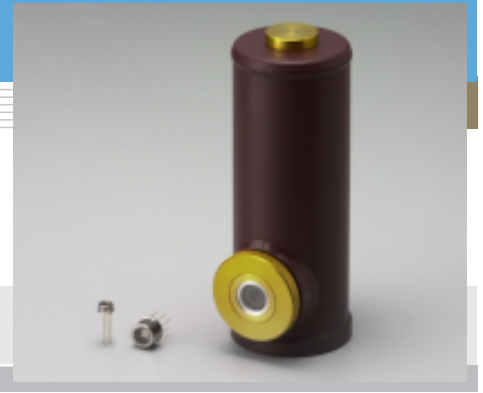


# InAs photovoltaic detector P8079 series, P7163

High-speed, low noise photovoltaic IR detectors



InAs photovoltaic detectors cover a spectral response range equivalent to that of PbS detectors, but provide higher response speed and lower noise.

### Features

- Thermoelectrically cooled type: high sensitivity and high-speed response
- Metal dewar type available for low light measurement
- Long-wavelength cut-off of up to 3.8  $\mu\text{m}$
- Easy-to-use detector/preamp modules available

### Applications

- Gas analysis
- Infrared radiation measurement
- Infrared spectrophotometry
- FTIR

### Accessories (Optional)

- Heatsink for one-stage TE-cooled type A3179
- Heatsink for two-stage TE-cooled type A3179-01
- Temperature controller C1103-04
- Infrared detector module with preamp P4631-01 (P8079-21)
- Custom amplifiers for InAs photovoltaic detector

### ■ Specifications / Absolute maximum ratings

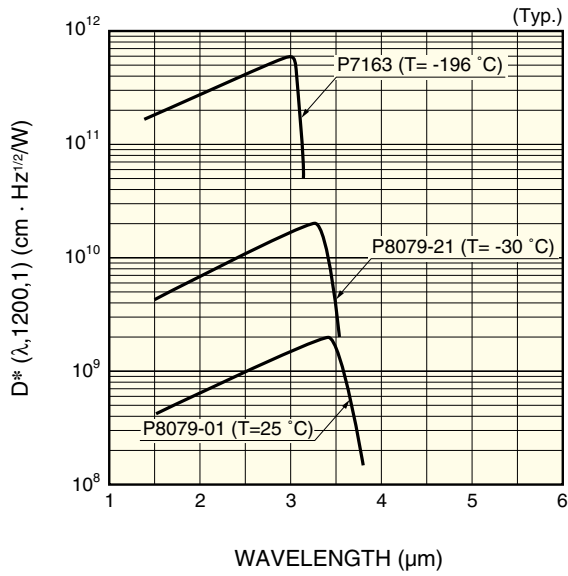
Type No.	Dimensional outline/ Window material *	Package	Cooling	Active area (mm)	Absolute maximum ratings			
					Thermistor power dissipation (mW)	Reverse voltage $V_R$ (V)	Operating temperature $T_{opr}$ ( $^{\circ}\text{C}$ )	Storage temperature $T_{stg}$ ( $^{\circ}\text{C}$ )
P8079-01	①/S	TO-5	Non-cooled	$\phi 1$	-	0.5	-40 to +60	-55 to +60
P8079-11	②/S	TO-8	One-stage TE-cooled		0.2			
P8079-21			Two-stage TE-cooled					
P7163	③/S	Metal dewar	LN <sub>2</sub>		-			

