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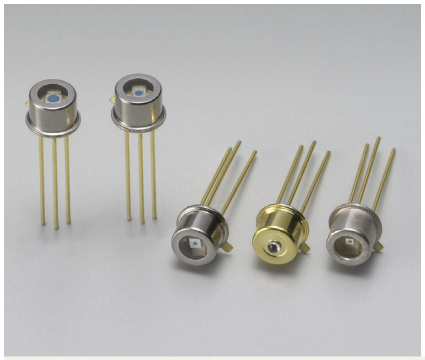
Si PIN photodiodes



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 % (λ=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 (mm²)	Absolute maximum ratings			
					Reverse voltage V_R Max. (V)	Power dissipation P (mW)	Operating temperature Topr (°C)	Storage temperature Tstg (°C)
S5971	①/K	TO-18	φ1.2	1.1	20	50	-40 to +100	-55 to +125
S5972			φ0.8	0.5				
S5973			φ0.4	0.12				
S5973-01	②/L							
S5973-02	③/K							

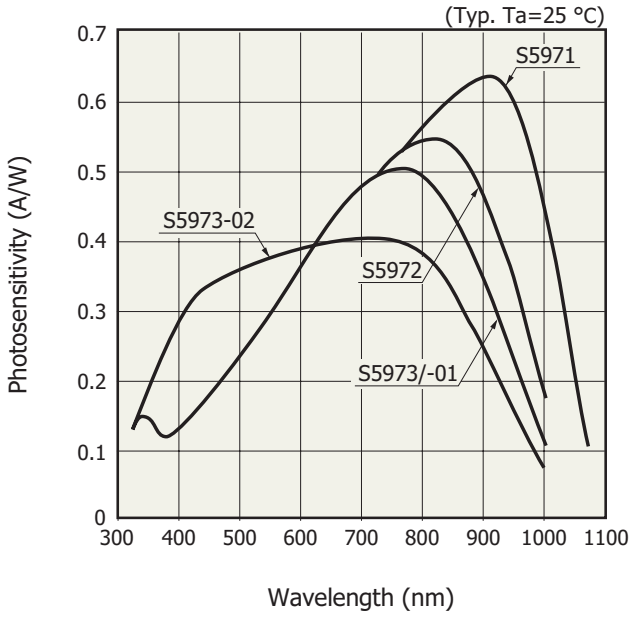
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

Electrical and optical characteristics

Type no.	Spectral response range λ (nm)	Peak sensitivity wavelength λp (nm)	Photosensitivity S (A/W)				Short circuit current Isc 100 lx (μA)	Dark current I_D		Temp. coefficient of I_D ΔT_{ID} (times/°C)	Cutoff frequency fc (GHz)	Terminal capacitance Ct f=1 MHz (pF)	Noise equivalent power NEP V_R=10 V λ=λp (W/Hz$^{1/2}$)
			λp	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	320 to 1000	800	0.57			0.55	0.42	0.01*3	0.5*3		0.5*3		3.1×10^{-15}
S5973		760	0.52		0.51	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	0.07						1.9×10^{-15} *2 *4

*1: Window material K: borosilicate glass, L: lens type borosilicate glass
*2: λ=410 nm
*3: V_R=10 V
*4: V_R=3.3 V

Spectral response



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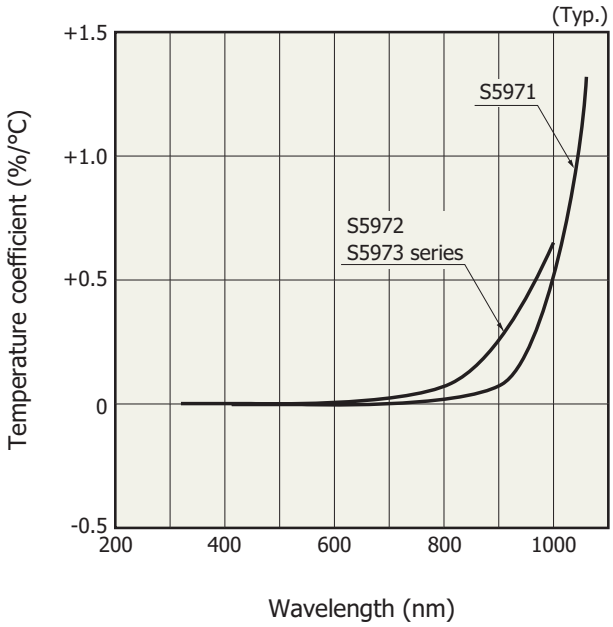
Photosensitivity temperature characteristics



