

Si PIN photodiode

S12271

Large area, high-speed PIN photodiode for UV to near IR photometry

The S12271 is a high-speed Si PIN photodiode having a large photosensitive area of $\phi 4.1$ mm. Using quartz glass as the light input window, this photodiode delivers high sensitivity extending to the UV region and is suitable for optical power meters.

Features

- Quartz glass window
- High UV sensitivity
- Large photosensitive area: $\phi 4.1$ mm
- High-speed response: 60 MHz ($V_R=100$ V)

Applications

- Optical power meters
- Radiation detectors

Structure

Parameter	Specification	Unit
Package	TO-8	mm
Photosensitive area size	$\phi 4.1$	mm
Effective photosensitive area	13.2	mm ²

Absolute maximum ratings

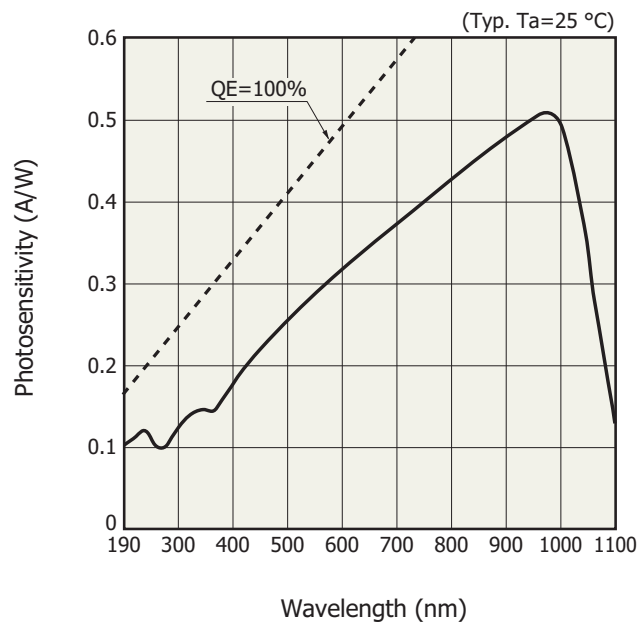
Parameter	Symbol	Specification	Unit
Reverse voltage	V_R max	120	V
Power dissipation	P	50	mW
Operating temperature	T _{opr}	-20 to +60	°C
Storage temperature	T _{stg}	-55 to +80	°C

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.

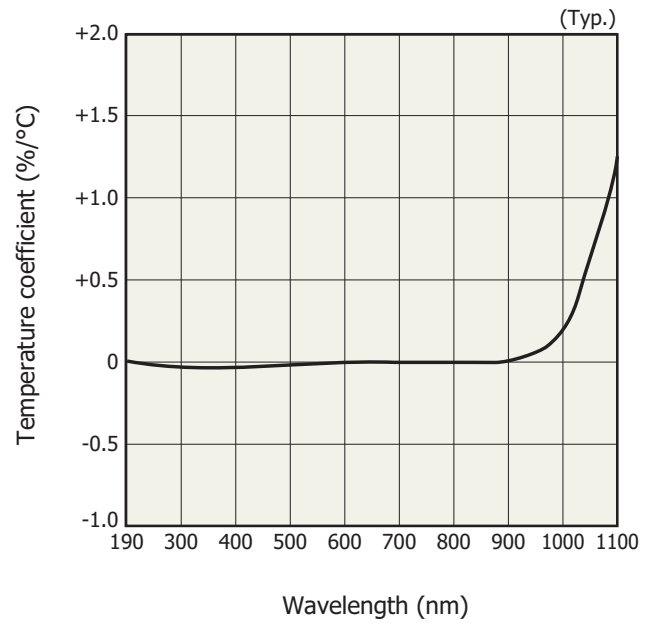
Electrical and optical characteristics (T_a=25 °C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Spectral response range	λ		-	190 to 1100	-	nm
Peak sensitivity wavelength	λ_p		-	960	-	nm
Photosensitivity	S	$\lambda=\lambda_p$	0.4	0.5	-	A/W
		$\lambda=200$ nm	0.08	0.10	-	A/W
Dark current	I _D	$V_R=100$ V	-	0.1	30	nA
Temperature coefficient of I _D	T _{CID}		-	1.15	-	times/°C
Terminal capacitance	C _t	$V_R=100$ V, f=1 MHz	-	10	20	pF
Cutoff frequency	f _c	$V_R=100$ V, R _L =50 Ω -3 dB	-	60	-	MHz
Noise equivalent power	NEP	$\lambda=\lambda_p$, $V_R=100$ V	-	1.5×10^{-14}	-	W/Hz ^{1/2}