\* Window material S: sapphire glass

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

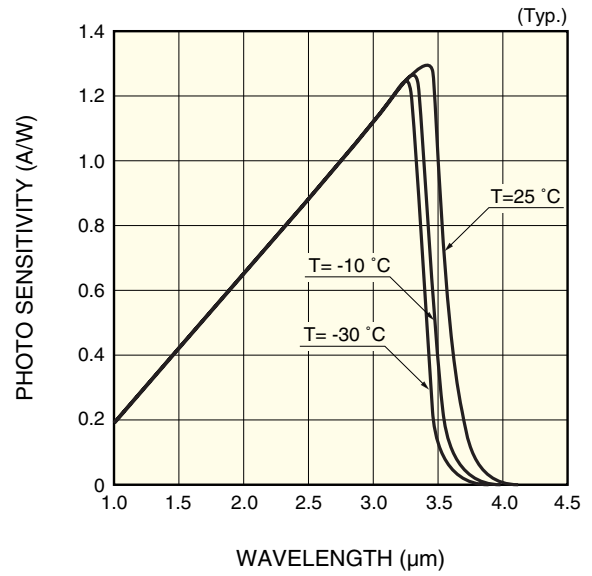
Type No.	Measurement condition Element temperature T ( $^{\circ}\text{C}$ )	Peak sensitivity wavelength $\lambda_p$ ( $\mu\text{m}$ )	Cut-off wavelength $\lambda_c$ ( $\mu\text{m}$ )	Photo sensitivity S $\lambda = \lambda_p$ (A/W)	Shunt resistance R <sub>sh</sub> ( $\Omega$ )	D* ( $\lambda_p, 1200, 1$ )		NEP $\lambda = \lambda_p$ (W/Hz <sup>1/2</sup> )	Rise time t <sub>r</sub> V <sub>R</sub> =0 V R <sub>L</sub> =50 $\Omega$ 0 to 63 % ( $\mu\text{s}$ )	Terminal capacitance C <sub>t</sub> V <sub>R</sub> =0 V f=1 MHz (pF)
						Min. (cm·Hz <sup>1/2</sup> /W)	Typ. (cm·Hz <sup>1/2</sup> /W)			
	P8079-01	25	3.45	3.8	1.1	10	$1.5 \times 10^9$	$2 \times 10^9$	$4.4 \times 10^{-11}$	0.1
P8079-11	-10	3.30	3.6	1.3	80	$7.5 \times 10^9$	$1 \times 10^{10}$	$8.9 \times 10^{-12}$	0.1	10
P8079-21	-30	3.25	3.5		200	$1.5 \times 10^{10}$	$2 \times 10^{10}$	$4.4 \times 10^{-12}$		5
P7163	-196	3.00	3.1		$1 \times 10^5$	$3.5 \times 10^{11}$	$6 \times 10^{11}$	$1.5 \times 10^{-13}$		150

■ Spectral response ( $D^*$ )



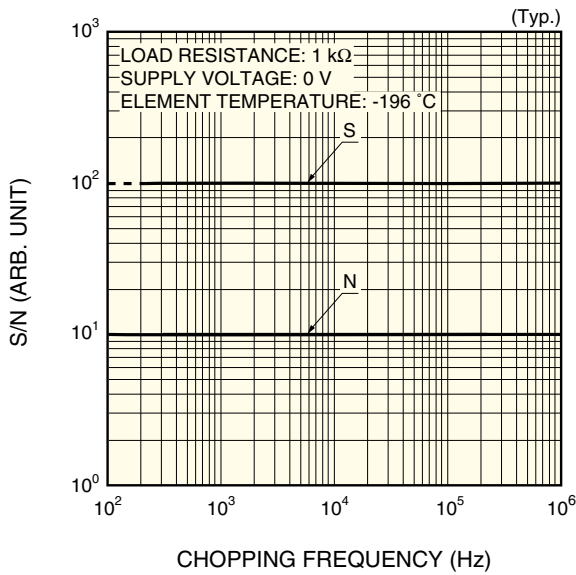
KIRDB0165EA

■ Spectral response



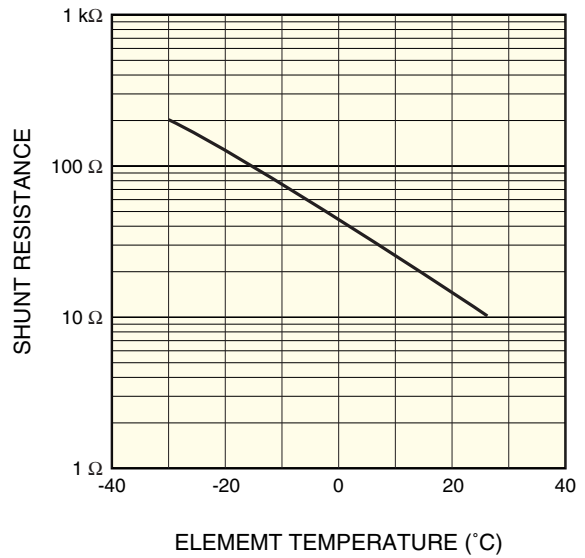
KIRDB0183EA

■ S/N vs. chopping frequency (P7163)