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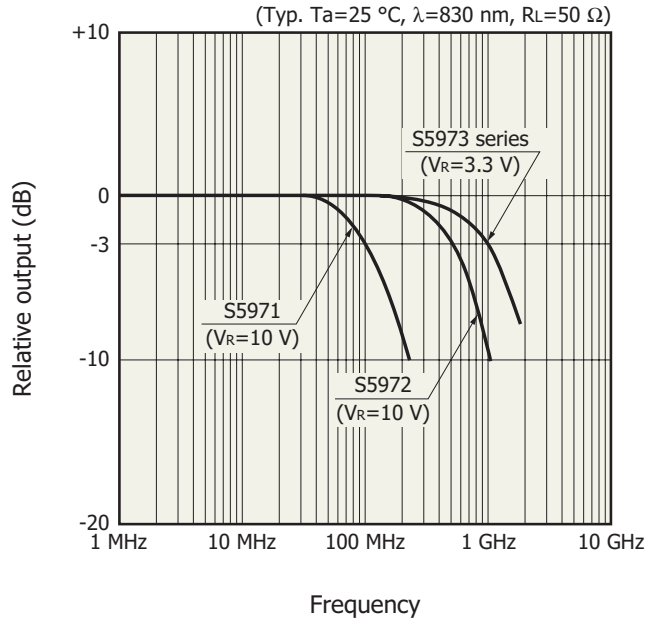
Frequency response



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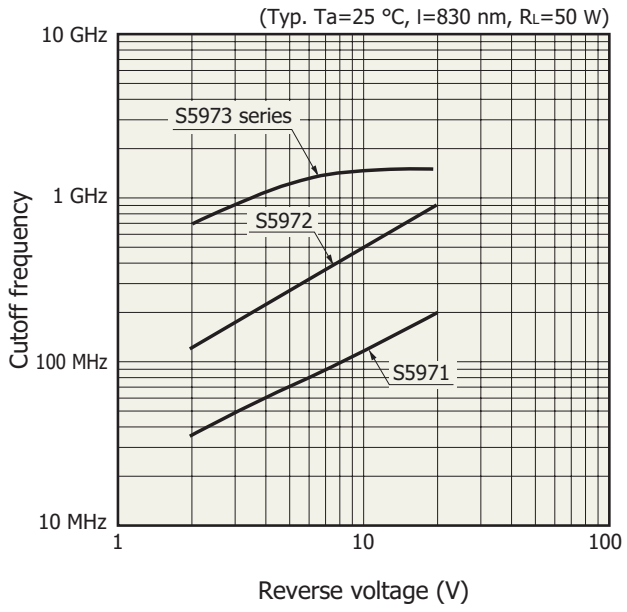
Cutoff frequency vs. reverse voltage



