

# Si PIN photodiodes

S9055 series



## Flat response characteristics up to high frequency bands

The S9055 series Si PIN photodiodes deliver a high-speed response exceeding 1 GHz at low bias voltage ( $V_R=2$  V). Their low capacitance (less than 1 pF) makes them ideal for combination with high-speed transimpedance amplifiers.

### Features

- Flat response characteristics up to high frequency bands  
Frequency flatness: -0.5 dB max.  
( $V_R=2$  V,  $\lambda=830$  nm,  $f=100$  MHz)
- High-speed response  
S9055: 1.5 GHz ( $V_R=2$  V, -3 dB)  
S9055-01: 2 GHz ( $V_R=2$  V, -3 dB)
- Low capacitance  
S9055: 0.8 pF ( $V_R=2$  V)  
S9055-01: 0.5 pF ( $V_R=2$  V)
- Highly reliable package: 3-pin TO-18 package

### Applications

- Optical fiber communications
- High-speed measurement system
- Optical inter-connection

### Structure / Absolute maximum ratings ( $T_a=25$ °C)

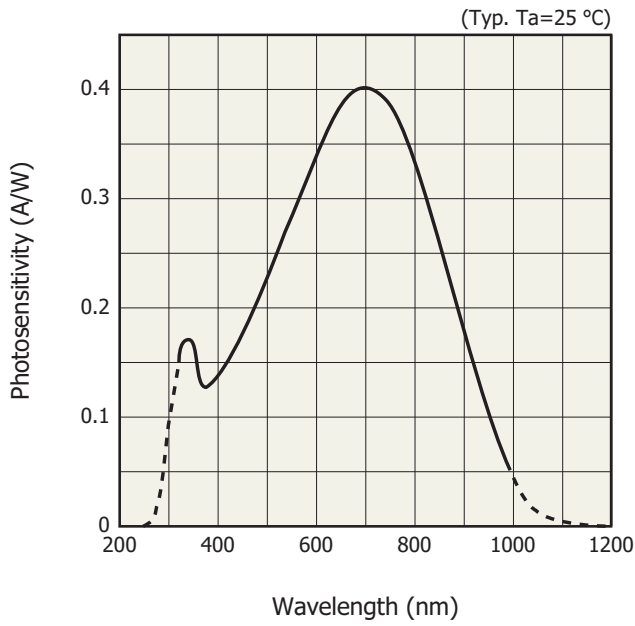
Parameter	Symbol	S9055	S9055-01	Unit
Photosensitive area	-	$\phi 0.2$	$\phi 0.1$	mm
Reverse voltage	$V_R$ max	20		V
Operating temperature	$T_{opr}$	-40 to +100		°C
Storage temperature	$T_{stg}$	-55 to +125		°C

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)

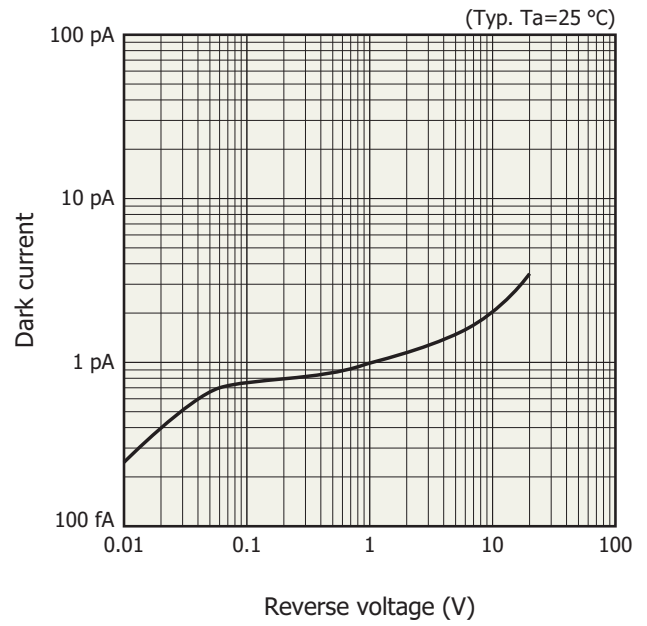
Parameter	Symbol	Condition	S9055			S9055-01			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Spectral response range	$\lambda$		320 to 1000			320 to 1000			nm
Peak sensitivity wavelength	$\lambda_p$		-	700	-	-	700	-	nm
Photosensitivity	S	$\lambda=850$ nm	0.2	0.25	-	0.2	0.25	-	A/W
Dark current	$I_D$	$V_R=2$ V	-	1	100	-	1	100	pA
Terminal capacitance	$C_t$	$V_R=2$ V, $f=1$ MHz	-	0.8	1.2	-	0.5	0.75	pF
Cutoff frequency	$f_c$	$V_R=2$ V, $R_L=25$ $\Omega$ -3 dB	1.0	1.5	-	1.5	2	-	GHz
Frequency flatness	-	$V_R=2$ V, $\lambda=850$ nm $f=100$ MHz	-	-	-0.5	-	-	-0.5	dB

