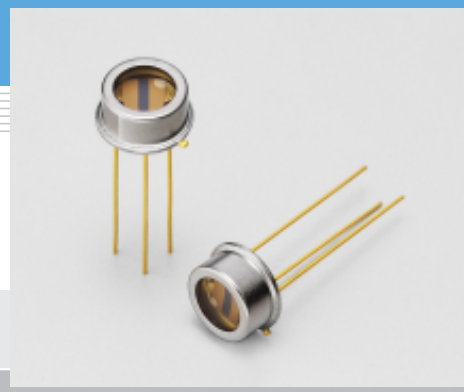


PbS photoconductive detector P9217

Infrared detectors utilizing photoconductive effects



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

Features

- Resistance to high temperatures, stability
- Lower temperature detection limit: 100 °C approx.

Applications

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

Accessories (Optional)

- Preamplifier for PbS/PbSe photoconductive detector C3757-02
- Power supply for amplifier C3871

■ Specification

Parameter	Specification	Unit
Window material	Borosilicate glass	-
Package	TO-5	-
Cooling	Non-cooled	-
Active area	1 × 5	mm

■ Absolute maximum ratings

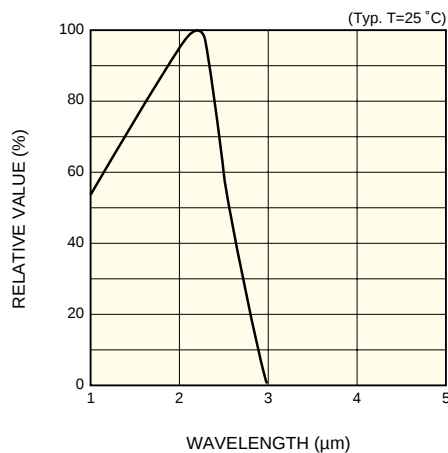
Parameter	Symbol	Value	Unit
Supply voltage	-	100	V
Operating temperature	T _{opr}	-30 to +65	°C
Storage temperature	T _{stg}	-55 to +65	°C

■ Electrical and optical characteristics (T=25 °C)

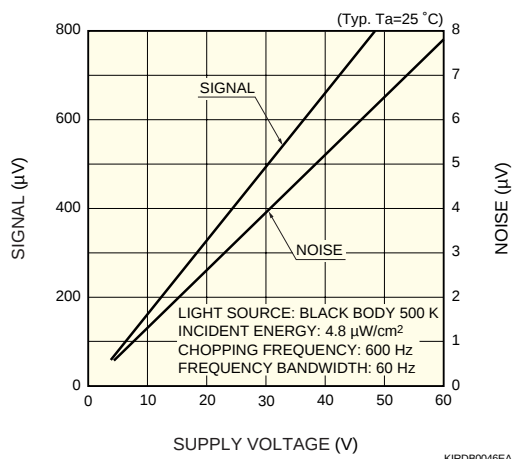
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Peak sensitivity wavelength	λ_p		-	2.2	-	μm
Cut-off wavelength	λ_c		-	2.9	-	μm
Photo sensitivity ^{*1}	S	$\lambda = \lambda_p$, V _s =15 V	4×10^4	1×10^5	-	V/W
Detectivity	D*	(500, 600, 1)	5×10^8	1×10^9	-	$\text{cm} \cdot \text{Hz}^{1/2}/\text{W}$
		(λ_p , 600, 1)	-	1×10^{11}	-	
Rise time	t _r	0 to 63 %	-	-	250	μs
Dark resistance	R _d		0.05	-	1	M Ω

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

Spectral response

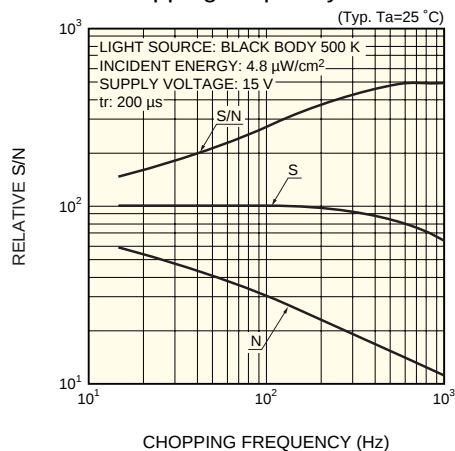


S/N vs. supply voltage



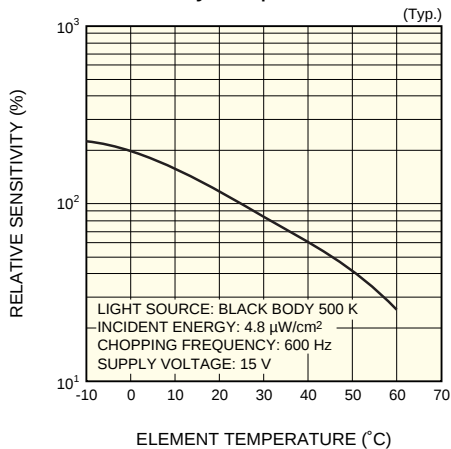
If voltage of higher than 60 V is applied, the noise increases exponentially, degrading the S/N. The device should be operated at 60 V or less.

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

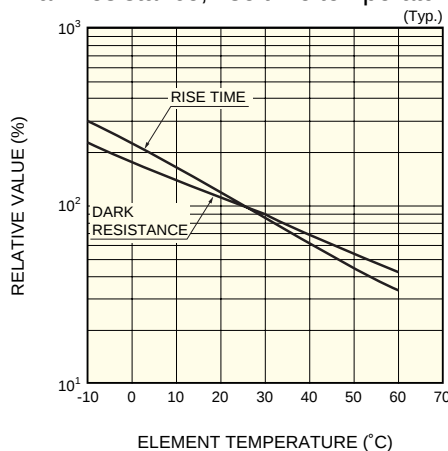
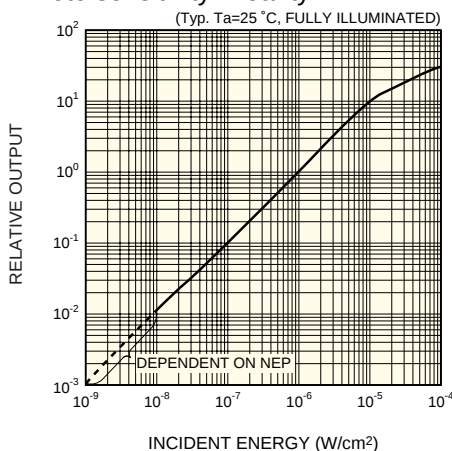
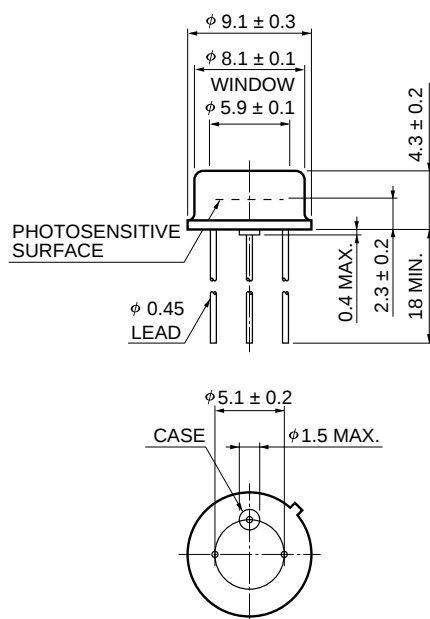


Photo sensitivity linearity



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

■ Dimensional outline (unit: mm)



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