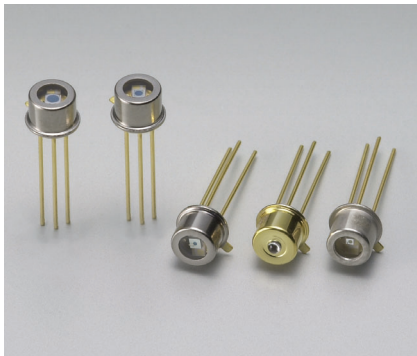


Si PIN photodiodes



S5971

S5972

S5973 series

High-speed photodiodes (S5973 series: 1 GHz)

The 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. The 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)**

Structure / Absolute maximum ratings

Type no.	Dimensional outline/ Window material*1	Package (mm)	Photosensitive area size (mm)	Effective photosensitive 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							

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

Type no.	Spectral response range λ (nm)	Peak sensitivity wavelength λ_p (nm)	Photosensitivity 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)	Cutoff frequency f_c (GHz)	Terminal capacitance C_t f=1 MHz (pF)	Noise equivalent power NEP $V_R=10$ V $\lambda=\lambda_p$ (W/Hz ^{1/2})
			λ_p	660 nm	780 nm	830 nm		Typ. (nA)	Max. (nA)				
S5971	320 to 1060	920	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	0.55	0.42	0.01*3	0.5*3		0.5*3		3.1 × 10 ⁻¹⁵
S5973		760	0.52	0.44	0.51	0.47	0.09	0.001*4	0.1*4	1*4	1.6*4	1.1 × 10 ⁻¹⁵ *4	
S5973-01					0.42								
S5973-02					0.4	0.3*2	0.42						0.37

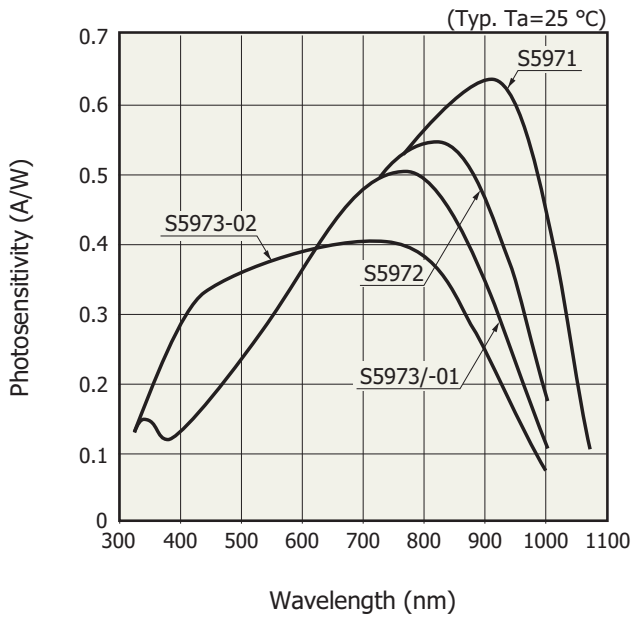
*1: Window material K: borosilicate glass, L: lens type borosilicate glass

