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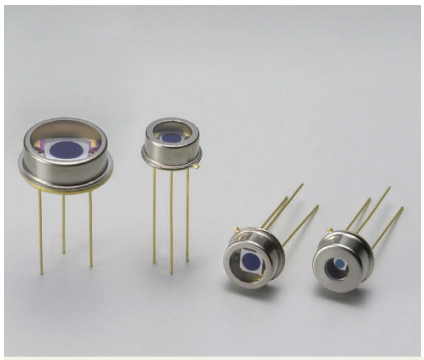
Si PIN photodiodes



S3071 S3072 S3399 S3883

Large area, high-speed Si PIN photodiodes

The S3071, S3072, S3399 and S3883 are Si PIN photodiodes having a relatively large photosensitive area from ϕ1.5 to ϕ5.0 mm yet they offer excellent frequency response from 40 to 300 MHz. These photodiodes are suitable for FSO (free space optics) and high-speed pulsed light detection.

Features

- **Photosensitive area size**
  S3071: ϕ5.0 mm
  S3072: ϕ3.0 mm
  S3399: ϕ3.0 mm
  S3883: ϕ1.5 mm
- **Cutoff frequency**
  S3071: 40 MHz (VR=24 V)
  S3072: 45 MHz (VR=24 V)
  S3399: 100 MHz (VR=10 V)
  S3883: 300 MHz (VR=20 V)
- **High reliability: TO-5/8 metal package**

Applications

- **FSO**
- **High-speed pulsed light detection**

Structure / Absolute maximum ratings

Type no.	Dimensional outline/ Window material*1	Package	Photosensitive area size (mm)	Effective photosensitive area (mm^2)	Absolute maximum ratings			
					Reverse voltage VR max. (V)	Power dissipation Pd (mW)	Operating temperature Topr (°C)	Storage temperature Tstg (°C)
S3071	(1)/K	TO-8	ϕ5.0	19.6	50	50	-40 to +100	-55 to +125
S3072	(2)/K	TO-5	ϕ3.0	7.0				
S3399	(3)/K		ϕ3.0	7.0	30			
S3883	(4)/K		ϕ1.5	1.7				

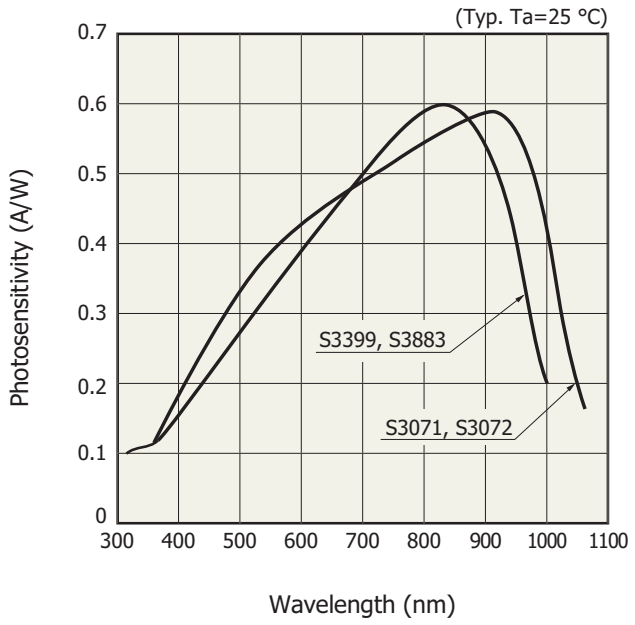
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.
*1: Window material K=borosilicate glass

Electrical and optical characteristics (Typ. Ta=25 °C, unless otherwise noted)

