Si PIN photodiode
S5971, S5972, S5973 series

High-speed photodiodes (S5973 series: 1 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 % (λ=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 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							

■ Electrical and optical characteristics

Type No.	Spectral response range λ (nm)	Peak sensitivity wavelength λp (nm)	Photo sensitivity S (A/W)				Short circuit current Isc 100 *lx* (μA)	Dark current ID		Temp. coefficient of ID TCID (times/°C)	Cut-off frequency fc (GHz)	Terminal capacitance Ct f=1 MHz (pF)	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	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	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			0.45	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: λ=410 nm
*3: V_R=10 V
*4: V_R=3.3 V

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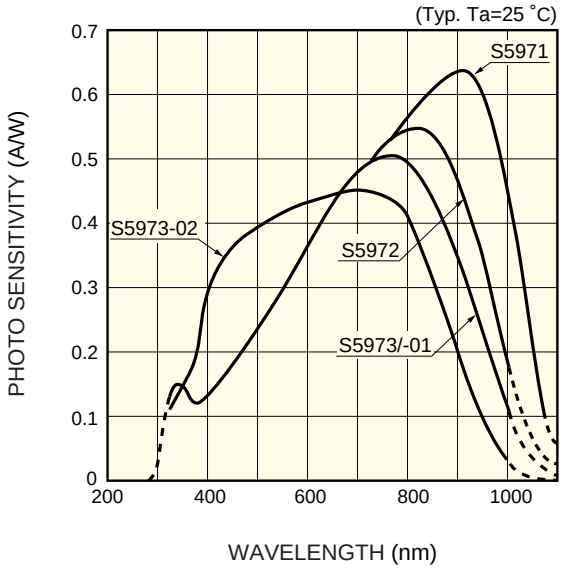
■ Spectral response



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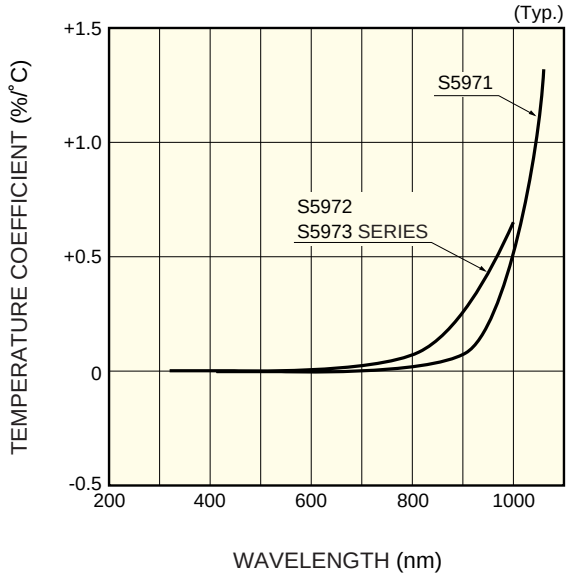
■ Photo sensitivity temperature characteristics



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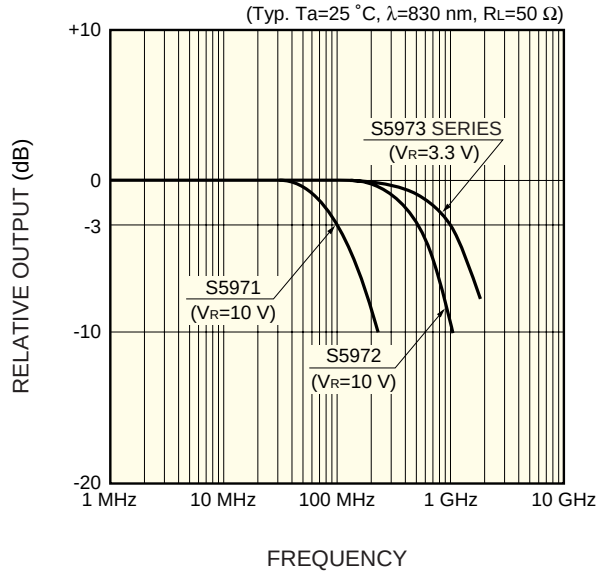
■ Frequency response