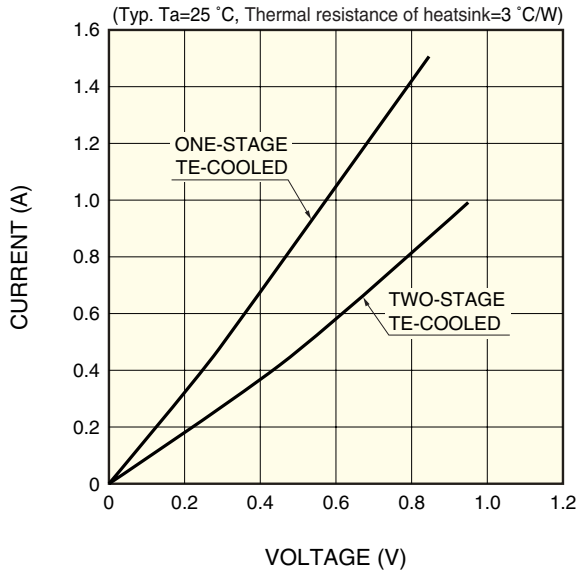
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■ Shunt resistance vs. element temperature



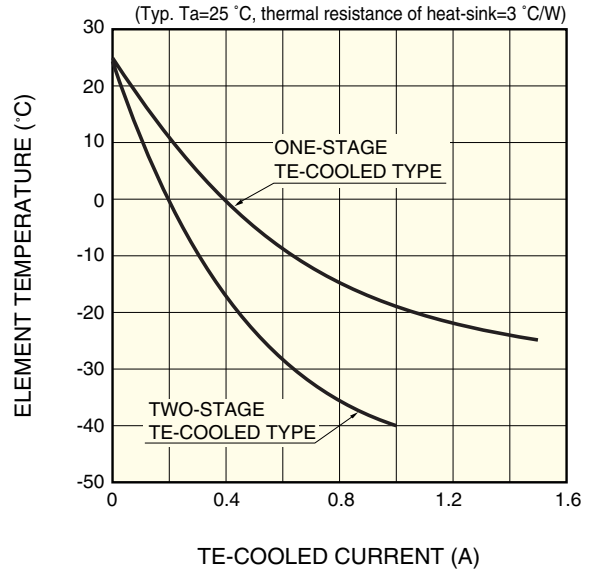
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■ Current vs. voltage of TE-cooled type



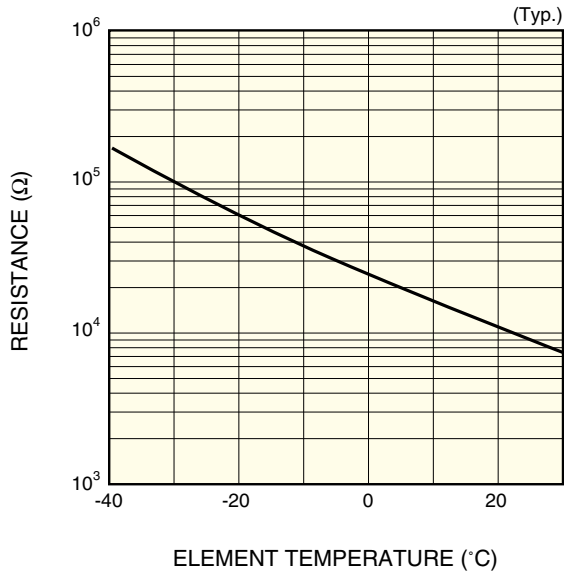
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■ Cooling characteristics of TE-cooled type



