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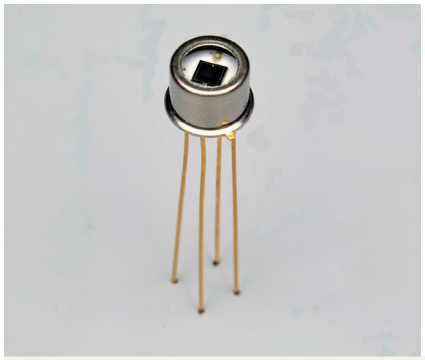
Two-color detector



K1713-003

Capable of detecting from UV to IR

The K1713-003 has a two-level structure in which an infrared transmitting Si photodiode is mounted over an infrared detector element. This structure allows you to design instruments using the same optical path.

Features

- **Wide spectral response range**
  Suitable for spectrophotometers, flame monitors, etc.
- **Non-cooled type: room temperature operation for easy handling**

Applications

- **Spectrophotometers**
- **Laser monitors**
- **Flame monitors**
- **Radiation thermometers**

Structure

Parameter	Detector	Specification	Unit
Window material	-	Sapphire glass	-
Package	-	4-pin TO-5	-
Photosensitive area	Si	2.4 × 2.4	mm
	InAsSb	0.7 × 0.7	

Absolute maximum ratings

Parameter	Symbol	Detector	Condition	Value	Unit
Reverse voltage	V_R max	Si	Ta=25 °C	5	V
		InAsSb	Ta=25 °C	1	
Operating temperature	Topr			-40 to +70	°C
Storage temperature	Tstg			-40 to +85	°C

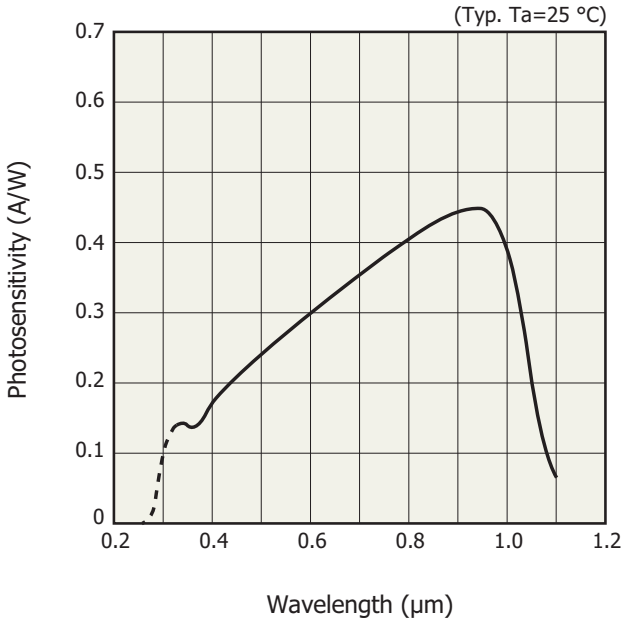
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

Electrical and optical characteristics (Ta=25 °C)

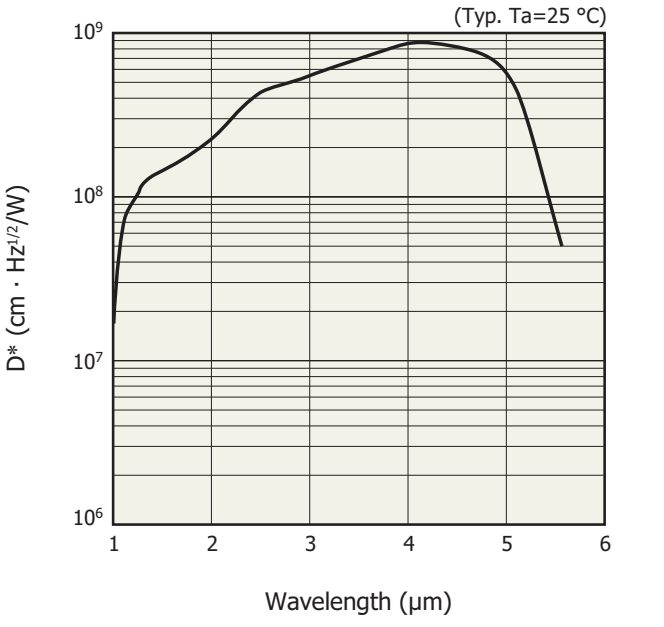
Parameter	Symbol	Detector	Condition	Min.	Typ.	Max.	Unit
Spectral response range	λ	Si		-	320 to 1100	-	nm
Cutoff wavelength	λc	InAsSb		5	5.3	-	µm
Peak sensitivity wavelength	λp	Si		840	940	980	nm
		InAsSb		-	4.0	-	µm
Photosensitivity	S	Si	λ=940 nm	0.3	0.45	0.75	A/W
		InAsSb	λ=λp	2.4	3.9	-	mA/W
Dark current	ID	Si	VR=10 mV	0.1	30	100	pA
		Si	VR=5 V	0.0001	0.5	100	nA
		InAsSb	VR=10 mV	-	33	83	nA
Rise time	tr	Si	VR=0 V, RL=1 kΩ	100	200	400	ns
		InAsSb	10 to 90%	-	1	-	µs
Terminal capacitance	Ct	Si	VR=0 V, f=10 kHz	30	60	80	pF
		InAsSb	VR=0 V, f=1 MHz	-	170	-	fF
Shunt resistance	Rsh	Si	VR=10 mV	100	300	-	MΩ
		InAsSb	VR=10 mV	120	300	-	kΩ
Detectivity	D*	InAsSb	(λp, 600, 1)	4.8×10^8	8.7×10^8	-	cm·Hz$^{1/2}$/W
Short circuit current	Isc	Si	100 *lx*, 2856 K	4	5	6.5	µA

