

Si PIN photodiode S5971, S5972, S5973 series

High-speed photodiodes (S5973 series: 1.5 GHz)



S5971, S5972 and S5973 series are high-speed Si PIN photodiodes designed for visible to near infrared light detection. These photodiodes provide wideband characteristics at a low bias, making them suitable for optical communications and other high-speed photometry. S5973 series includes a mini-lens type (S5973-01) that can be efficiently coupled to an optical fiber and a violet sensitivity enhanced type (S5973-02) ideal for violet laser detection.

Features

- High-speed response
S5971 : 100 MHz ($V_R=10$ V)
S5972 : 500 MHz ($V_R=10$ V)
S5973 series: 1 GHz ($V_R=3.3$ V)
- Low price
- High sensitivity
S5973-02: 0.3 A/W, QE=91 % ($\lambda=410$ nm)
- High reliability

Applications

- Optical fiber communications
- High-speed photometry
- Violet laser detection (S5973-02)

General ratings / Absolute maximum ratings

Type No.	Dimensional outline/ Window material *1	Package (mm)	Active area size (mm)	Effective active area (mm ²)	Absolute maximum ratings			
					Reverse voltage V_R Max. (V)	Power dissipation P (mW)	Operating temperature T_{opr} (°C)	Storage temperature T_{stg} (°C)
S5971	①/K	TO-18	$\phi 1.2$	1.1	20	50	-40 to +100	-55 to +125
S5972			$\phi 0.8$	0.5				
S5973			$\phi 0.4$	0.12				
S5973-01	②/L							
S5973-02	③/K							

Electrical and optical characteristics

Type No.	Spectral response range λ (nm)	Peak sensitivity wavelength λ_p (nm)	Photo sensitivity S (A/W)			Short circuit current I_{sc} 100 lx (μ A)	Dark current I_D		Temp. coefficient of I_D T_{CID} (times/°C)	Cut-off frequency f_c (GHz)	Terminal capacitance C_t $f=1$ MHz (pF)	NEP $V_R=10$ V $\lambda=\lambda_p$ (W/Hz ^{1/2})	
			λ_p	660 nm	780 nm		830 nm	$I_{D, Typ.}$ (nA)					$I_{D, Max.}$ (nA)
S5971	320 to 1060	900	0.64	0.44	0.55	0.6	1.0	0.07 *3	1 *3	1.15	0.1 *3	3 *3	7.4×10^{-15}
S5972		800	0.57		0.55	0.42	0.01 *3	0.5 *3	0.5 *3		3.1×10^{-15}		
S5973	320 to 1000	760	0.52	0.51	0.47	0.09	0.001 *4	0.1 *4	1.5 *4	1.6 *4	1.1×10^{-15} *4		
S5973-01												0.42	
S5973-02			0.45	0.3 *2	0.42	0.37	0.09				1.9×10^{-15} *2, *4		

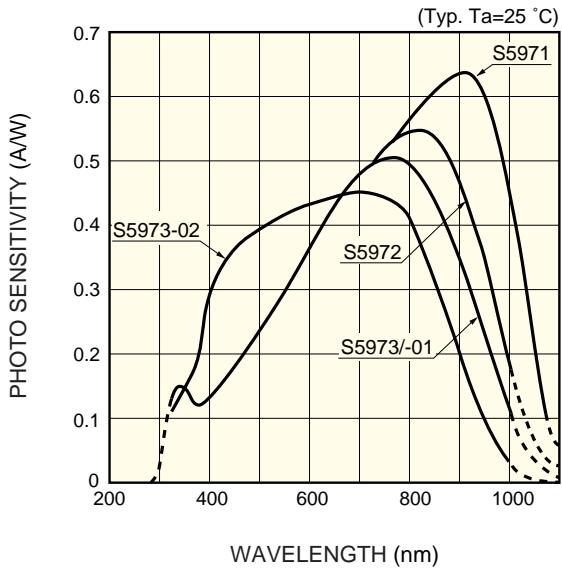
*1: Window material K: borosilicate glass, L: lens type borosilicate glass

