

S2386 series

**For visible to near IR, general-purpose photometry**

## Features

- High sensitivity in visible to near infrared range
- Low dark current
- High reliability
- Superior linearity

## Applications

- Analytical instruments
- Optical measurement equipment

## Structure / Absolute maximum ratings

Type no.	Dimensional outline/ Window material*	Package	Photosensitive area size (mm)	Absolute maximum ratings		
				Reverse voltage V <sub>R</sub> max (V)	Operating temperature T <sub>opr</sub> (°C)	Storage temperature T <sub>stg</sub> (°C)
S2386-18K	(1)/K	TO-18	1.1 × 1.1	30	-40 to +100	-55 to +125
S2386-18L	(2)/L					
S2386-5K	(3)/K	TO-5	2.4 × 2.4			
S2386-44K	(4)/K		3.6 × 3.6			
S2386-45K	(5)/K		3.9 × 4.6			
S2386-8K	(6)/K	TO-8	5.8 × 5.8			

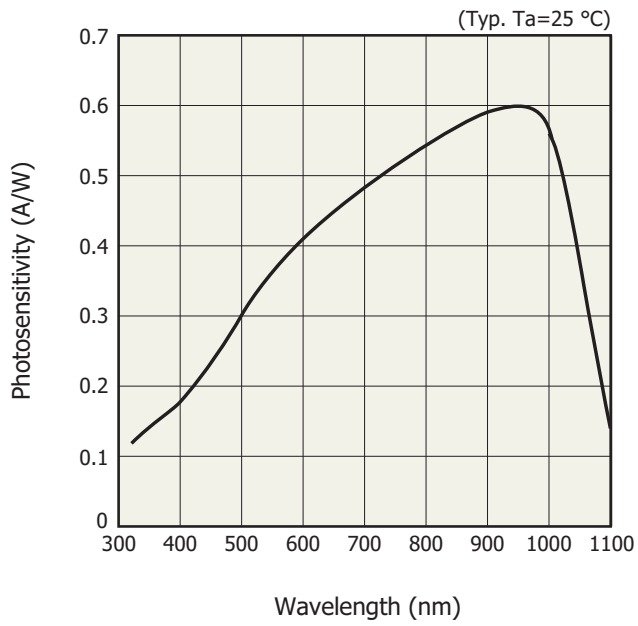
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

\* Window material K=borosilicate glass, L=lens type borosilicate glass

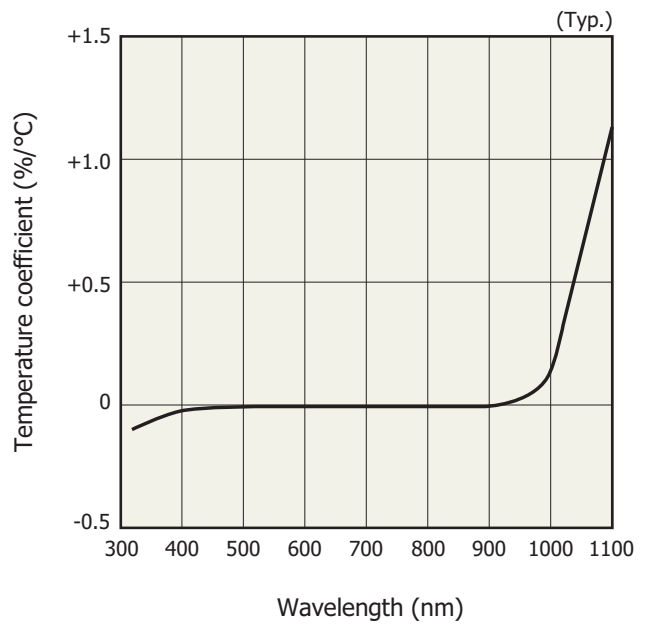
## Electrical and optical characteristics (Typ. T<sub>a</sub>=25 °C, unless otherwise noted)

