

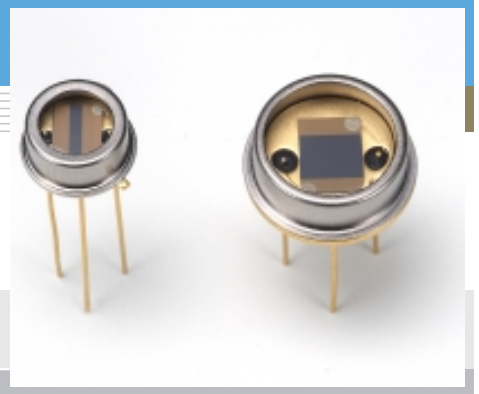
NEW

INFRARED DETECTOR

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)

- Pre-amplifier 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			

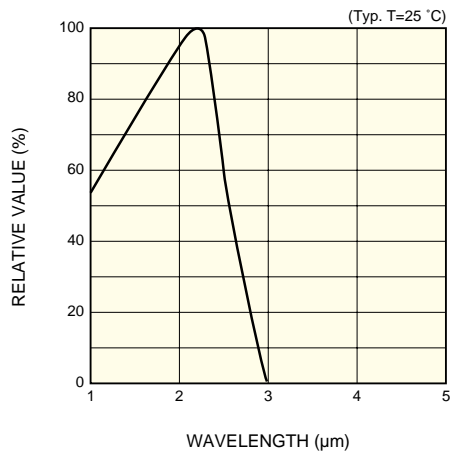
■ Electrical and optical characteristics (Typ. unless otherwise noted)

Type No.	Peak sensitivity wavelength λ_p (μm)	Cut-off wavelength λ_c (μm)	Photo sensitivity *2 S $\lambda = \lambda_p$ $V_s = 15 \text{ V}$		D* (500, 600, 1)		D* ($\lambda_p, 600, 1$) ($\text{cm} \cdot \text{Hz}^{1/2}/\text{W}$)	Rise time tr 0 to 63 % Max. (μs)	Dark resistance Rd ($\text{M}\Omega$)
			Min. (V/W)	Typ. (V/W)	Min. ($\text{cm} \cdot \text{Hz}^{1/2}/\text{W}$)	Typ. ($\text{cm} \cdot \text{Hz}^{1/2}/\text{W}$)			
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	0.2 to 2.0				
P9217-04			1 × 10 ⁴	3 × 10 ⁴	2 × 10 ⁸	5 × 10 ⁸			5 × 10 ¹⁰

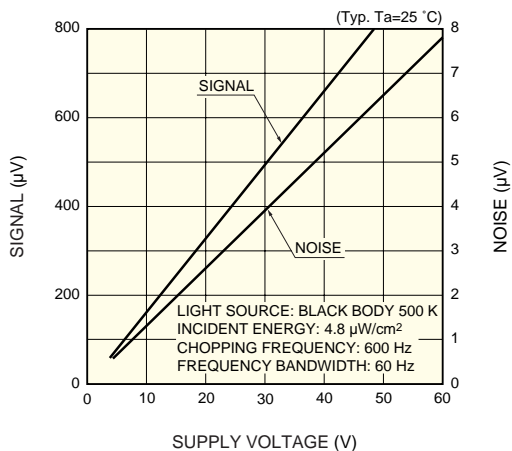
*1: Window material K: Borosilicate glass

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

■ Spectral response

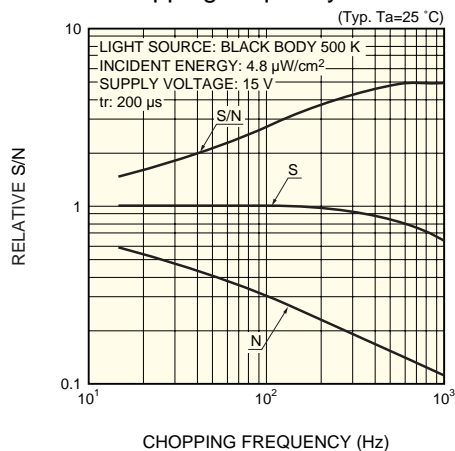


■ S/N vs. supply voltage



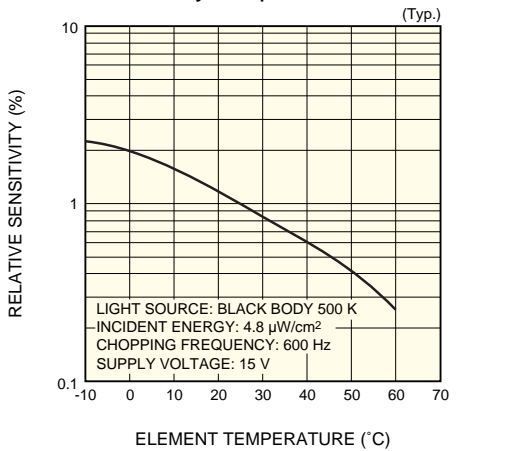
If voltage of higher than 60 V is applied, the noise increases exponentially, degrading the S/N. The device should be operated at 60 V or less.