Spectral response

Si photodiode

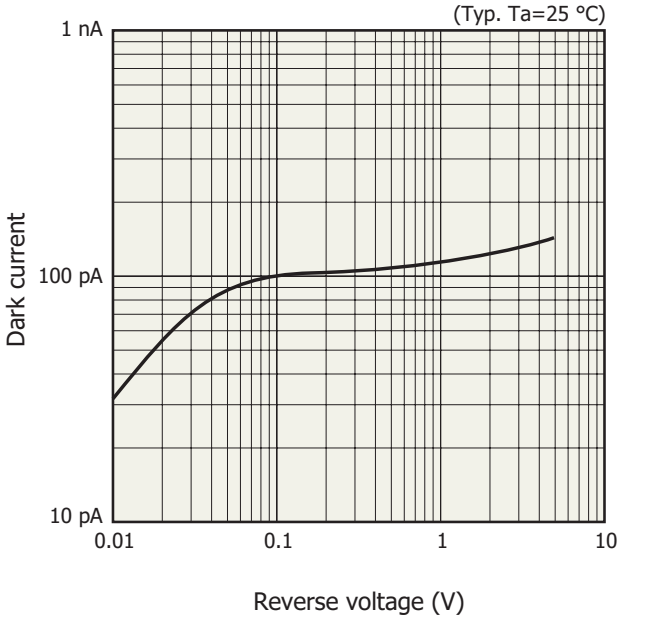


InAsSb photovoltaic detector

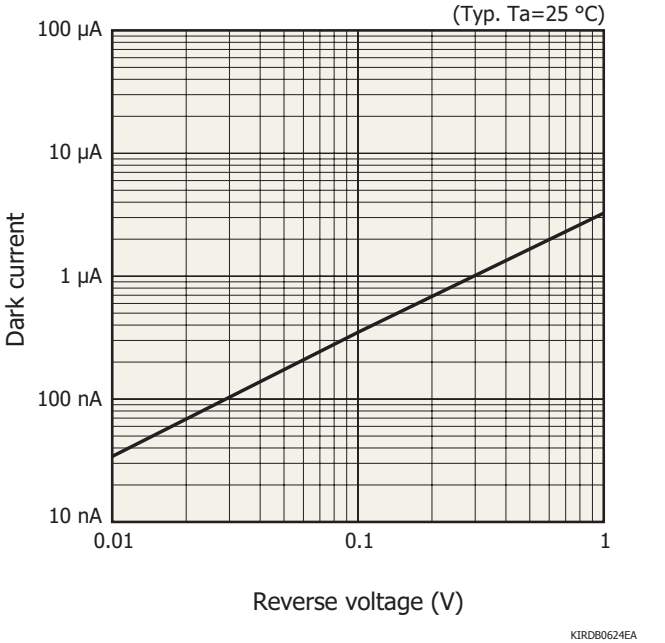


Dark current vs. reverse voltage

Si photodiode

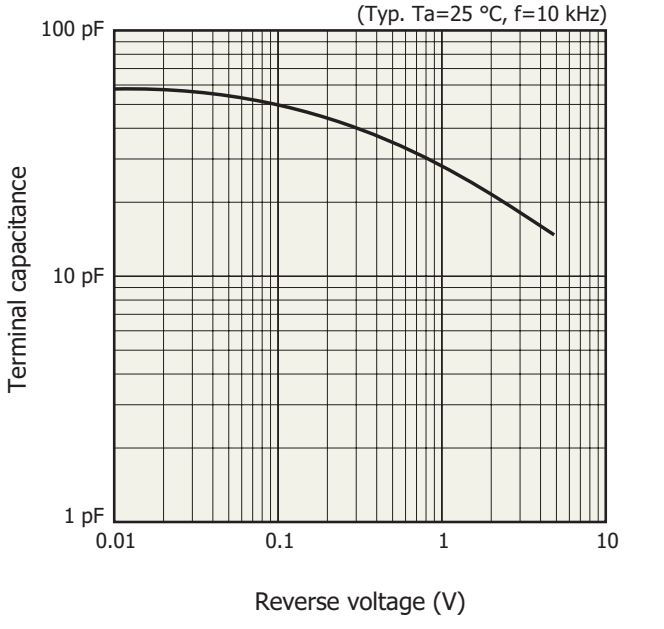


InAsSb photovoltaic detector



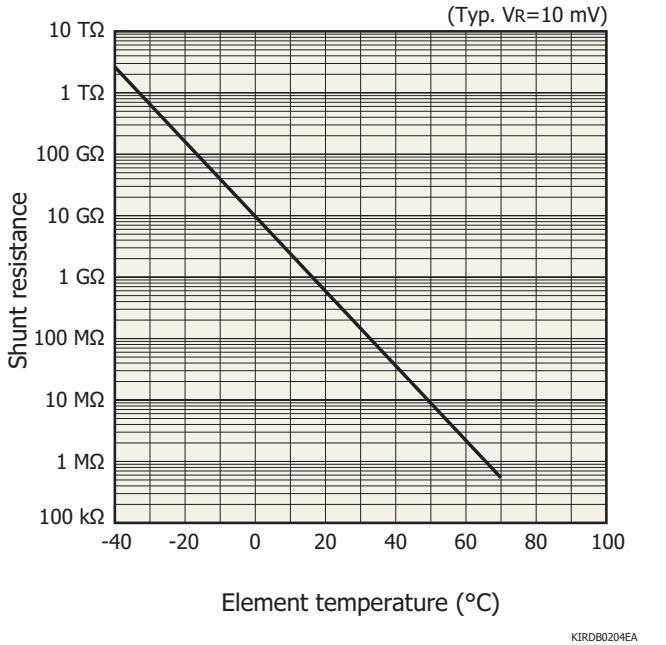
Terminal capacitance vs. reverse voltage

Si photodiode



Shunt resistance vs. element temperature

Si photodiode