Type no.	Spectral response range λ (nm)	Peak sensitivity wavelength λ <sub>p</sub> (nm)	Photosensitivity S (A/W)				Short circuit current I <sub>sc</sub> 100 lx		Dark current I <sub>D</sub> V <sub>R</sub> =10 mV max. (pA)	Temp. coefficient of I <sub>D</sub> T <sub>CID</sub> (times/°C)	Rise time t <sub>r</sub> V <sub>R</sub> =0 V R <sub>L</sub> =1 kΩ (μs)	Terminal capacitance C <sub>t</sub> V <sub>R</sub> =0 V f=10 kHz (pF)	Shunt resistance R <sub>sh</sub> V <sub>R</sub> =10 mV		Noise equivalent power NEP V <sub>R</sub> =0 V λ=λ <sub>p</sub> (W/Hz <sup>1/2</sup> )		
			λ <sub>p</sub>	GaP LED 560 nm	He-Ne laser 633 nm	GaAs LED 930 nm	Min. (μA)	Typ. (μA)					Min. (GΩ)	Typ. (GΩ)			
S2386-18K	320 to 1100	960	0.6	0.38	0.43	0.59	1	1.3	2	1.12	0.4	140	5	100	6.8 × 10 <sup>-16</sup>		
S2386-18L							4	6.5									
S2386-5K							4.4	6.0	5								
S2386-44K							9.6	12	20				2	50	2	50	9.6 × 10 <sup>-16</sup>
S2386-45K							12	17	30				25	25	0.5	25	1.4 × 10 <sup>-15</sup>
S2386-8K							26	33	50				10	10	0.3	10	2.1 × 10 <sup>-15</sup>

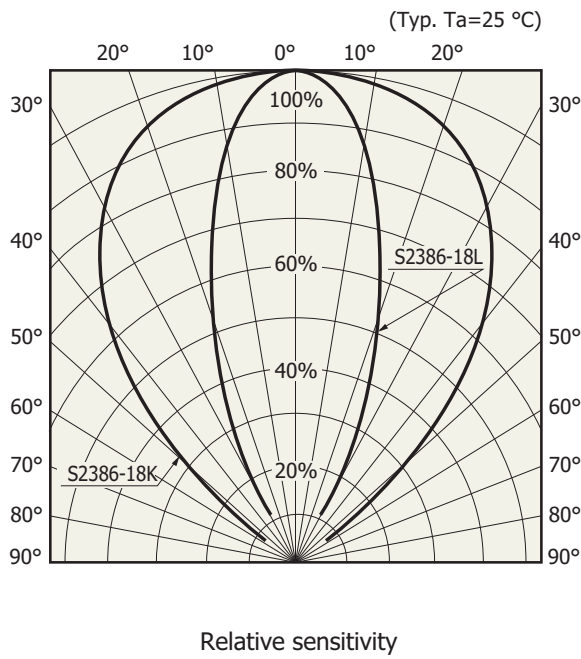
**Spectral response**



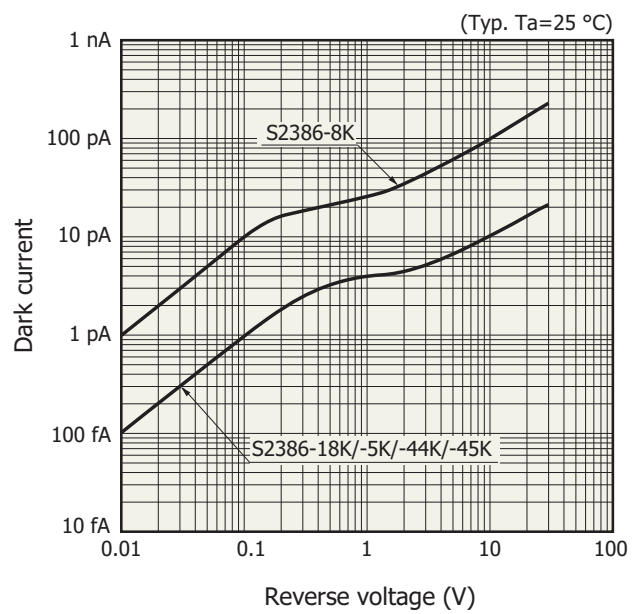
**Photosensitivity temperature characteristic**