**Spectral response**



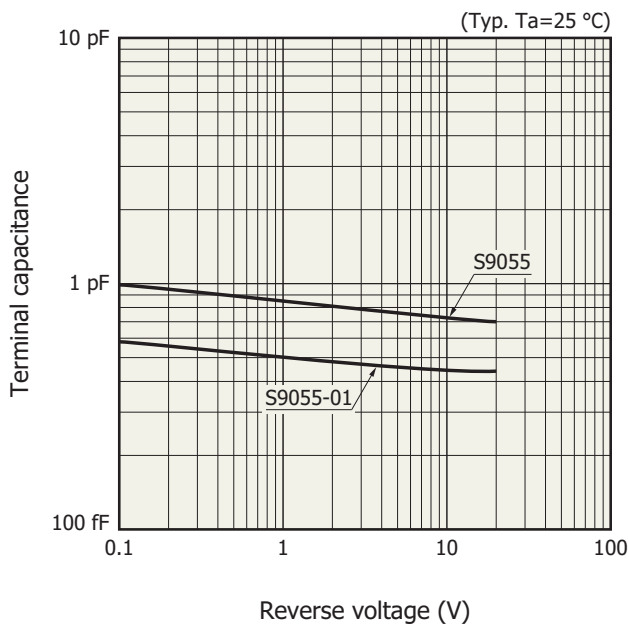
KPINB0274EB

**Dark current vs. reverse voltage**



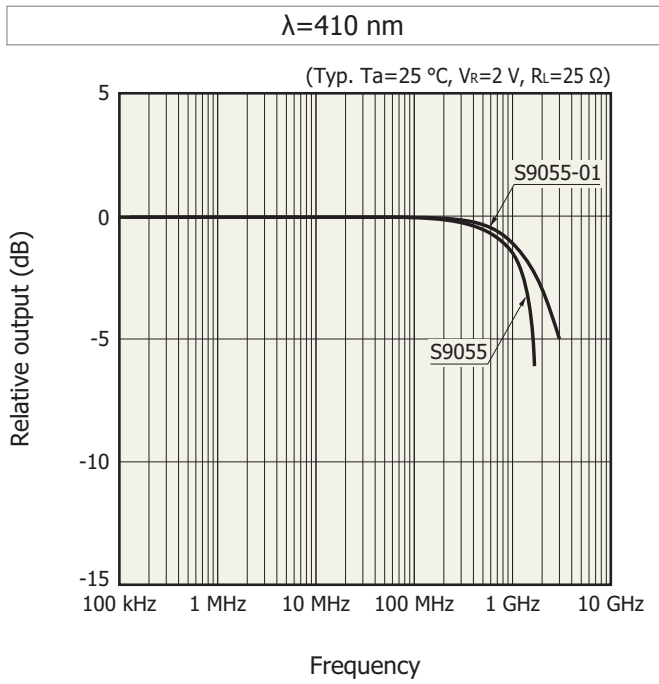
KPINB0275EC

**Terminal capacitance vs. reverse voltage**

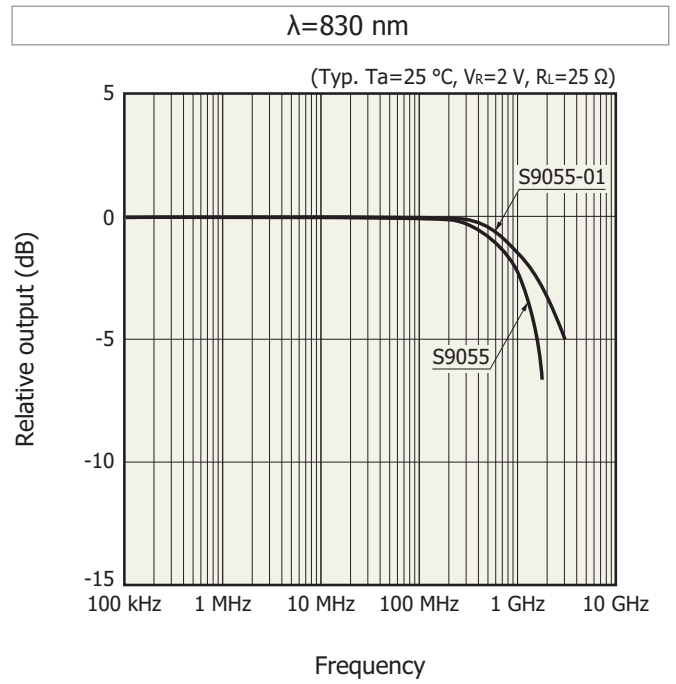


KPINB0276EC

**Frequency characteristics**

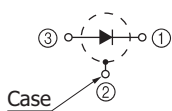
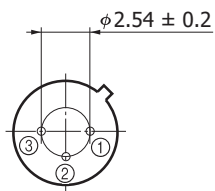
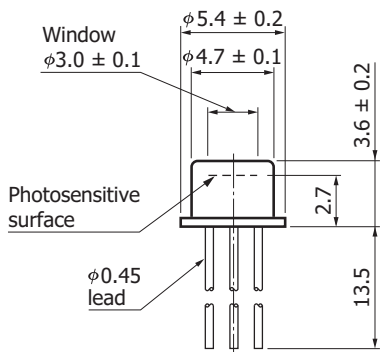


KPINB0277EC



KPINB0278EC

**Dimensional outline (unit: mm)**



The glass window does not extend beyond the upper edge of cap but may be recessed a maximum of 0.1 mm from the cap edge.

KPINA0071EB

## 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 September 2017.

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. 08807, 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, Beijing 100020, 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)03-659-0080, Fax: (886)03-659-0081, E-mail: [info@tw.hpj.co.jp](mailto:info@tw.hpj.co.jp)