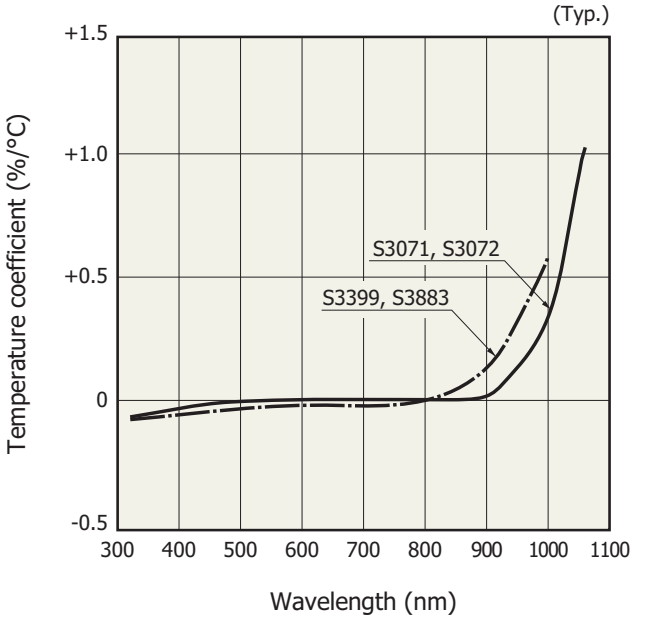
Type no.	Spectral response range λ (nm)	Peak sensitivity wavelength λp (nm)	Photosensitivity S (A/W)				Short circuit current Isc 100 lx (μA)	Dark current ID (nA)		Temp. coefficient of ID TCID (times/°C)	Cutoff frequency fc RL=50 Ω (MHz)	Terminal capacitance Ct f=1 MHz (pF)	Noize equivalent power NEP λ=λp ($W/Hz^{1/2}$)
			λp	660 nm	780 nm	830 nm		Typ.	Max.				
S3071	320 to 1060	920	0.6	0.47	0.54	0.56	17	0.5*2	10*2	1.15	40*2	18*2	2.1×10^{-14} *2
S3072							6.5	0.3*2	10*2		45*2	7*2	1.6×10^{-14} *2
S3399	320 to 1000	840	0.6	0.45	0.58	0.6	5.6	0.1*3	1.0*3	1.12	100*3	20*3	9.4×10^{-15} *3
S3883							1.4	0.05*4	1.0*4		300*4	6*4	6.7×10^{-15} *4

*2: VR=24 V
*3: VR=10 V
*4: VR=20 V

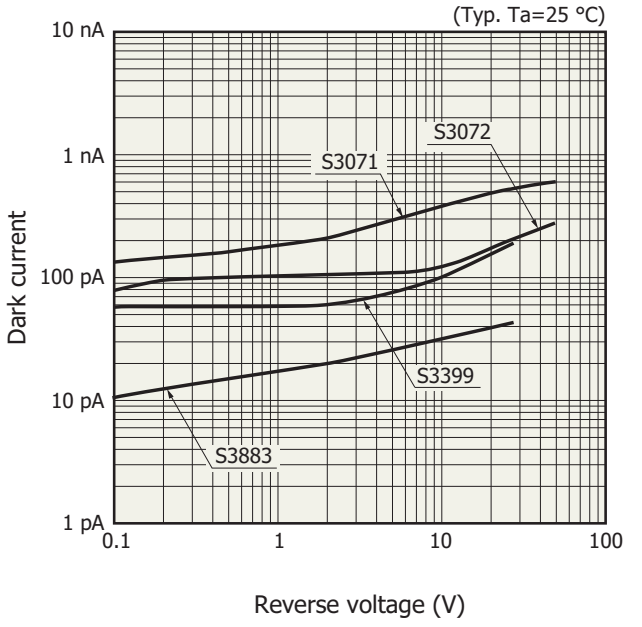
Spectral response



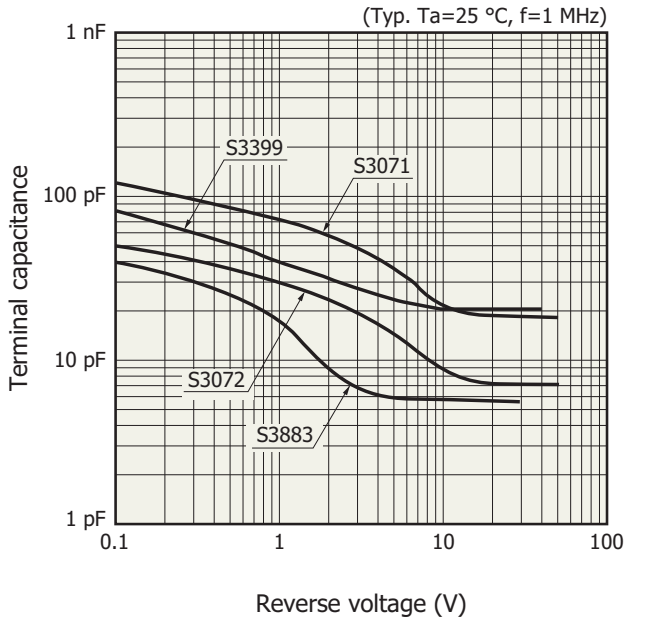
Photosensitivity temperature characteristics