*2: $\lambda=410$ nm

*3: $V_R=10$ V

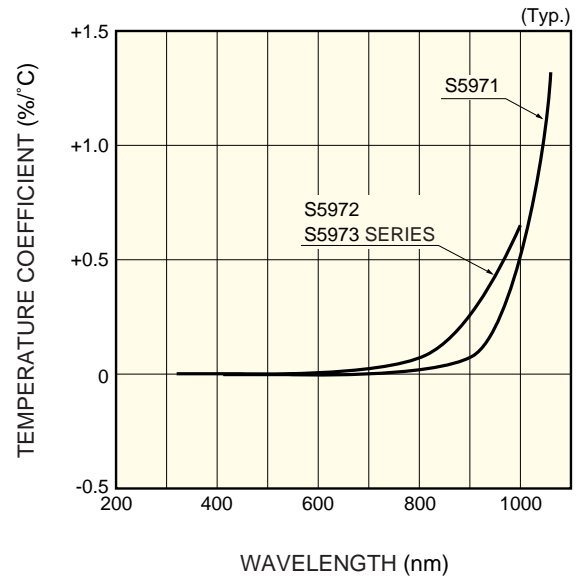
*4: $V_R=3.3$ V

■ Spectral response



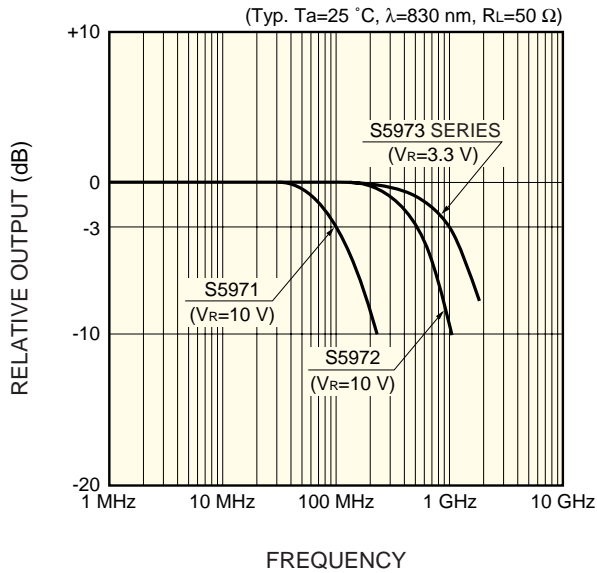
KPINB0157EA

■ Photo sensitivity temperature characteristics



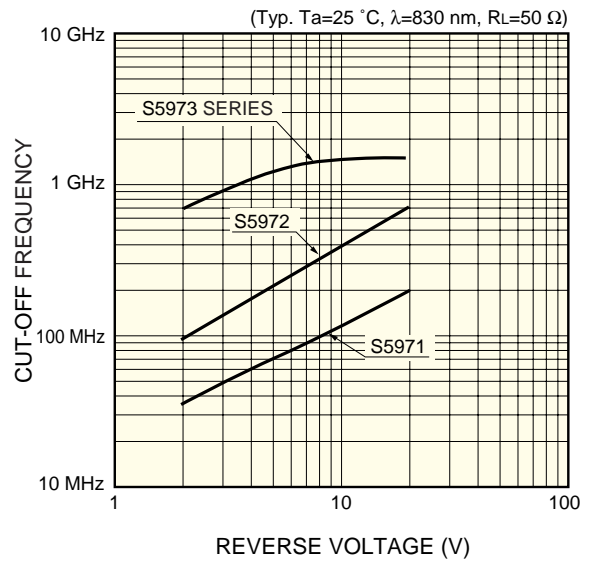
KPINB0158EA

■ Frequency response



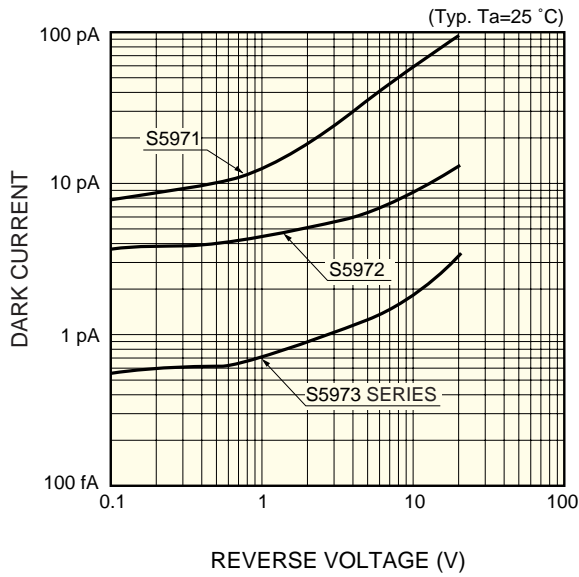
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■ Cut-off frequency vs. reverse voltage



