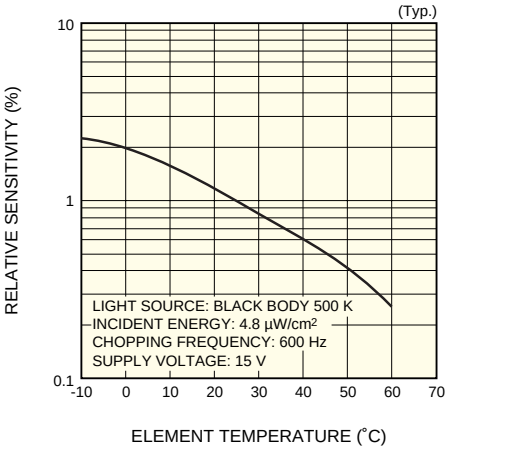
If voltage of higher than 60 V is applied, the noise increases exponentially, degrading the S/N. The device should be operated at 60 V or less.

■ S/N vs. chopping frequency



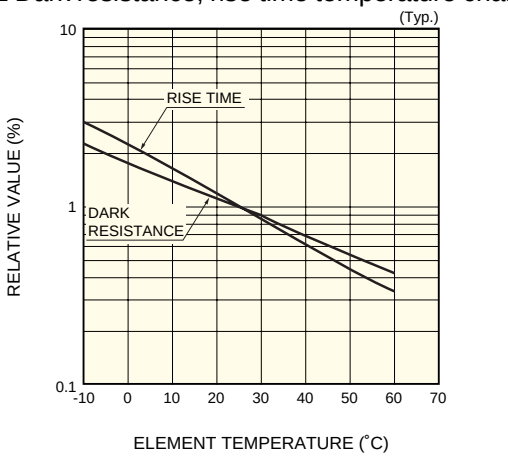
Increasing the chopping frequency reduces the 1/f noise and results in an S/N improvement. The S/N can also be improved by narrowing the noise bandwidth using a lock-in amplifier.

■ Photo sensitivity temperature characteristic

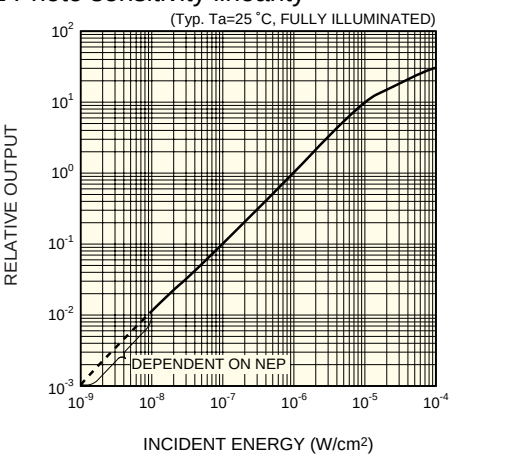


Cooling the device enhances its sensitivity, but the sensitivity also depends on the load resistance in the circuit.

■ Dark resistance, rise time temperature characteristics



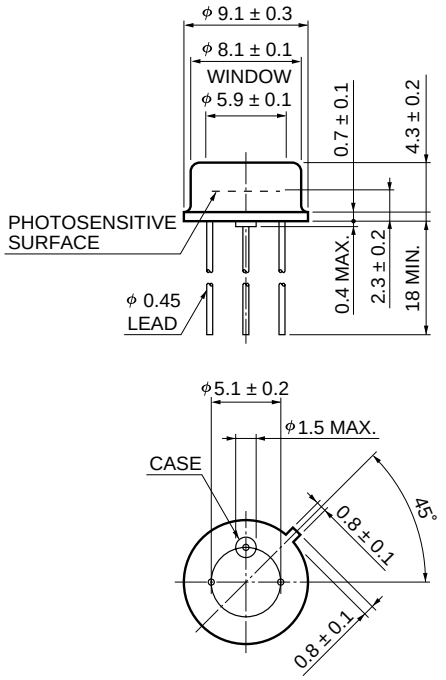
■ Photo sensitivity linearity



By making the incident light spot smaller than the active area, the upper limit of the linearity becomes lower.

■ Dimensional outline (unit: mm)

① P9217/-02/-03



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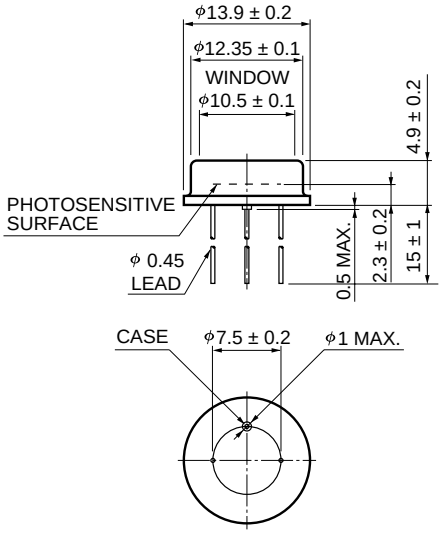
② P9217-04



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