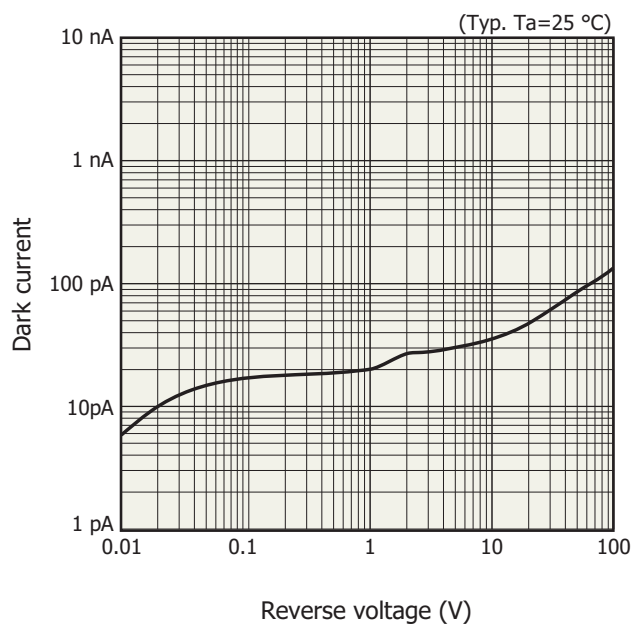
Spectral response



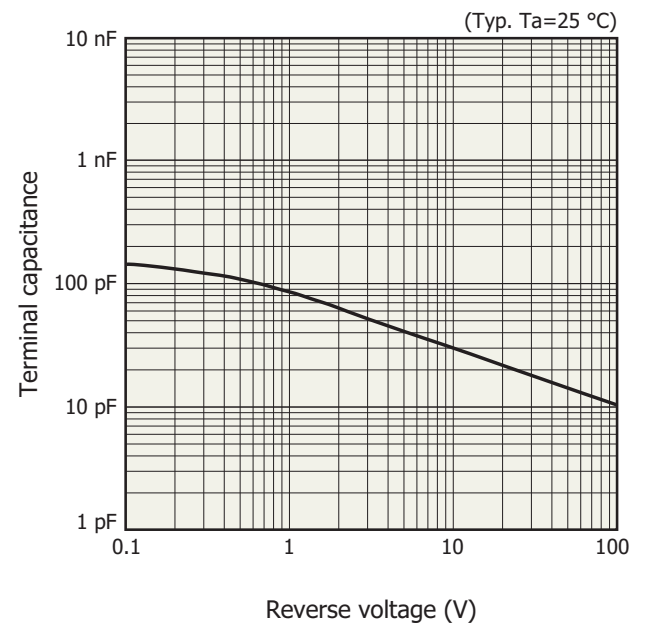
Photosensitivity temperature characteristics



