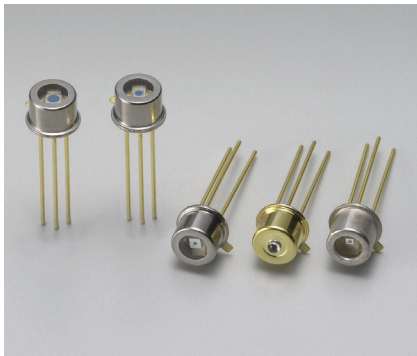


Si PIN photodiodes



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 ΔT_D (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		0.42		0.01*3	0.5*3	0.5*3	3.1 × 10 ⁻¹⁵				
S5973		760	0.52	0.4	0.42	0.37	0.09	0.001*4	0.1*4	1.15	1*4	1.6*4	1.1 × 10 ⁻¹⁵ *4							
S5973-01																				
S5973-02													0.4	0.3*2	0.42	0.37	0.07			1.9 × 10 ⁻¹⁵ *2 *4

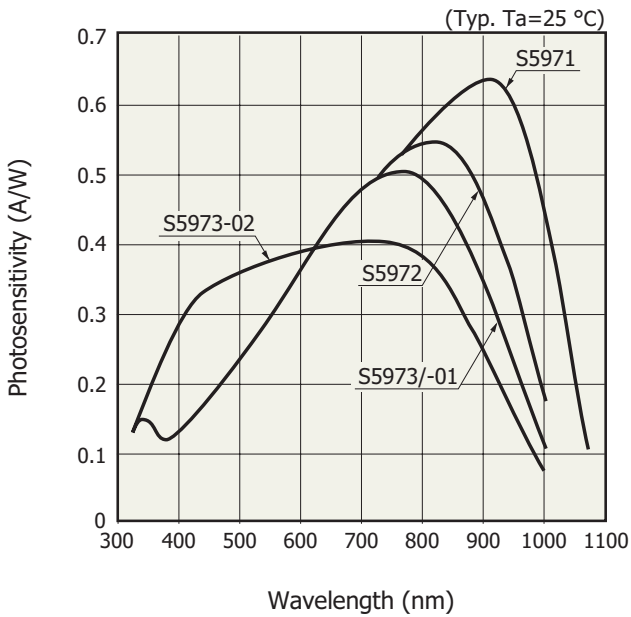
*1: Window material K: borosilicate glass, L: lens type borosilicate glass

