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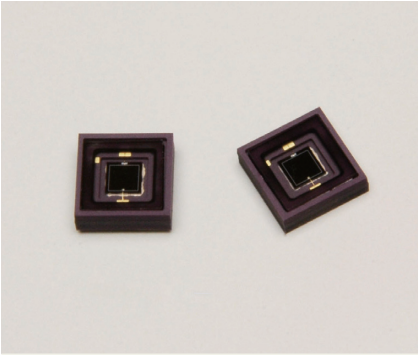
Two-color detector



K12728-010K

Wide spectral response range: 0.32 to 1.65 µm, Compact ceramic package

The K12728-010K is a two-color detector in a compact ceramic package, covering a wide spectral response range. Like the current K1713-09, it incorporates an infrared-transmitting Si photodiode mounted over an InGaAs PIN photodiode, along the same optical axis. It features low noise and low dark current and supports reflow soldering.

Features

- **Wide spectral response range**
- **Compact, low noise, low dark current**
- **Supports reflow soldering**

Applications

- **Spectrophotometers**
- **Radiation thermometers**

Structure

Parameter	Symbol	Condition	Specification	Unit
Window material	-		Borosilicate glass	-
Package	-		Ceramic	-
Photosensitive area	-	Si	2.4 × 2.4	mm
		InGaAs	ϕ1.0	

Absolute maximum ratings

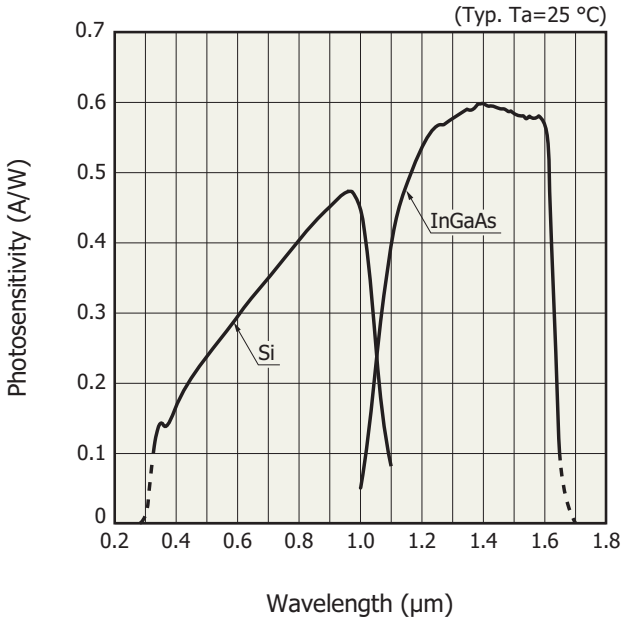
Parameter	Symbol	Condition	Value	Unit
Reverse voltage	V_R max	Si, Ta=25 °C	5	V
		InGaAs, Ta=25 °C	10	
Operating temperature	Topr	No condensation	-20 to +70	°C
Storage temperature	Tstg	No condensation	-20 to +85	°C

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)

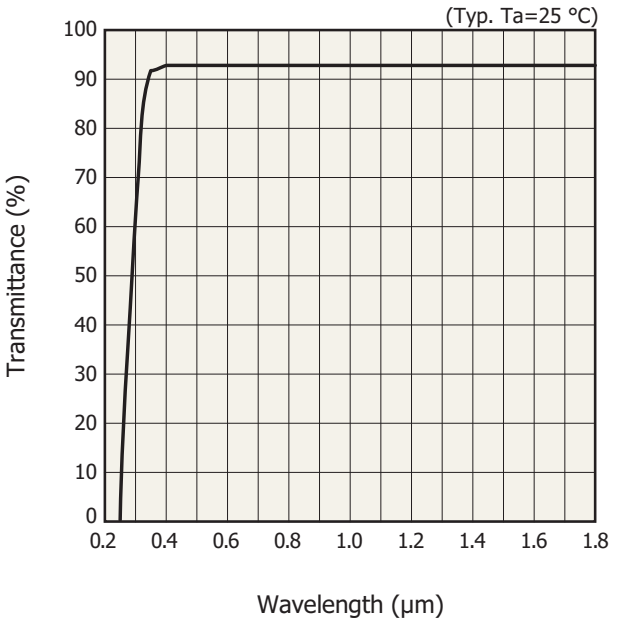
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Spectral response range	λ	Si	-	0.32 to 1.1	-	µm
		InGaAs	-	1.1 to 1.65	-	
Peak sensitivity wavelength	λp	Si	-	0.96	-	µm
		InGaAs	-	1.55	-	
Photosensitivity	S	Si, λ=λp	0.3	0.45	-	A/W
		InGaAs, λ=λp	0.3	0.55	-	
Dark current	I_D	Si, V_R=10 mV	-	30	100	pA
		InGaAs, V_R=10 mV	-	80	400	
Cutoff frequency	fc	Si, -3 dB, V_R=0 V, R_L=50 Ω	1	2	-	MHz
		InGaAs, -3 dB, V_R=0 V, R_L=50 Ω	5	10	-	
Terminal capacitance	Ct	Si, V_R=0 V, f=10 kHz	-	60	110	pF
		InGaAs, V_R=0 V, f=1 MHz	-	130	200	
Shunt resistance	Rsh	Si, V_R=10 mV	100	300	-	MΩ
		InGaAs, V_R=10 mV	25	125	-	MΩ
Detectivity	D*	Si, λ=λp	5×10^{12}	1.4×10^{13}	-	cm·Hz$^{1/2}$/W
		InGaAs, λ=λp	5×10^{11}	3.5×10^{12}	-	

