

InGaAs PIN photodiodes



G10899 series

Wide spectral response range (0.5 to 1.7 μm)

The G10899 series is an InGaAs PIN photodiode that covers a wide spectral response range from 0.5 μm to 1.7 μm . While standard InGaAs PIN photodiodes have spectral response ranging from 0.9 μm to 1.7 μm , the G10899 series has sensitivity extending to 0.5 μm on the shorter wavelength side. A wide range of spectrum can be detected with a single detector. The G10899 series also features low noise and low dark current.

Features

- Wide spectral response range
- Low noise, low dark current
- Large active area available

Applications

- Spectroanalysis
- Thermometer

Structure

Type no.	Photosensitive area (mm)	Window material	Package
G10899-003K	$\phi 0.3$	Borosilicate glass	TO-18
G10899-005K	$\phi 0.5$		
G10899-01K	$\phi 1$		
G10899-02K	$\phi 2$		TO-5
G10899-03K	$\phi 3$		

Absolute maximum ratings

Type no.	Reverse voltage V_R max (V)	Forward current I_F max (mA)	Operating temperature* ¹ T_{opr} (°C)	Storage temperature* ¹ T_{stg} (°C)
G10899-003K	5	10	-40 to +85	-55 to +125
G10899-005K				
G10899-01K				
G10899-02K	2			
G10899-03K				

*1: No dew condensation

When there is a temperature difference between a product and the surrounding area in high humidity environment, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.

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.

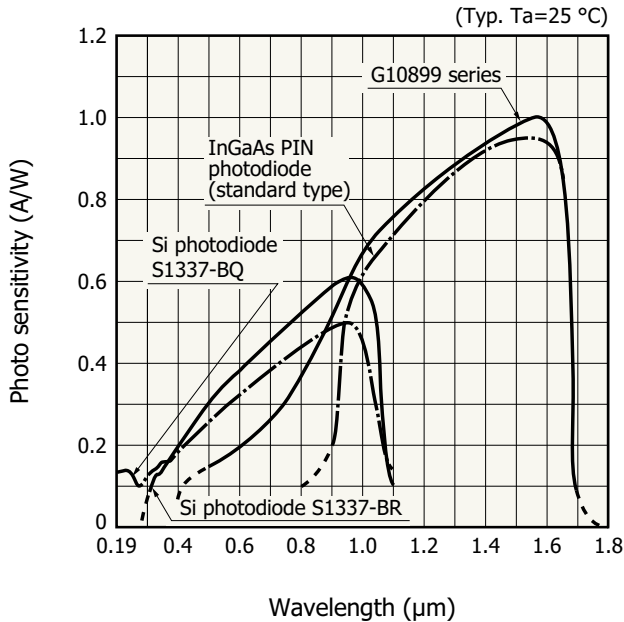
Electrical and optical characteristics (Ta=25 °C)

Type no.	Spectral response range λ (μm)	Peak sensitivity wavelength λ_p (μm)	Photosensitivity S								Dark current I_D $V_R=1\text{ V}$		Temp. coefficient of dark current ΔT_{ID} $V_R=1\text{ V}$ (times/°C)
			$\lambda=0.65\ \mu\text{m}$		$\lambda=0.85\ \mu\text{m}$		$\lambda=1.3\ \mu\text{m}$		$\lambda=\lambda_p$		Typ. (nA)	Max. (nA)	
			Min. (A/W)	Typ. (A/W)	Min. (A/W)	Typ. (A/W)	Min. (A/W)	Typ. (A/W)	Min. (A/W)	Typ. (A/W)			
G10899-003K	0.5 to 1.7	1.55	0.15	0.22	0.35	0.45	0.8	0.9	0.85	1	0.3	1.5	1.07
G10899-005K											0.5	2.5	
G10899-01K											1	5	
G10899-02K											5	25	
G10899-03K											15	75	