*2: $\lambda=410$ nm

*3: $V_R=10$ V

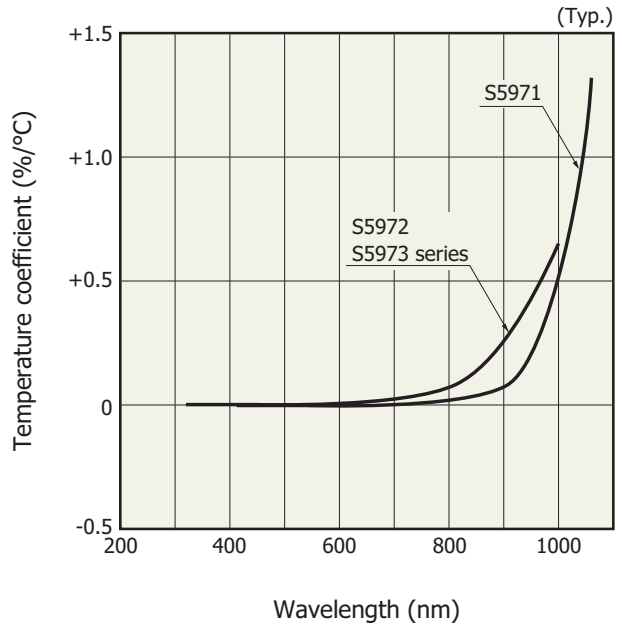
*4: $V_R=3.3$ V

Spectral response



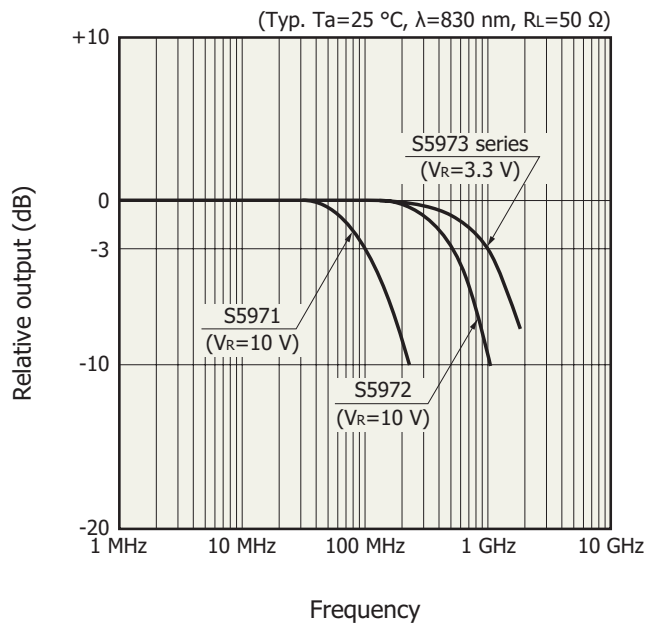
KPINB0157EB

Photosensitivity temperature characteristics



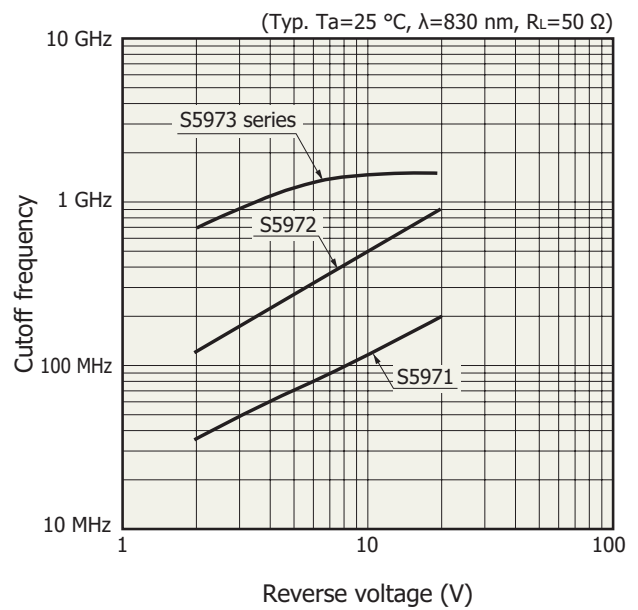
KPINB0158EA

Frequency response



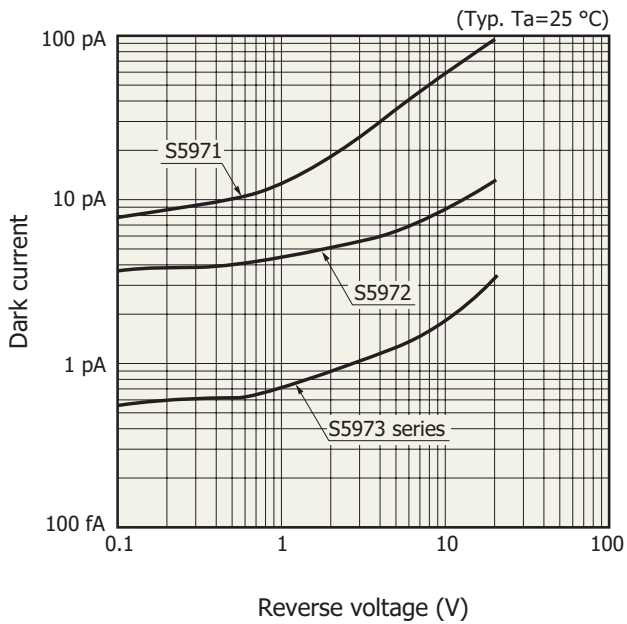
KPINB0159EB

Cutoff frequency vs. reverse voltage

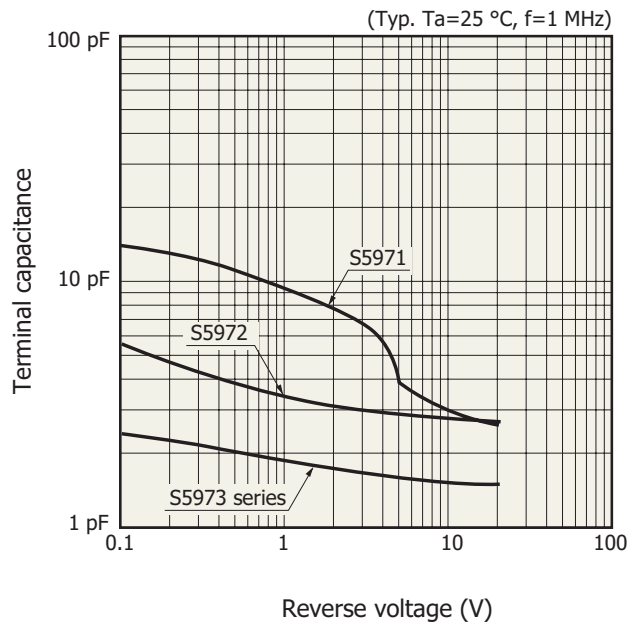


KPINB0160EC

Dark current vs. reverse voltage

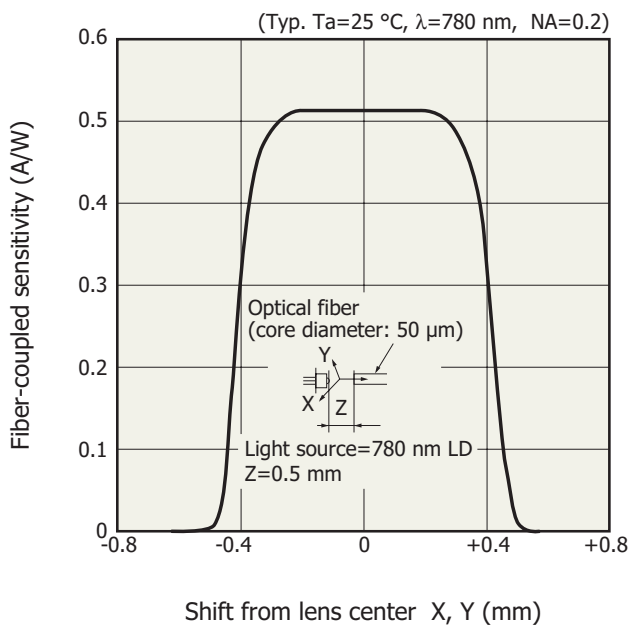