*2: $\lambda=410$ nm

*3: $V_R=10$ V

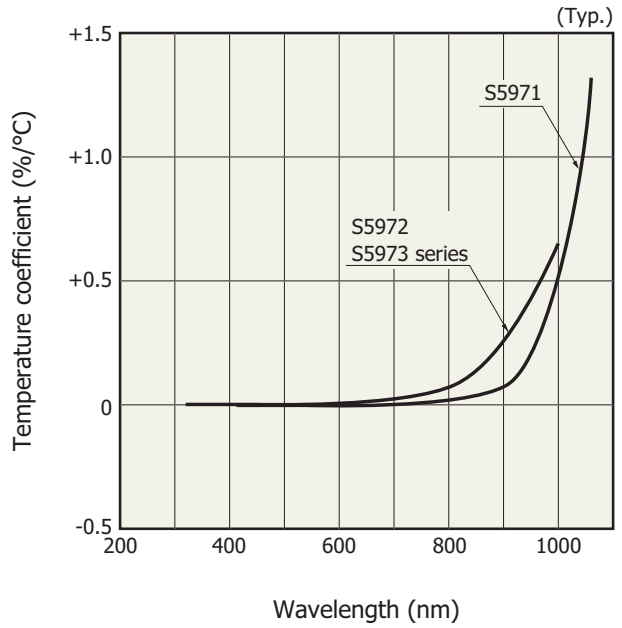
*4: $V_R=3.3$ V

Spectral response



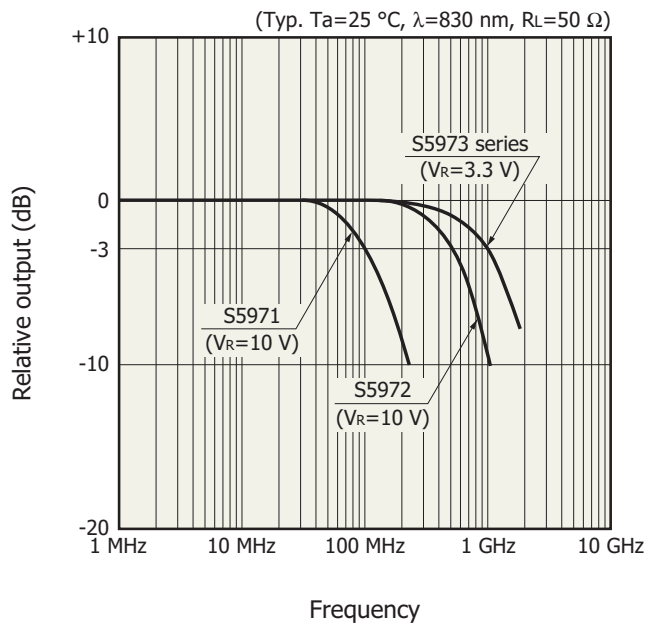
KPINB0157EB

Photosensitivity temperature characteristics



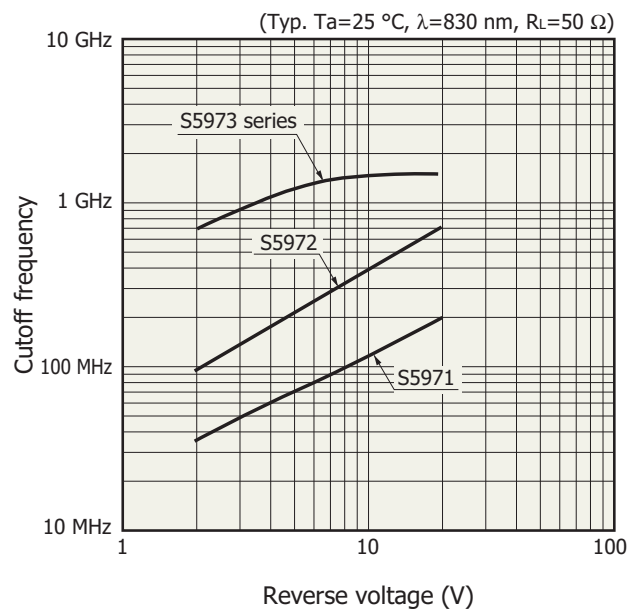
KPINB0158EA

Frequency response