Dark current vs. reverse voltage

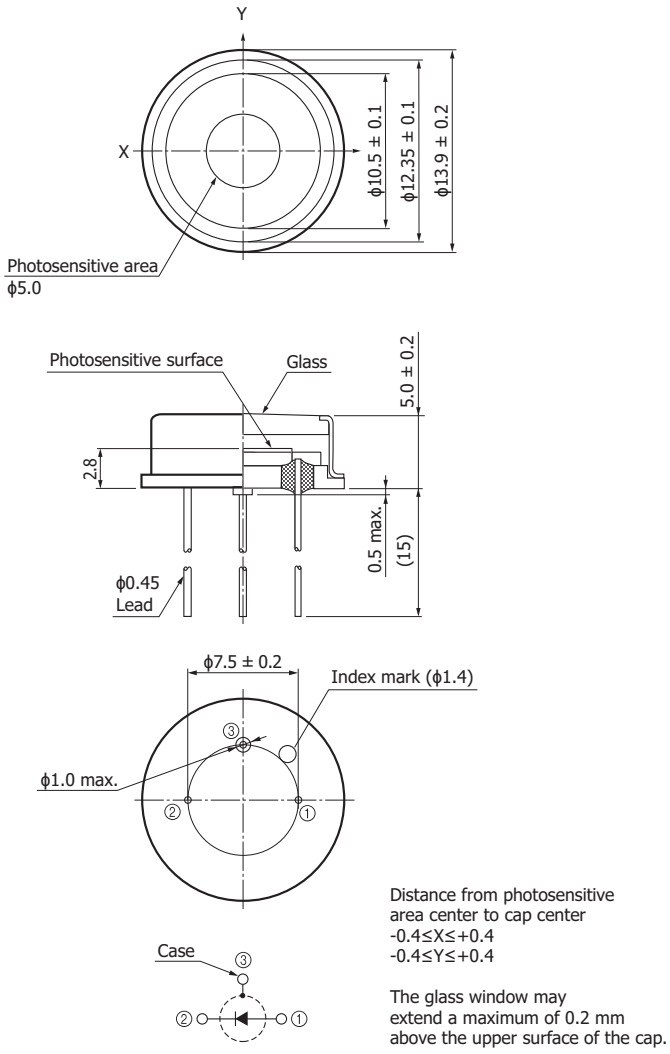


Terminal capacitance vs. reverse voltage



Dimensional outlines (unit: mm)

(1) S3071

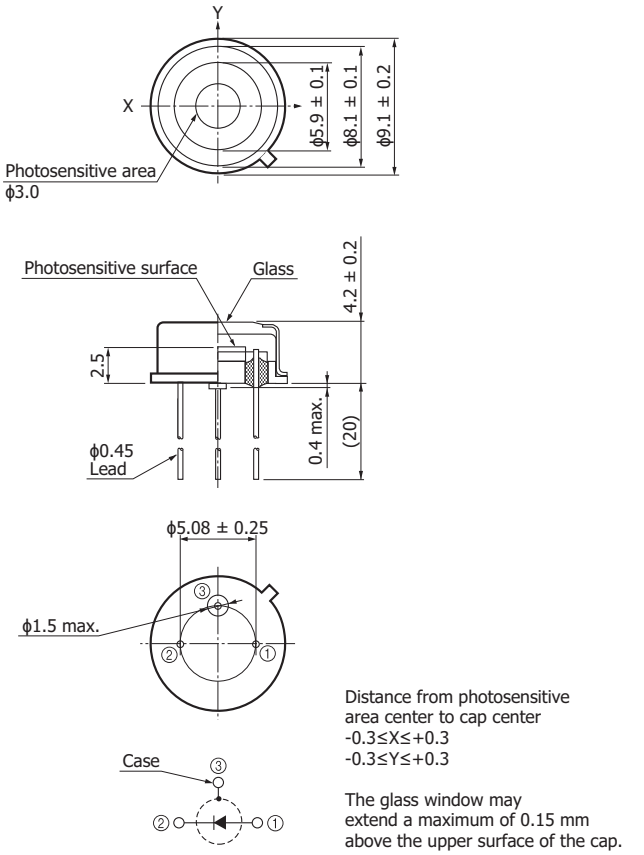


Distance from photosensitive area center to cap center
-0.4≤X≤+0.4
-0.4≤Y≤+0.4

The glass window may extend a maximum of 0.2 mm above the upper surface of the cap.