Spectral response



KIRDB0598EB

Spectral transmittance of window material



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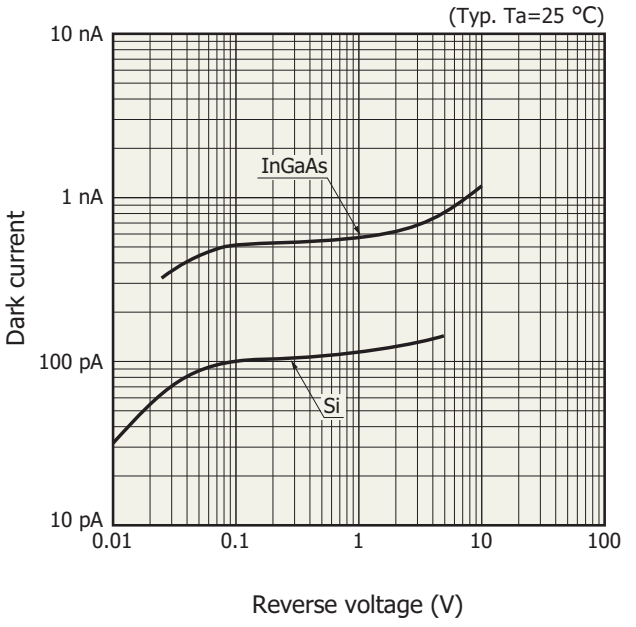
Dark current vs. reverse voltage



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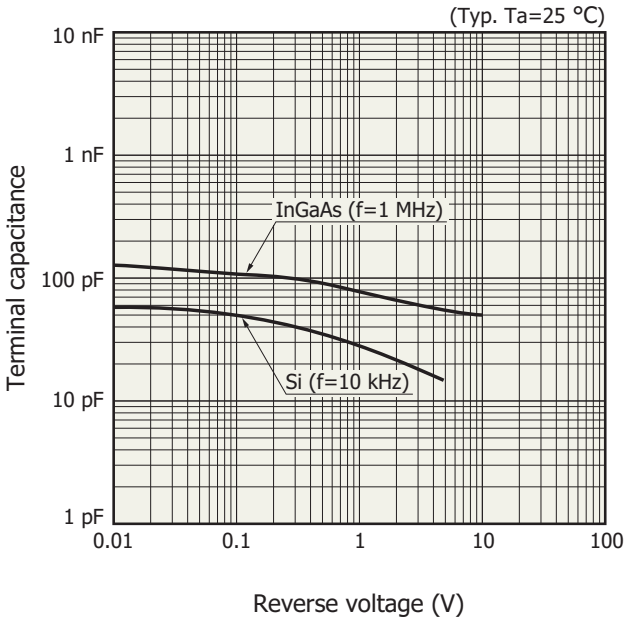
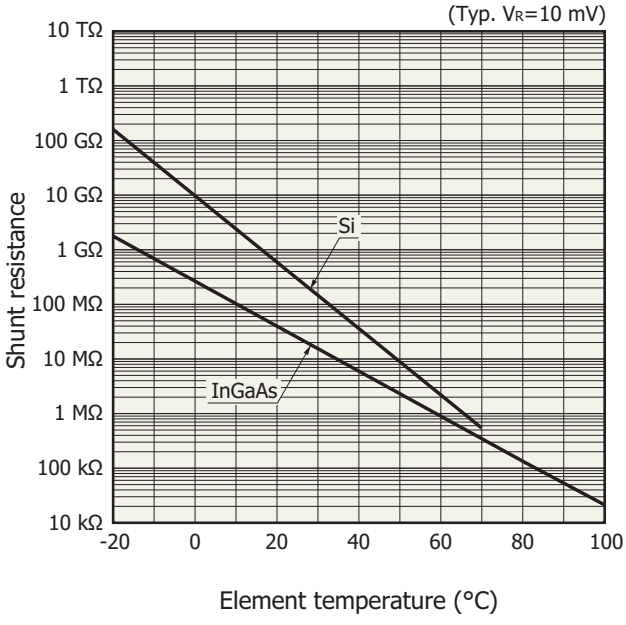
Terminal capacitance vs. reverse voltage