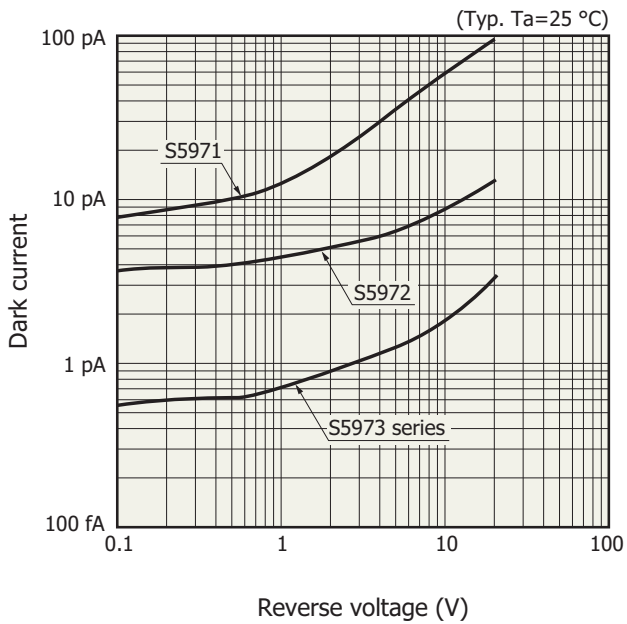
KPINB0159EB

Cutoff frequency vs. reverse voltage



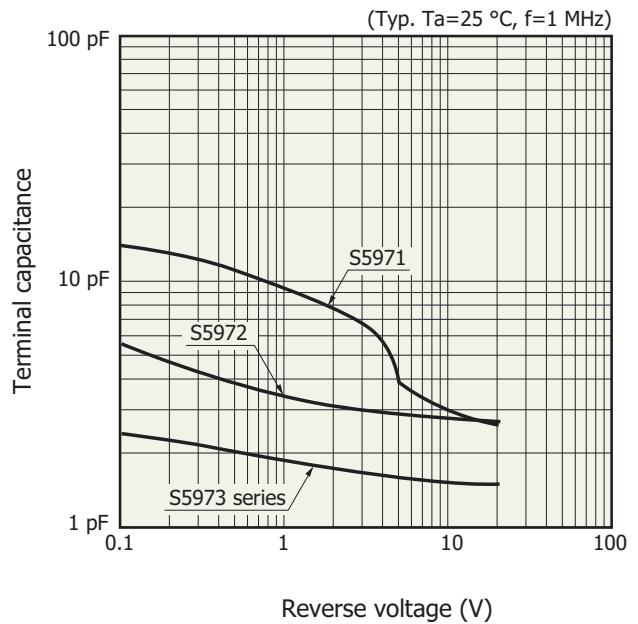
KPINB0160EB

Dark current vs. reverse voltage



KPINB0161EA

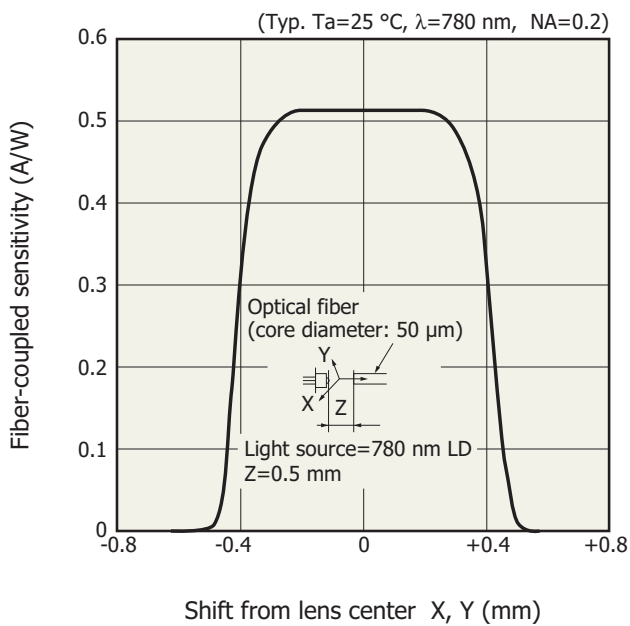
Terminal capacitance vs. reverse voltage