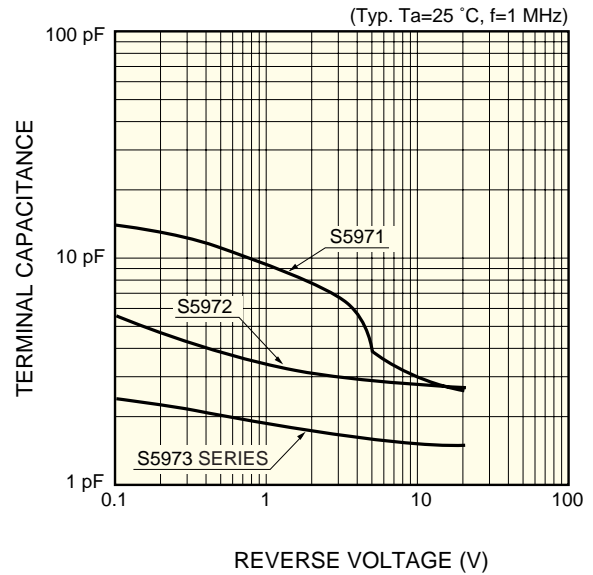
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■ Dark current vs. reverse voltage



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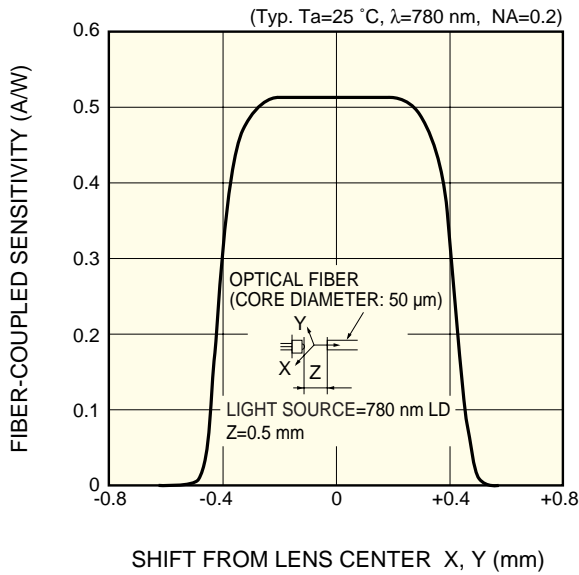
■ Terminal capacitance vs. reverse voltage



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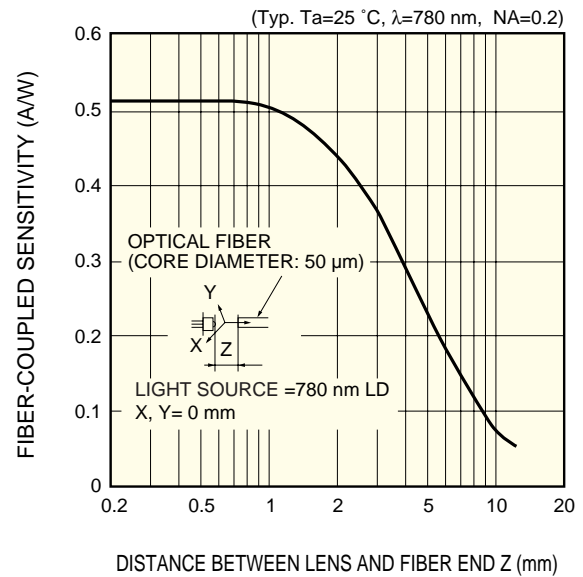
■ Fiber coupling characteristics (S5973-01)