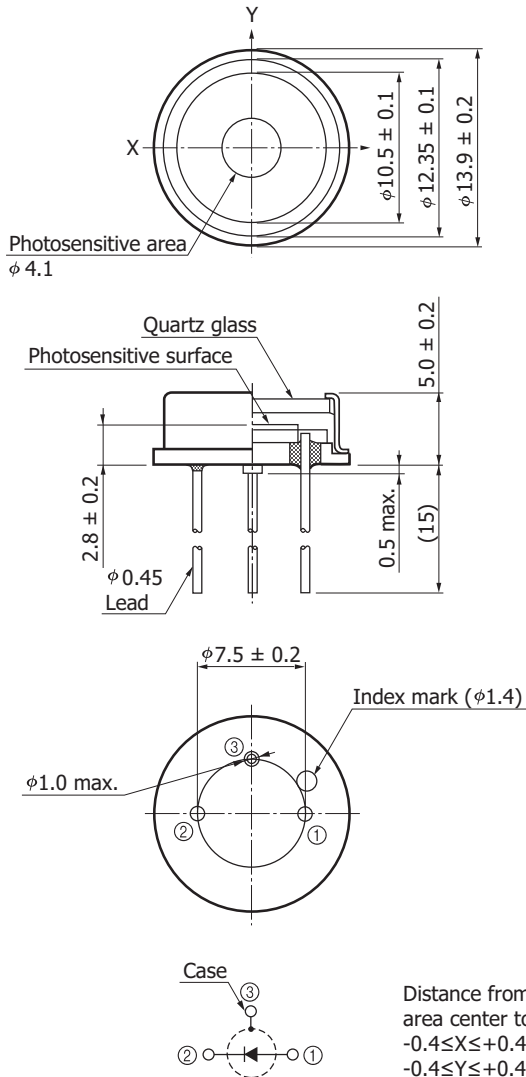
Dark current vs. reverse voltage



Terminal capacitance vs. reverse voltage



Dimensional outline (unit: mm)



KPINA0114EA

Precautions against UV light exposure

- When UV light irradiation is applied, the product characteristics may degrade. Such examples include degradation of the product's UV sensitivity and increase in dark current. This phenomenon varies depending on the irradiation level, irradiation intensity, usage time, and ambient environment and also varies depending on the product model. Before employing the product, we recommend that you check the tolerance under the ultraviolet light environment that the product will be used in.
- Exposure to UV light may cause the characteristics to degrade due to gas released from the resin bonding the product's component materials. As such, we recommend that you avoid applying UV light directly on the resin and apply it on only the inside of the photosensitive area by using an aperture or the like.

Related information

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

■ Precautions

- Disclaimer
- Metal, ceramic, plastic package products

■ Technical information

- Si photodiode/Application circuit examples

Information described in this material is current as of October, 2015.

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.

The product warranty is valid for one year after delivery and is limited to product repair or replacement for defects discovered and reported to us within that one year period. However, even if within the warranty period we accept absolutely no liability for any loss caused by natural disasters or improper product use. Copying or reprinting the contents described in this material in whole or in part is prohibited without our prior permission.

HAMAMATSU

www.hamamatsu.com

HAMAMATSU PHOTONICS K.K., Solid State Division

1126-1 Ichino-cho, Higashi-ku, Hamamatsu City, 435-8558 Japan, Telephone: (81) 53-434-3311, Fax: (81) 53-434-5184

U.S.A.: Hamamatsu Corporation: 360 Foothill Road, Bridgewater, N.J. 08807, U.S.A., Telephone: (1) 908-231-0960, Fax: (1) 908-231-1218

Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49) 8152-375-0, Fax: (49) 8152-265-8

France: Hamamatsu Photonics France S.A.R.L.: 19, Rue du Saule Trappu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: 33-(1) 69 53 71 00, Fax: 33-(1) 69 53 71 10

United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court, 10 Tewin Road, Welwyn Garden City, Hertfordshire AL7 1BW, United Kingdom, Telephone: (44) 1707-294888, Fax: (44) 1707-325777

North Europe: Hamamatsu Photonics Norden AB: Torshamnsgatan 35 16440 Kista, Sweden, Telephone: (46) 8-509-031-00, Fax: (46) 8-509-031-01

Italy: Hamamatsu Photonics Italia S.r.l.: Strada della Moia, 1 int. 6, 20020 Arese (Milano), Italy, Telephone: (39) 02-93581733, Fax: (39) 02-93581741

China: Hamamatsu Photonics (China) Co., Ltd.: B1201, Jiaming Center, No.27 Dongsanhuan Beilu, Chaoyang District, Beijing 100020, China, Telephone: (86) 10-6586-6006, Fax: (86) 10-6586-2866