Type no.	Cutoff frequency f_c $V_R=1\text{ V}$ $R_L=50\ \Omega$		Terminal capacitance C_t $V_R=1\text{ V}$ $f=1\text{ MHz}$		Shunt resistance R_{sh} $V_R=10\text{ mV}$		D^* $\lambda=\lambda_p$		NEP $\lambda=\lambda_p$	
	Min. (MHz)	Typ. (MHz)	Typ. (pF)	Max. (pF)	Min. (M Ω)	Typ. (M Ω)	Min. ($\text{cm} \cdot \text{Hz}^{1/2}/\text{W}$)	Typ. ($\text{cm} \cdot \text{Hz}^{1/2}/\text{W}$)	Typ. ($\text{W}/\text{Hz}^{1/2}$)	Max. ($\text{W}/\text{Hz}^{1/2}$)
G10899-003K	150	300	10	15	100	1000	1×10^{12}	5×10^{12}	5×10^{-15}	2×10^{-14}
G10899-005K	75	150	20	30	30	300			9×10^{-15}	4×10^{-14}
G10899-01K	25	45	70	130	10	100			2×10^{-14}	6×10^{-14}
G10899-02K	4	10	300	800	2.5	25			3×10^{-14}	2×10^{-13}
G10899-03K	2	5	600	1200	1	10			5×10^{-14}	2×10^{-13}

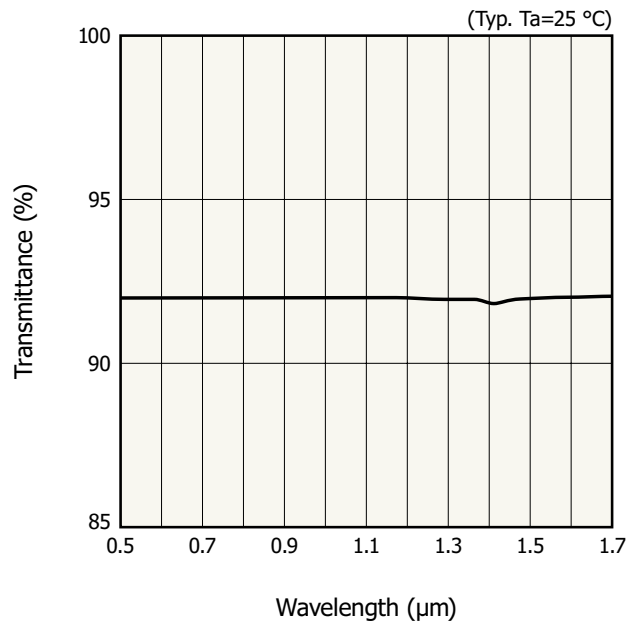
The G10899 series may be damaged by electrostatic discharge, etc. Be careful when using the G10899 series.