KPINB0162EA

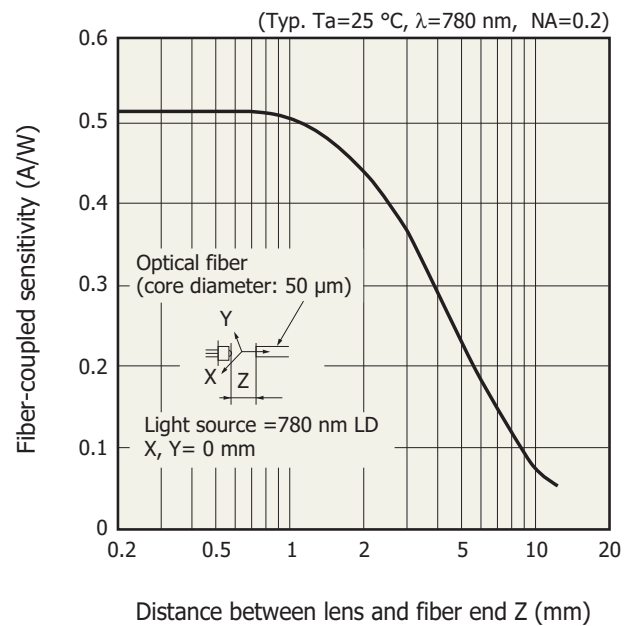
Fiber coupling characteristics (S5973-01)

X, Y direction



KPINB0088EA

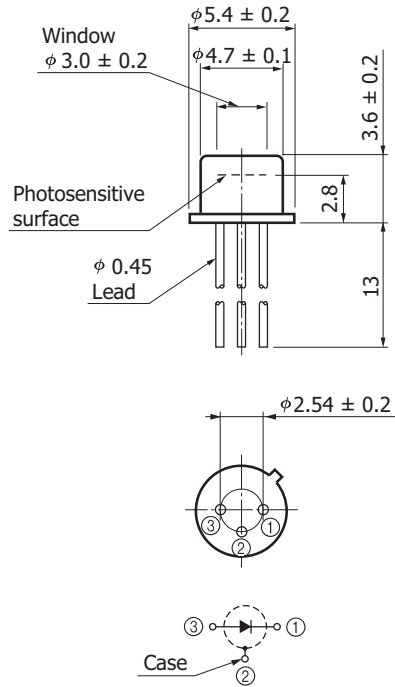
Z direction



KPINB0089EA

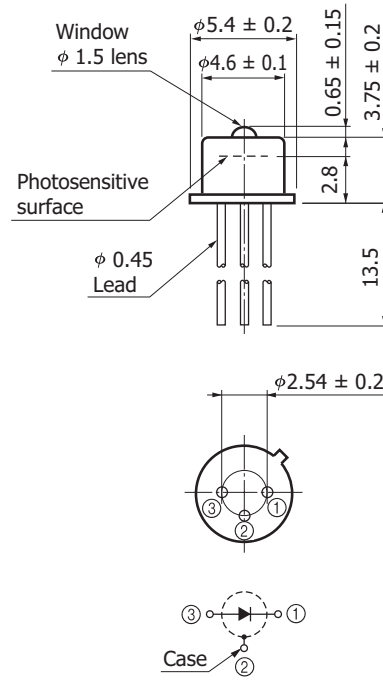
Dimensional outlines (unit: mm)

(1) S5971, S5972, S5973



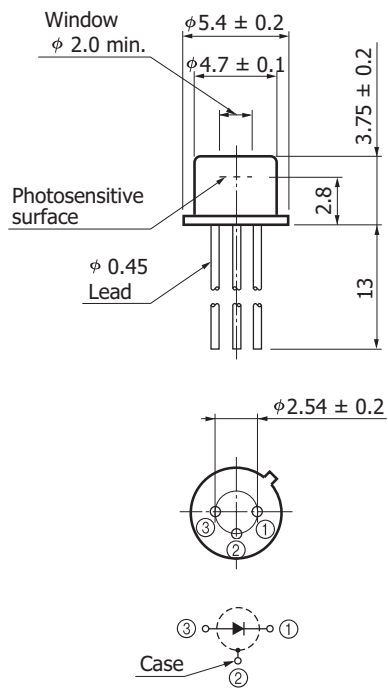
KPINA0022EB

(2) S5973-01



KPINA0023EA

(3) S5973-02



KPINA0061EB

Related information

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

■ Precautions

- Disclaimer
- Metal, ceramic, plastic package products

■ Technical information

- Si photodiode / Application circuit example

Information described in this material is current as of June, 2019.

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