■ S/N vs. chopping frequency



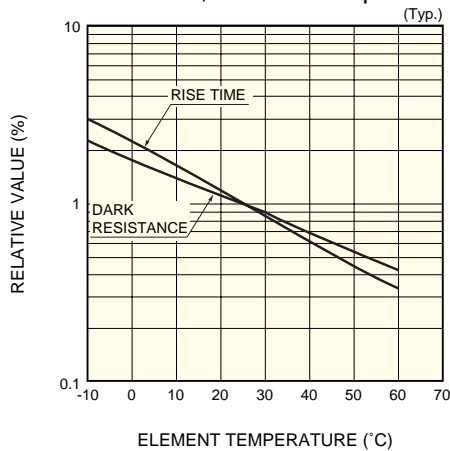
Increasing the chopping frequency reduces the 1/f noise and results in an S/N improvement. The S/N can also be improved by narrowing the noise bandwidth using a lock-in amplifier.

■ Photo sensitivity temperature characteristic

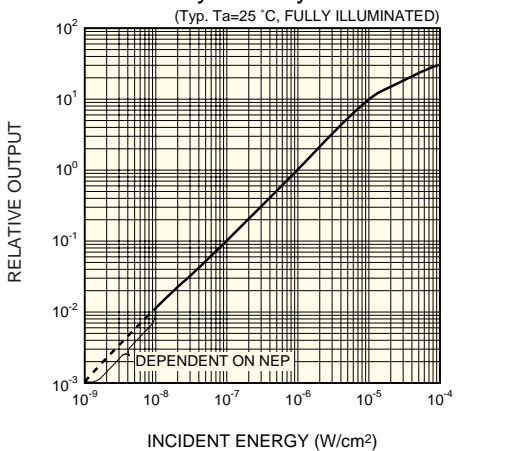


Cooling the device enhances its sensitivity, but the sensitivity also depends on the load resistance in the circuit.

■ Dark resistance, rise time temperature characteristics



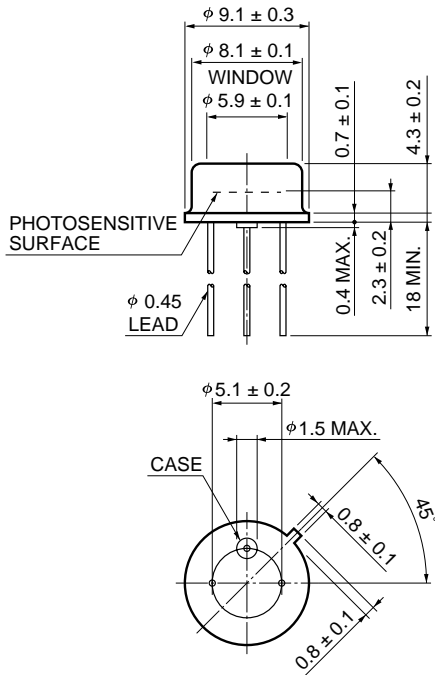
■ Photo sensitivity linearity



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

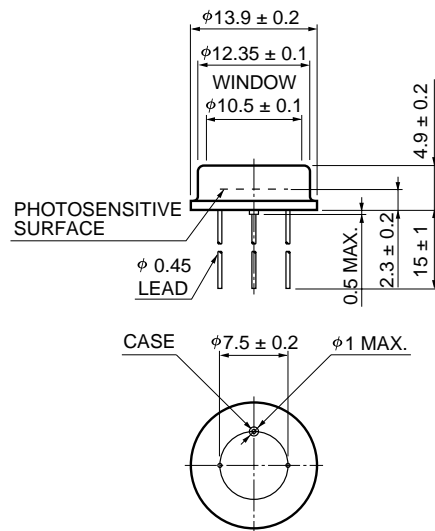
■ Dimensional outline (unit: mm)

① P9217-01/-02/-03



KIRDA0166EB

② P9217-04



KIRDA0181EA