Spectral response



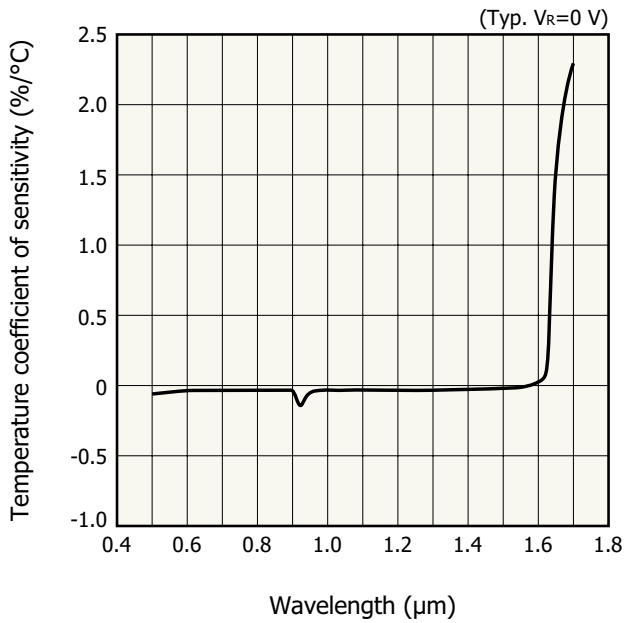
K1RDB0408EA

Spectral transmittance characteristics of window material



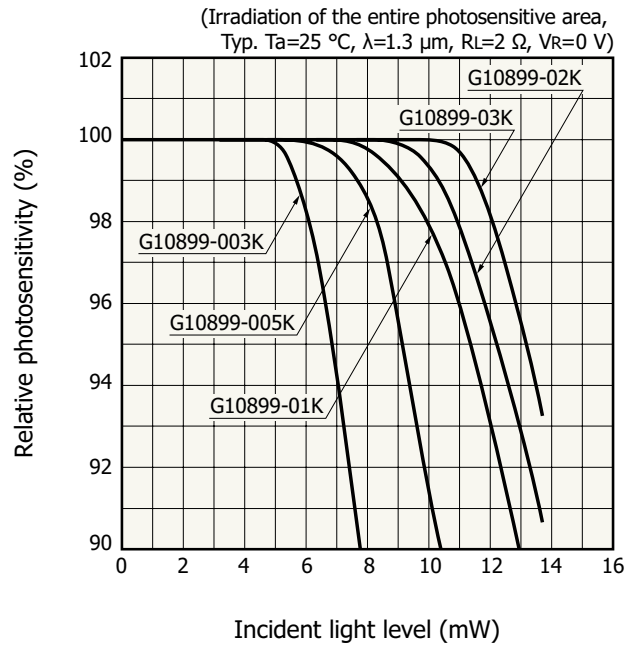
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Photosensitivity temperature characteristics



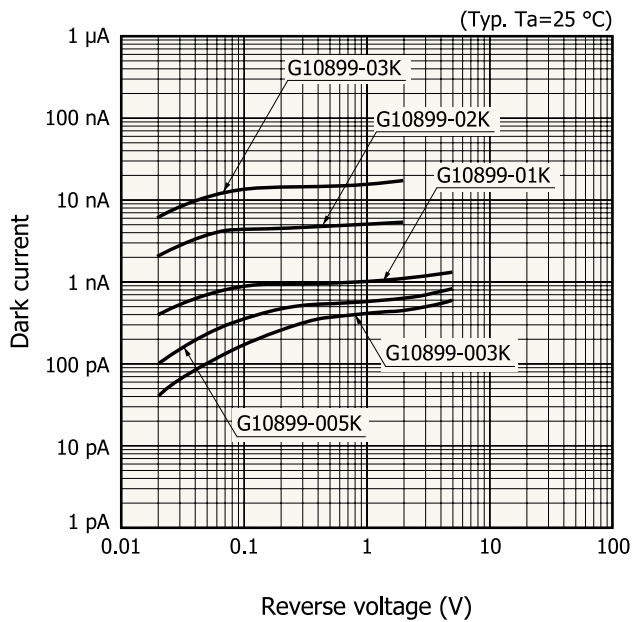
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Linearity



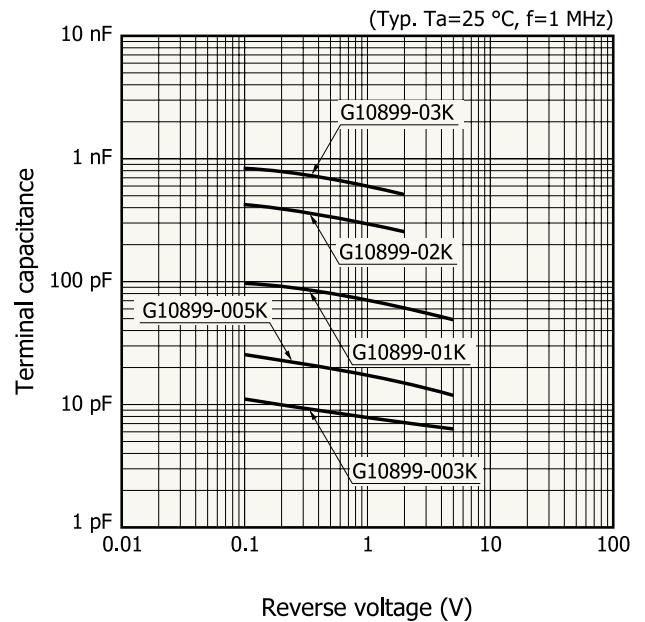
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Dark current vs. reverse voltage