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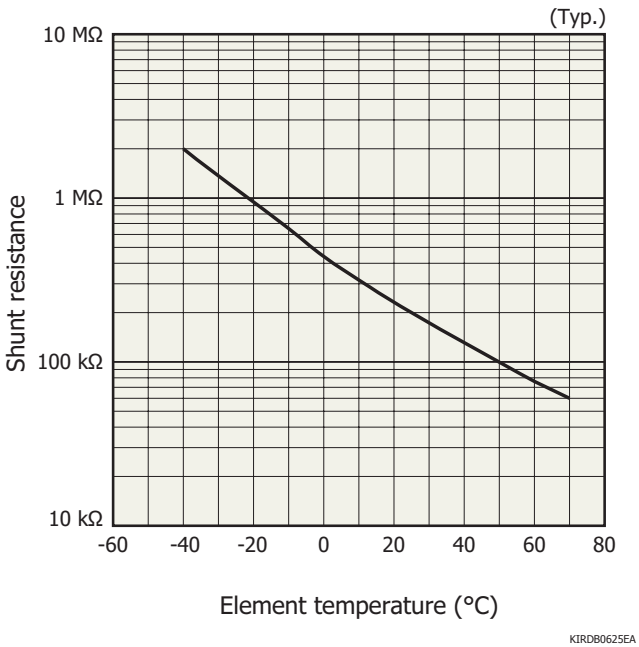
InAsSb photovoltaic detector



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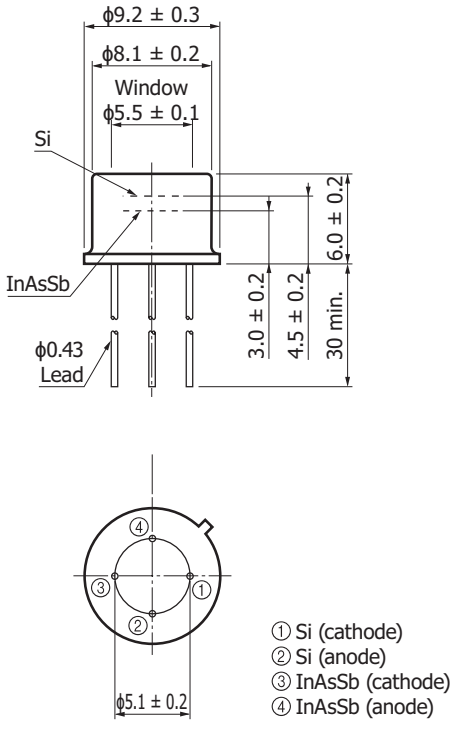
Dimensional outline (unit: mm)



KIRDA0254EA

Related information

www.hamamatsu.com/sp/ssd/doc_en.html

■ Precautions
· Disclaimer
· Metal, ceramic, plastic packages

■ Technical information
· Infrared detectors

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