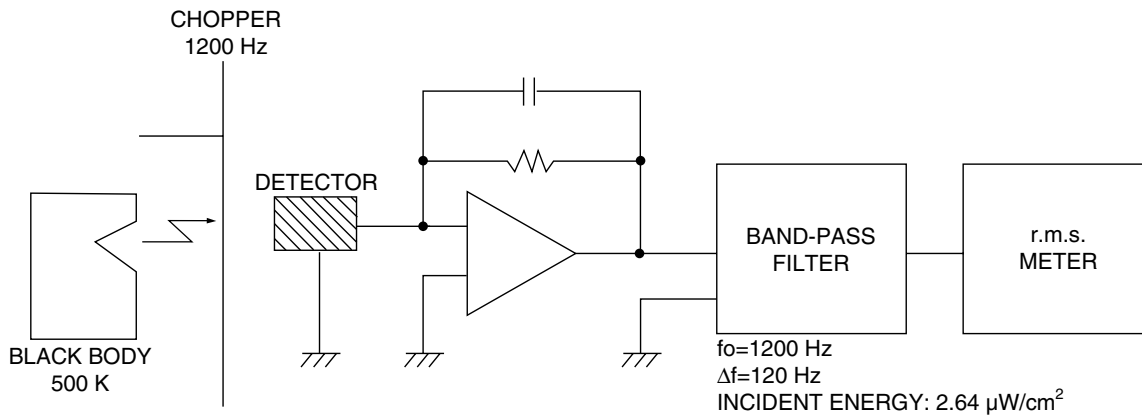
KIRDB0181EA

■ Thermistor temperature characteristic



KIRDB0116EA

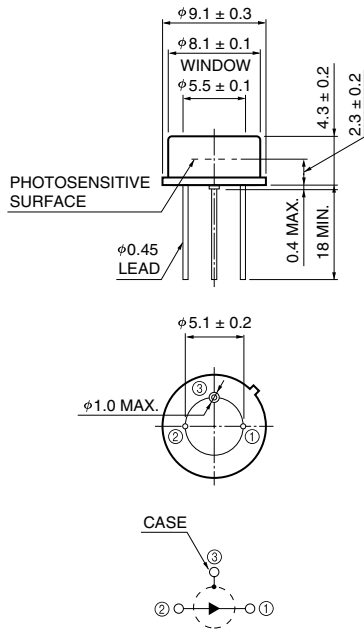
■ Measurement circuit



KIRDC0004EA

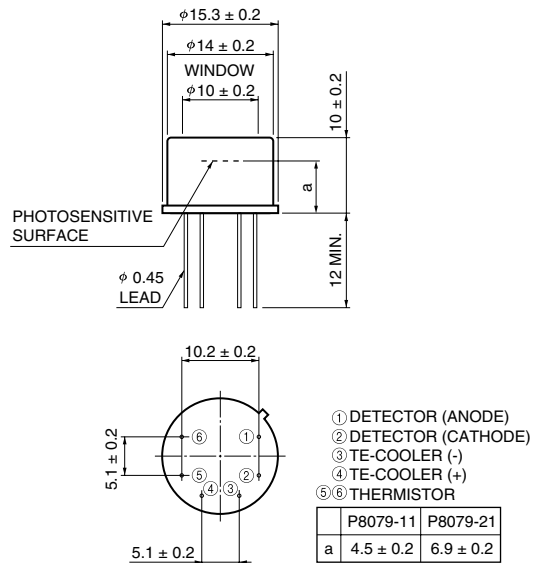
## Dimensional outlines (unit: mm)

### ① P8079-01



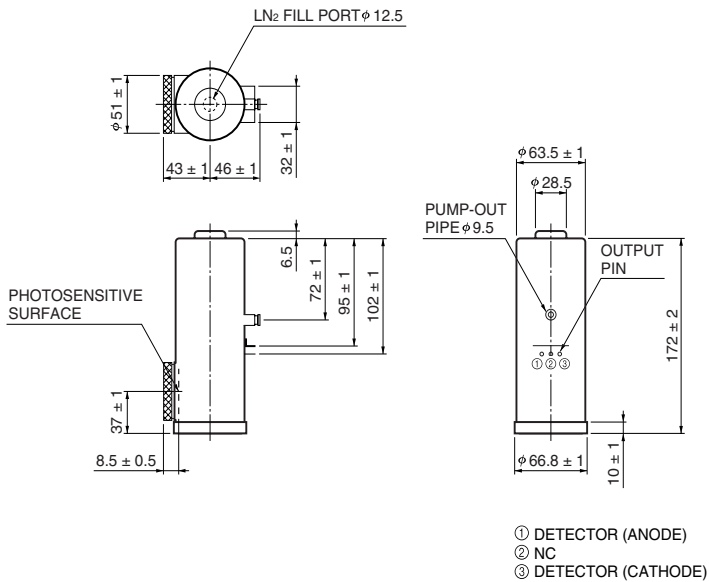
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### ② P8079-11/-21



KIRDA0120EA

### ③ P7163



KIRDA0033EC

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