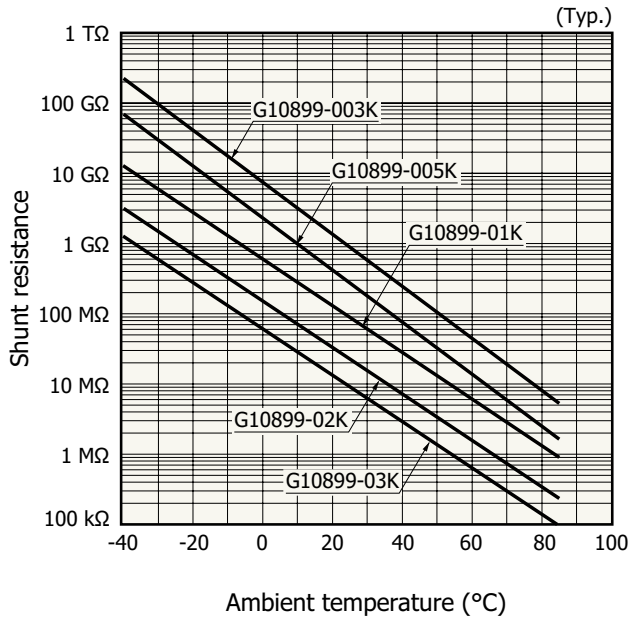
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Terminal capacitance vs. reverse voltage



KIRD80410EC

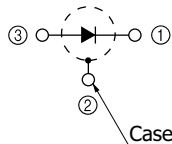
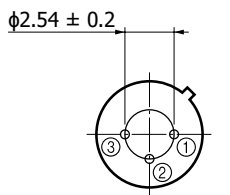
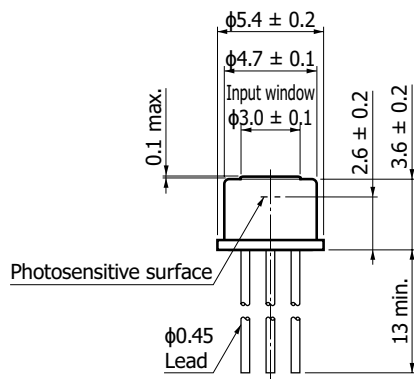
Shunt resistance vs. ambient temperature



KIRD0411ED

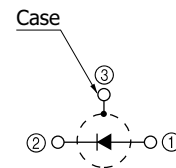
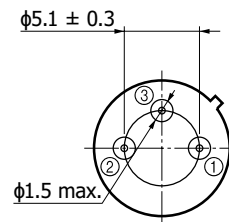
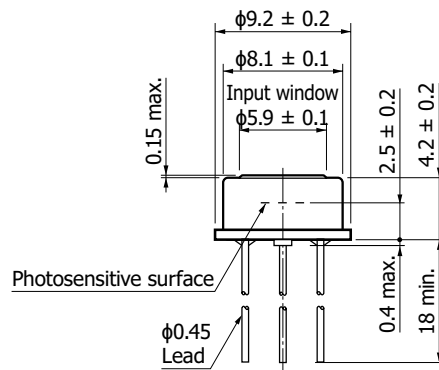
Dimensional outlines (unit: mm)

G10899-003K/-005K/-01K



KIRDA0220EA

G10899-02K/-03K



KIRDA0221EA

Related information

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

■ Precautions

- Disclaimer
- Safety consideration
- Compound opto-semiconductors (photosensors, light emitters)

■ Technical information

- Infrared detectors

Information described in this material is current as of February 2024.

Product specifications are subject to change without prior notice due to improvements or other reasons. This document has been carefully prepared and the information contained is believed to be accurate. In rare cases, however, there may be inaccuracies such as text errors. Before using these products, always contact us for the delivery specification sheet to check the latest specifications.

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