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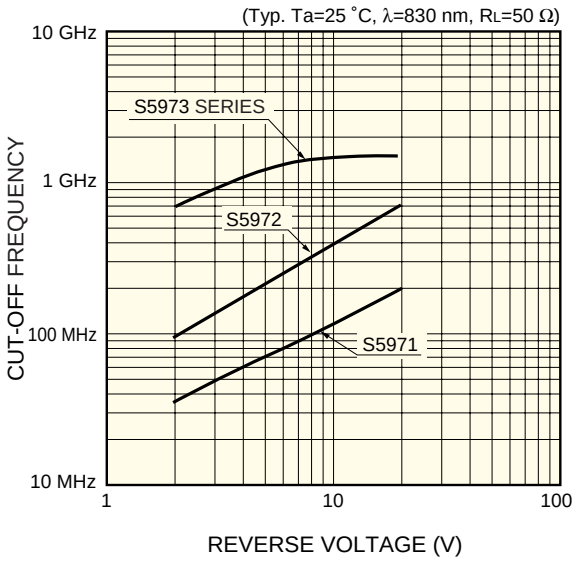
■ Cut-off frequency vs. reverse voltage



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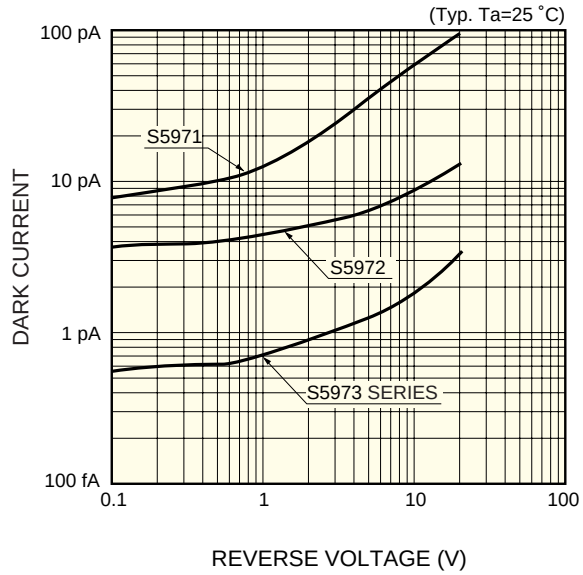
■ Dark current vs. reverse voltage



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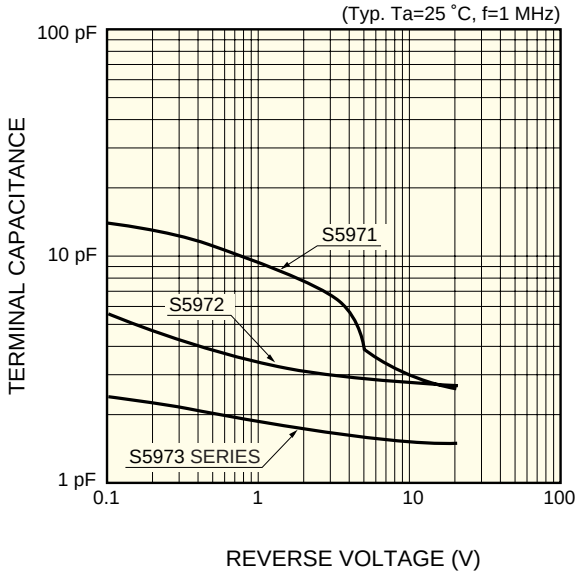
■ Terminal capacitance vs. reverse voltage



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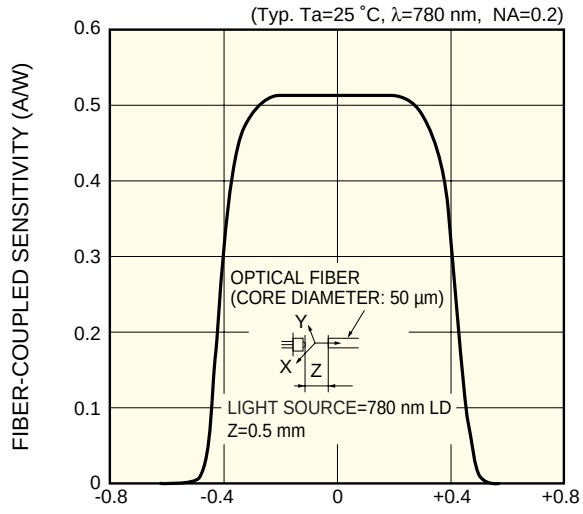
■ Fiber coupling characteristics (S5973-01)