**Directivity**

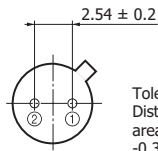
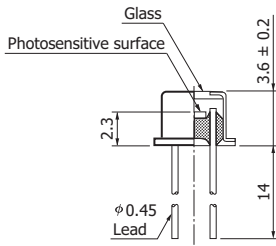
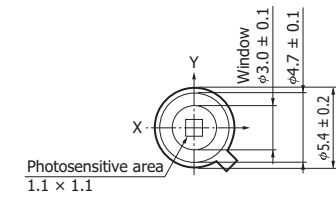


**Dark current vs. reverse voltage**

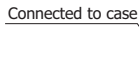


Dimensional outlines (unit: mm)

(1) S2386-18K



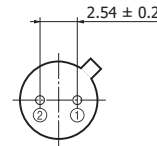
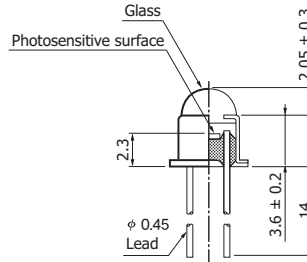
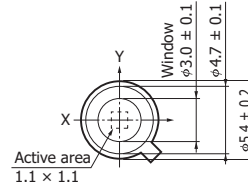
Tolerance unless otherwise noted:  $\pm 0.2$   
 Distance from photosensitive area center to cap center  
 $-0.3 \leq X \leq +0.3$   
 $-0.3 \leq Y \leq +0.3$



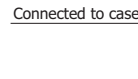
The glass window may extend a maximum of 0.2 mm above the upper surface of the cap.

KSPDA0191ED

(2) S2386-18L

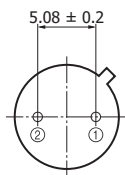
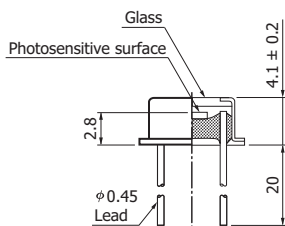
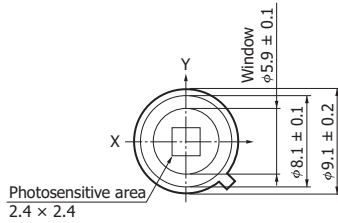


Tolerance unless otherwise noted:  $\pm 0.2$   
 Distance from photosensitive area center to cap center  
 $-0.3 \leq X \leq +0.3$   
 $-0.3 \leq Y \leq +0.3$

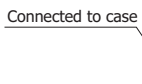


KSPDA0048EF

(3) S2386-5K



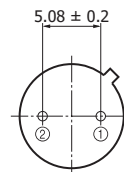
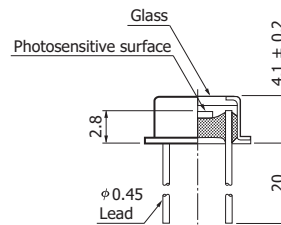
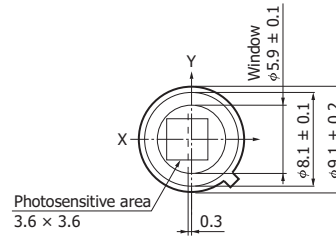
Tolerance unless otherwise noted:  $\pm 0.2$   
 Distance from photosensitive area center to cap center  
 $-0.3 \leq X \leq +0.3$   
 $-0.3 \leq Y \leq +0.3$



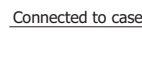
The glass window may extend a maximum of 0.2 mm above the upper surface of the cap.