X, Y direction



KPINB0088EA

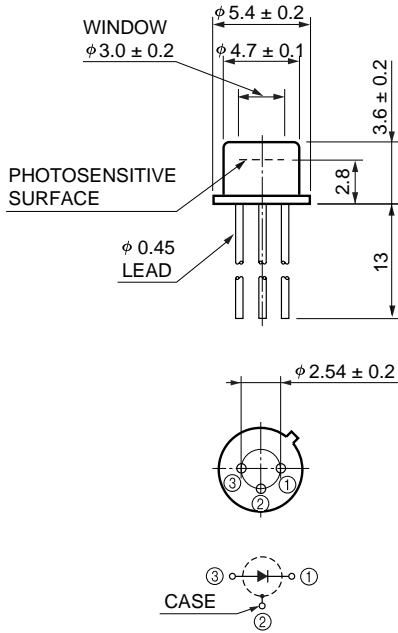
Z direction



KPINB0089EA

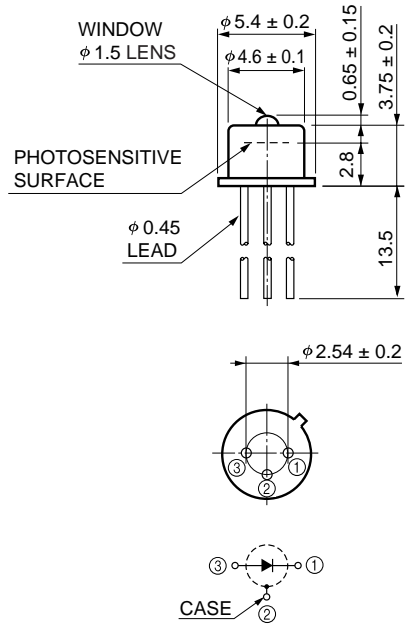
Dimensional outlines (unit: mm)

① S5971, S5972, S5973



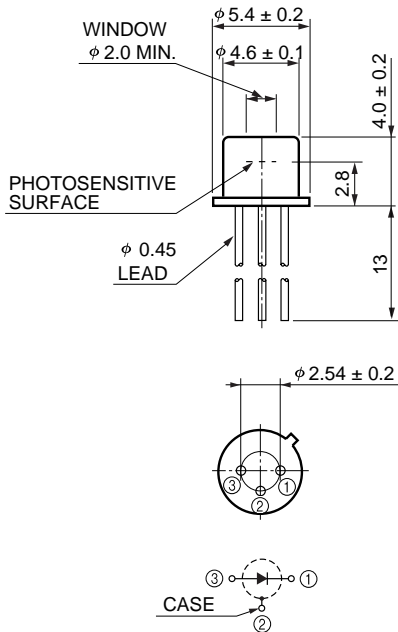
KPINA0022EB

② S5973-01



KPINA0023EA

③ S5973-02



KPINA0061EA

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HAMAMATSU PHOTONICS K.K., Solid State Division

1126-1 Ichino-cho, Hamamatsu City, 435-8558 Japan, Telephone: (81) 53-434-3311, Fax: (81) 53-434-5184, www.hamamatsu.com

U.S.A.: Hamamatsu Corporation: 360 Foothill Road, P.O.Box 6910, Bridgewater, N.J. 08807-0910, 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) 08152-3750, Fax: (49) 08152-2658

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: Smidesvägen 12, SE-171 41 Solna, Sweden, Telephone: (46) 8-509-031-00, Fax: (46) 8-509-031-01

Italy: Hamamatsu Photonics Italia S.R.L.: Strada della Moia, 1/E, 20020 Arese, (Milano), Italy, Telephone: (39) 02-935-81-733, Fax: (39) 02-935-81-741