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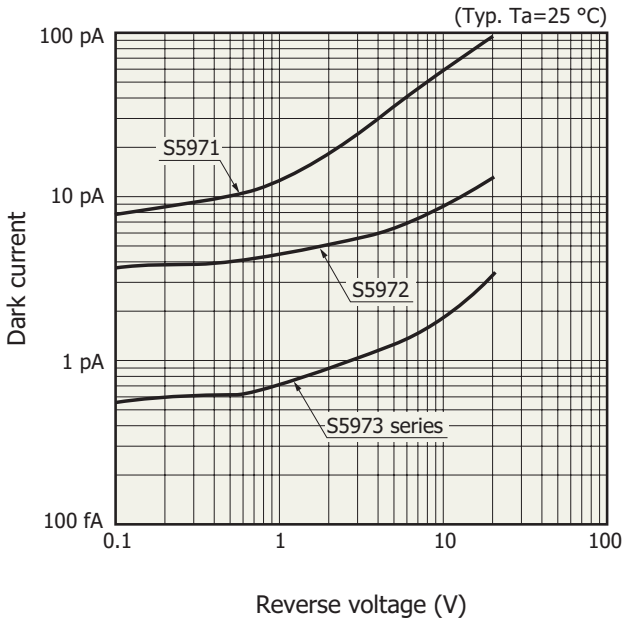
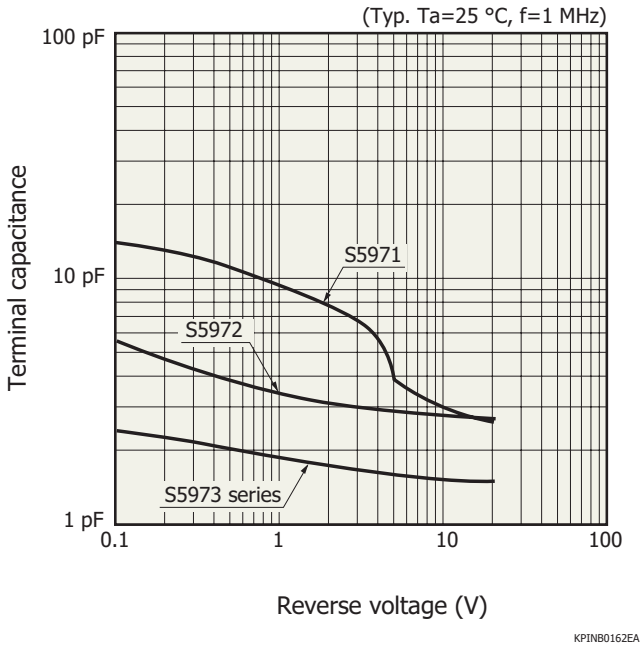
Dark current vs. reverse voltage