KIRDB0601EA

Shunt resistance vs. element temperature



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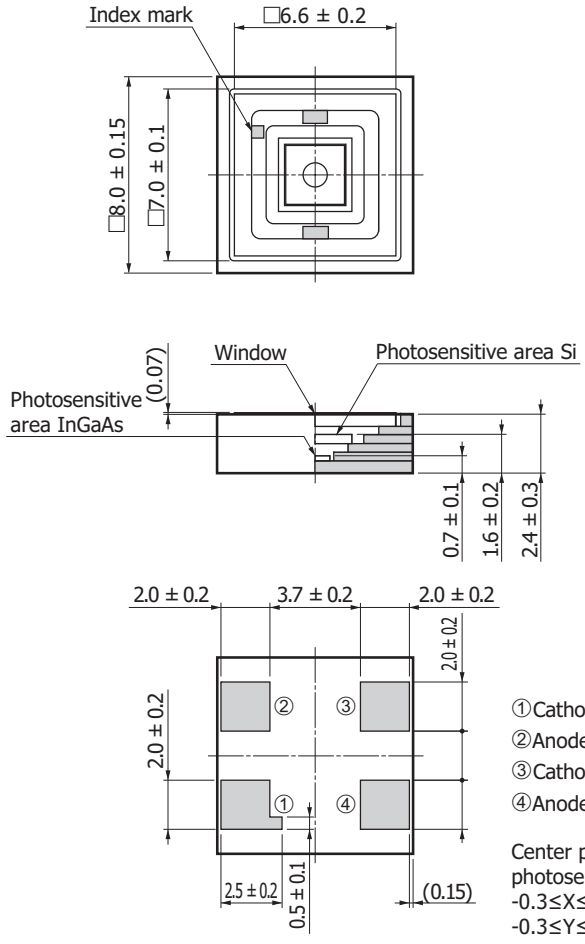
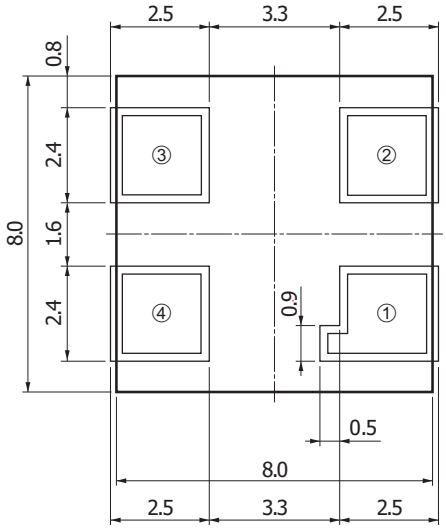
Dimensional outline (unit: mm)



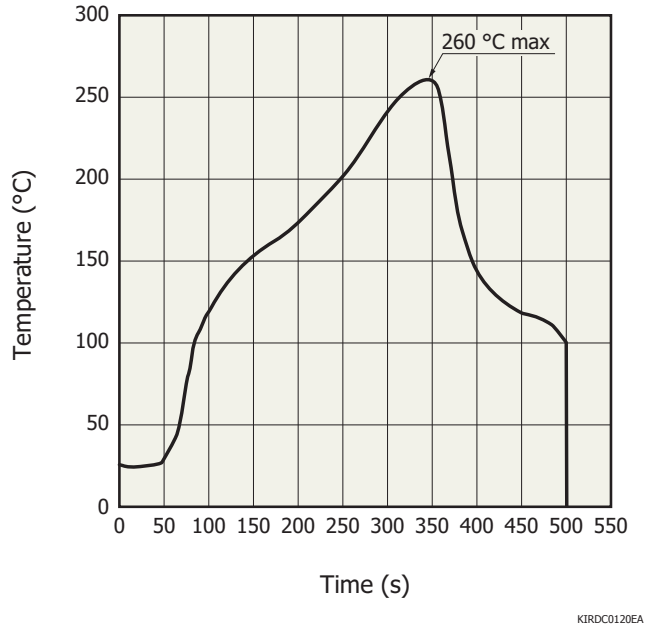
KIRDA0243EA

Recommended land mark pattern (unit: mm)



KIRDC0119EA

Measured example of temperature profile with our hot-air reflow oven for product testing



- After unpacking, store the device in an environment at a temperature range of 5 to 30 °C and a humidity of 60% or less, and perform reflow soldering within 4 weeks.
- The thermal stress applied to the device during reflow soldering varies depending on the circuit board and the reflow oven that is used.
- When setting the reflow conditions, verify that the reliability of the device is not compromised by the reflow soldering process.

Related information

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

■Precautions
· Notice
· Metal, ceramic, plastic packages

■Technical information
· Infrared detector / Technical information

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