Terminal capacitance vs. reverse voltage

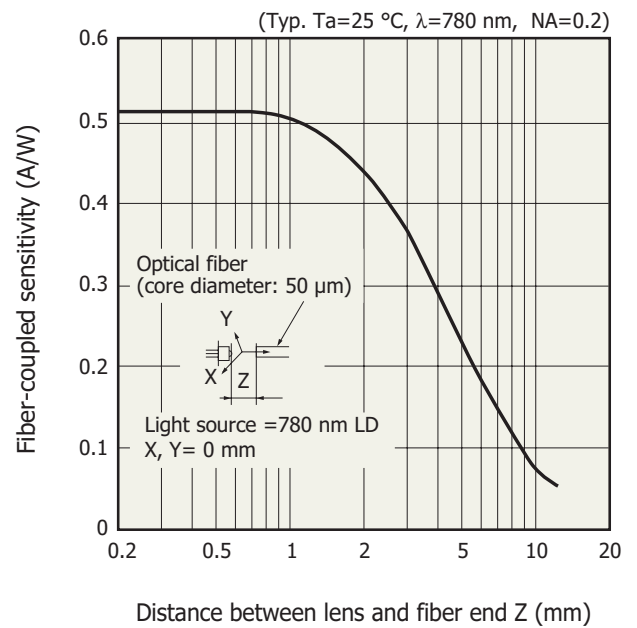


Fiber coupling characteristics (S5973-01)

X, Y direction

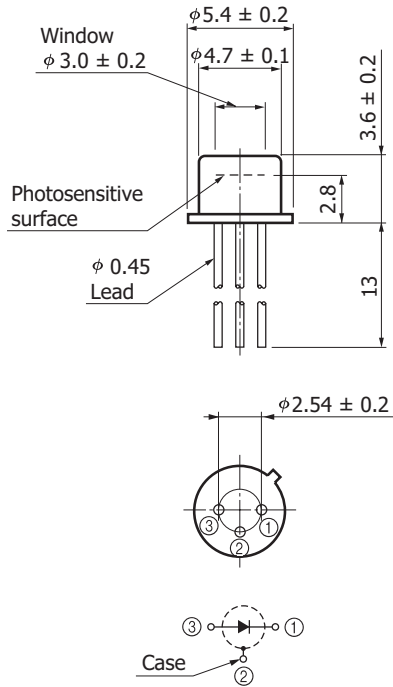


Z direction



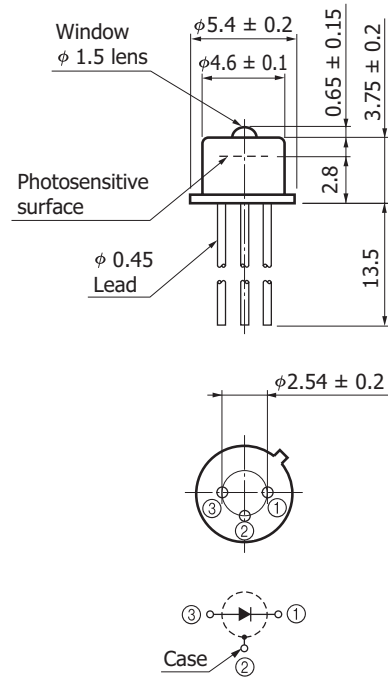
Dimensional outlines (unit: mm)

① S5971, S5972, S5973



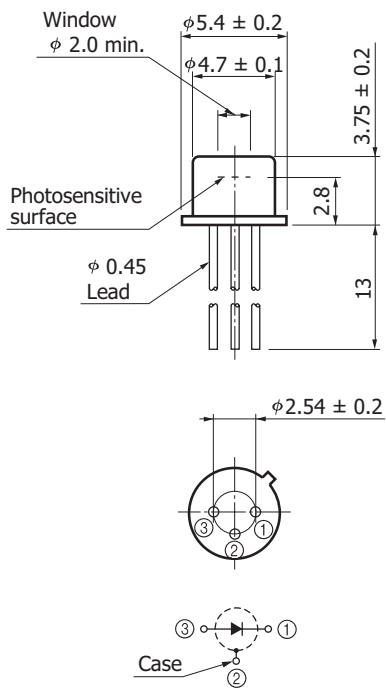
KPINA0022EB

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 November, 2019.

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