KSPDA0192ED

(4) S2386-44K



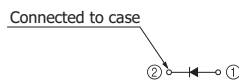
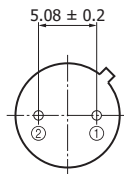
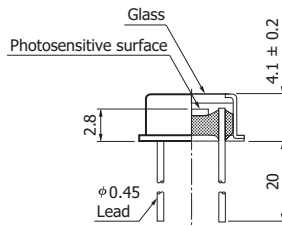
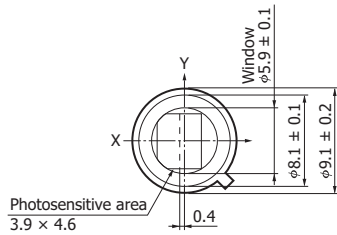
Tolerance unless otherwise noted:  $\pm 0.2$   
 Distance from photosensitive area center to cap center  
 $-0.6 \leq X \leq 0$   
 $-0.3 \leq Y \leq +0.3$



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

KSPDA0193ED

(5) S2386-45K

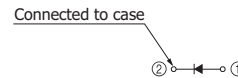
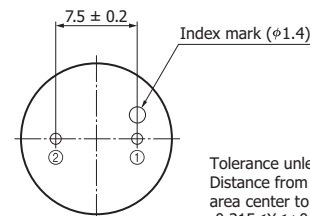
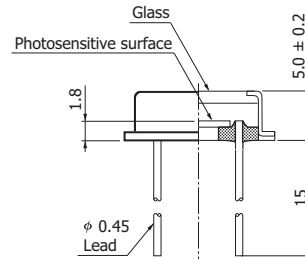
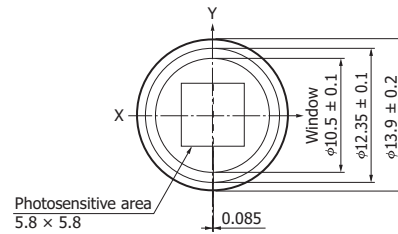


Tolerance unless otherwise noted:  $\pm 0.2$   
Distance from photosensitive area center to cap center  
 $-0.7 \leq X \leq -0.1$   
 $-0.3 \leq Y \leq +0.3$

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

KSPDA0178EF

(6) S2386-8K



Tolerance unless otherwise noted:  $\pm 0.2$   
Distance from photosensitive area center to cap center  
 $-0.315 \leq X \leq +0.485$   
 $-0.4 \leq Y \leq +0.4$

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

KSPDA0194ED

## Related information

[www.hamamatsu.com/sp/ssd/doc\\_en.html](http://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 April 2019.

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](http://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. 08907, U.S.A., Telephone: (1)908-231-0960, Fax: (1)908-231-1218, E-mail: [usa@hamamatsu.com](mailto:usa@hamamatsu.com)

Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49)8152-375-0, Fax: (49)8152-265-8, E-mail: [info@hamamatsu.de](mailto:info@hamamatsu.de)

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, E-mail: [infos@hamamatsu.fr](mailto:infos@hamamatsu.fr)

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, E-mail: [info@hamamatsu.co.uk](mailto:info@hamamatsu.co.uk)

North Europe: Hamamatsu Photonics Norden AB: Torshamnsgatan 35 16440 Kista, Sweden, Telephone: (46)8-509 031 00, Fax: (46)8-509 031 01, E-mail: [info@hamamatsu.se](mailto:info@hamamatsu.se)

Italy: Hamamatsu Photonics Italia S.r.l.: Strada della Moia, 1 int. 6, 20020 Arese (Milano), Italy, Telephone: (39)02-93 58 17 33, Fax: (39)02-93 58 17 41, E-mail: [info@hamamatsu.it](mailto:info@hamamatsu.it)

China: Hamamatsu Photonics (China) Co., Ltd.: B1201, Jiaming Center, No.27 Dongsanhuan Beilu, Chaoyang District, 100020 Beijing, P.R.China, Telephone: (86)10-6586-6006, Fax: (86)10-6586-2866, E-mail: [hpc@hamamatsu.com.cn](mailto:hpc@hamamatsu.com.cn)

Taiwan: Hamamatsu Photonics Taiwan Co., Ltd.: 8F-3, No. 158, Section2, Gongdao 5th Road, East District, Hsinchu, 300, Taiwan R.O.C. Telephone: (886)3-659-0080, Fax: (886)3-659-0081, E-mail: [info@hamamatsu.com.tw](mailto:info@hamamatsu.com.tw)