KPINA0027ED

(2) S3072

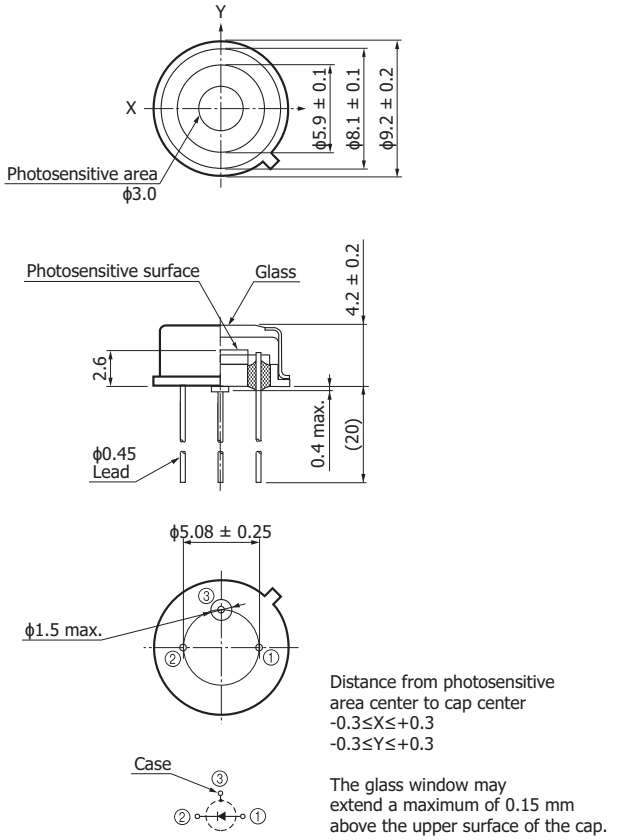


Distance from photosensitive area center to cap center
-0.3≤X≤+0.3
-0.3≤Y≤+0.3

The glass window may extend a maximum of 0.15 mm above the upper surface of the cap.

KPINA0024EC

(3) S3399

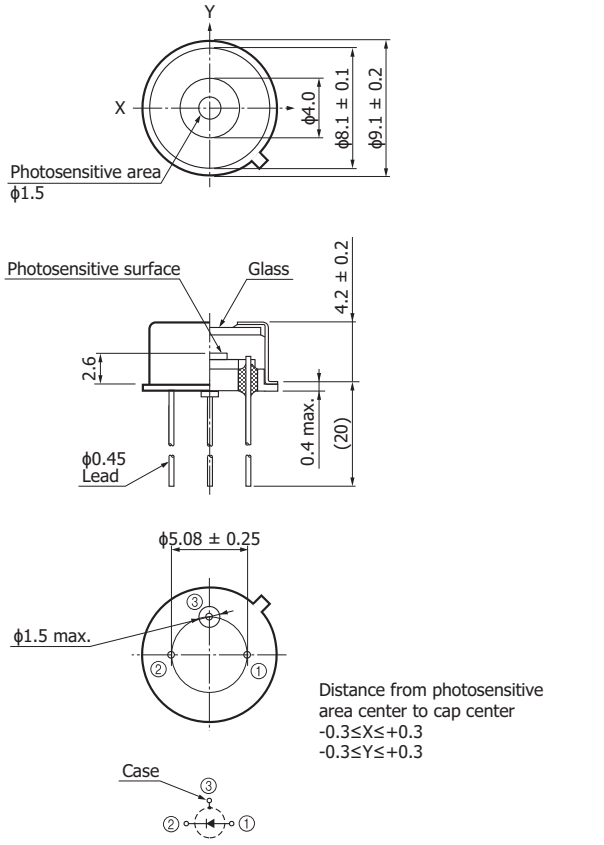


Distance from photosensitive area center to cap center
-0.3≤X≤+0.3
-0.3≤Y≤+0.3

The glass window may extend a maximum of 0.15 mm above the upper surface of the cap.

KPINA0026EC

(4) S3883



Distance from photosensitive area center to cap center
-0.3≤X≤+0.3
-0.3≤Y≤+0.3

KPINA0025ED

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 Trapu, 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

Cat. No. KPIN1044E06 Nov. 2014 DN