X, Y direction



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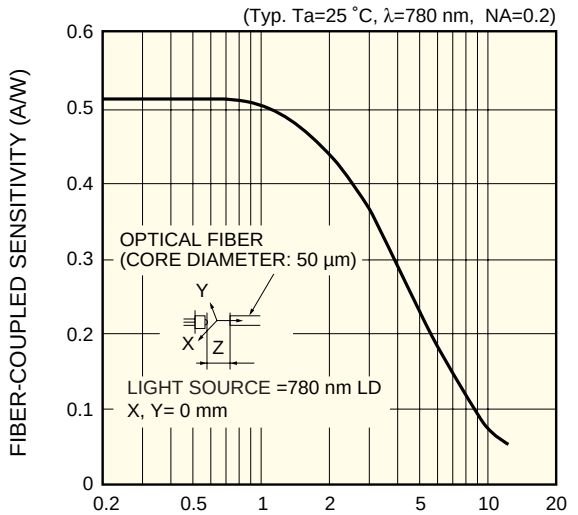
Z direction



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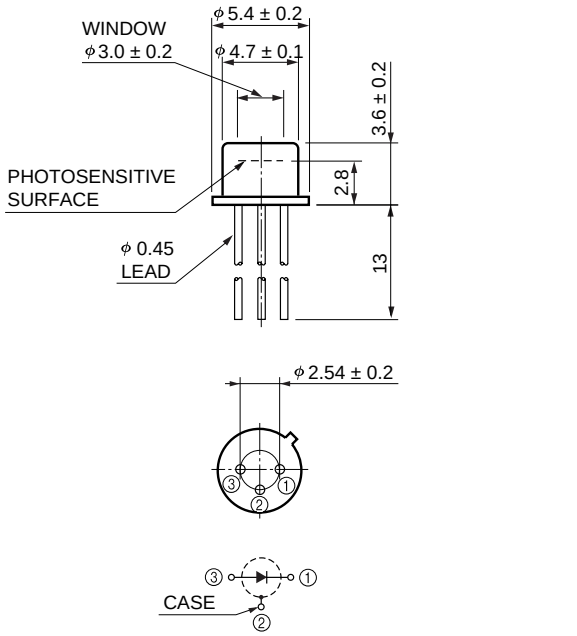
■ Dimensional outlines (unit: mm)

① S5971, S5972, S5973



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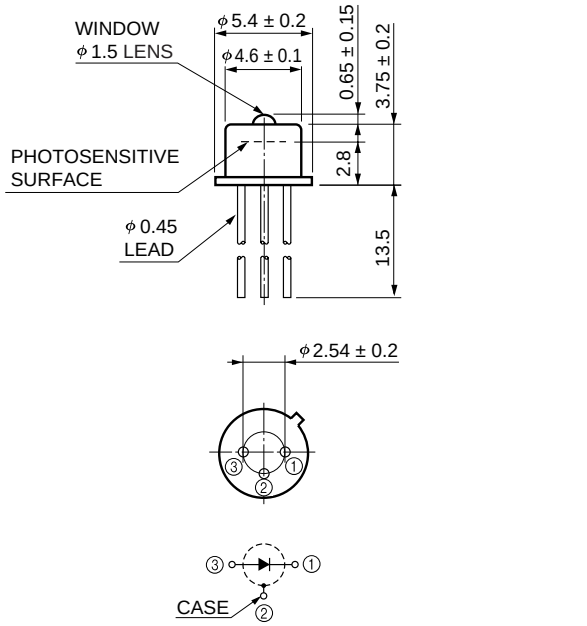
② S5973-01



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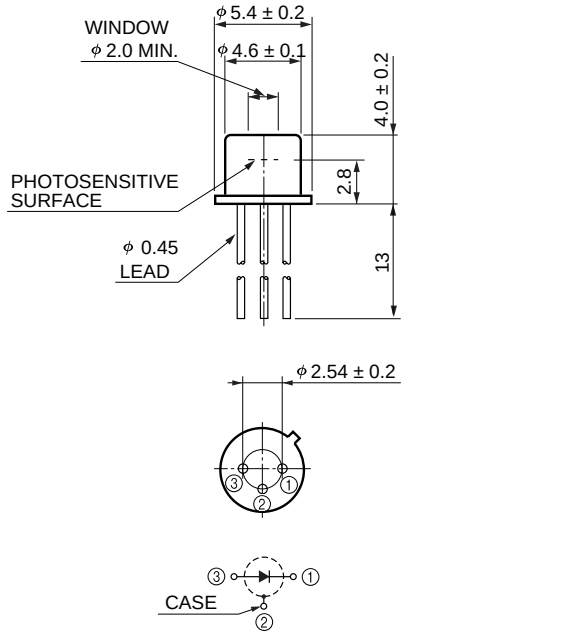
③ S5973-02



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