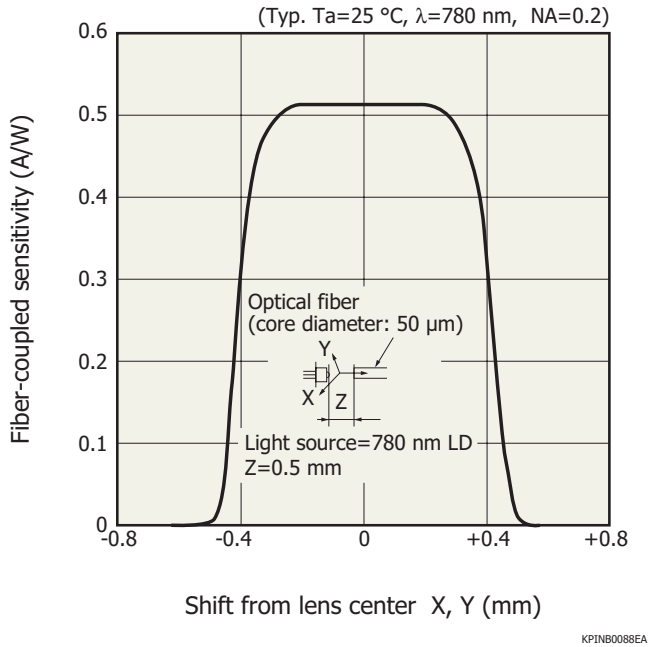


Terminal capacitance vs. reverse voltage

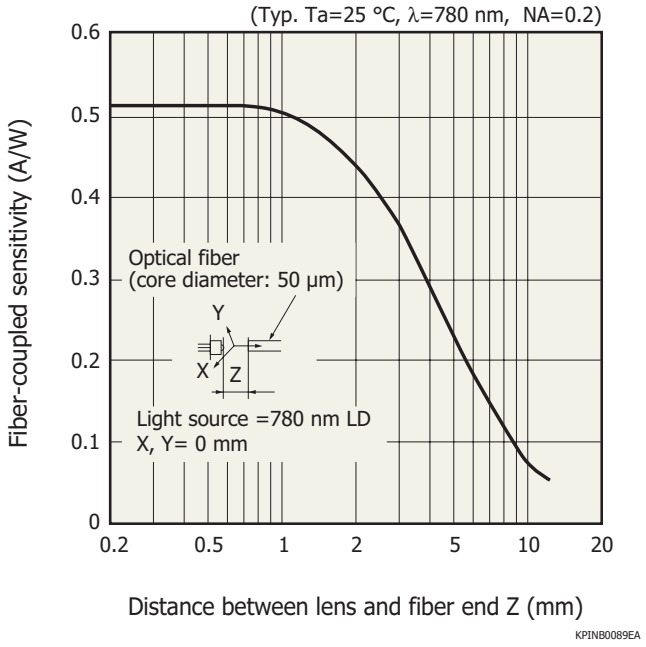


Fiber coupling characteristics (S5973-01)

X, Y direction

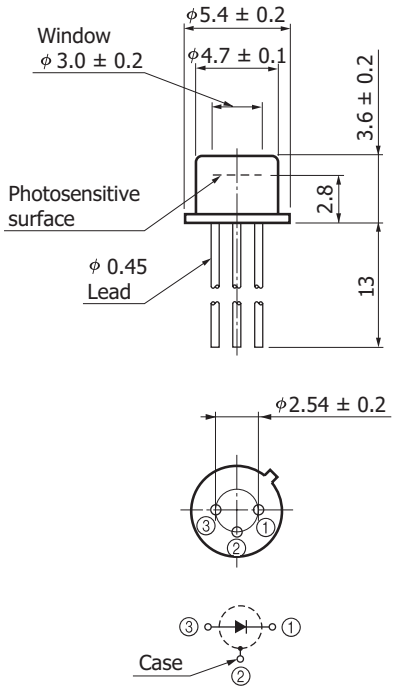


Z direction



Dimensional outlines (unit: mm)

① S5971, S5972, S5973



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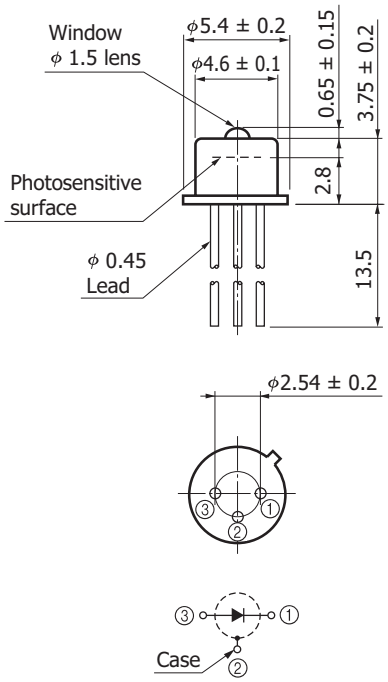
② S5973-01



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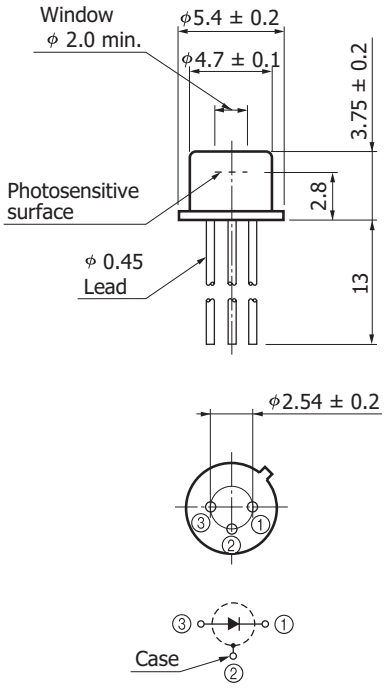
③ S5973-02



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Related information

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

■ Precautions
· Disclaimer
· Metal, ceramic, plastic package products

■ Technical information
· Si photodiode / Application circuit example

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