

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		3.1 × 10 ⁻¹⁵		
S5973	320 to 1000	760	0.52	0.42	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

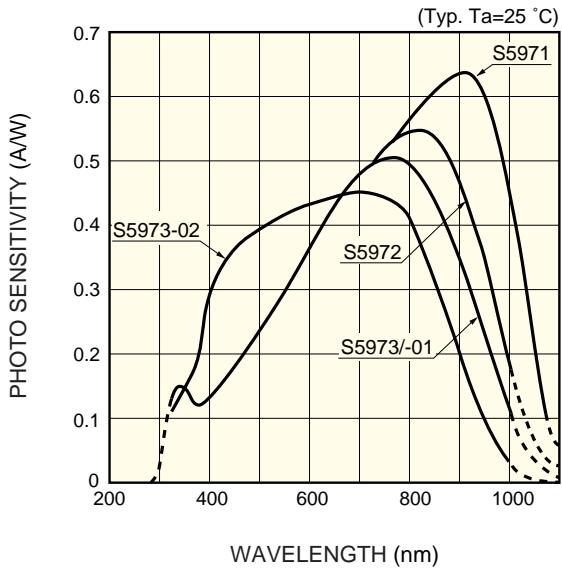
*1: Window material K: borosilicate glass, L: lens type borosilicate glass

*2: $\lambda=410$ nm

*3: $V_R=10$ V

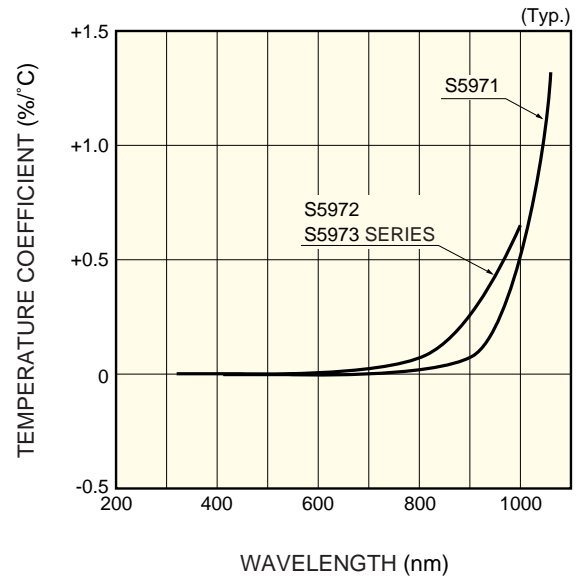
*4: $V_R=3.3$ V

■ Spectral response



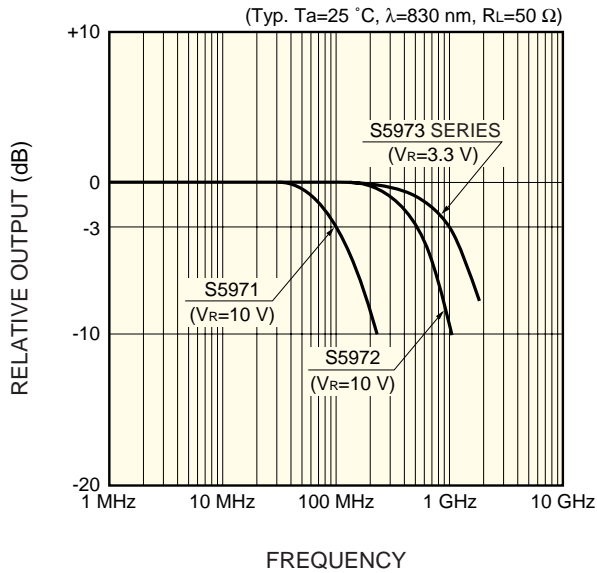
KPINB0157EA

■ Photo sensitivity temperature characteristics



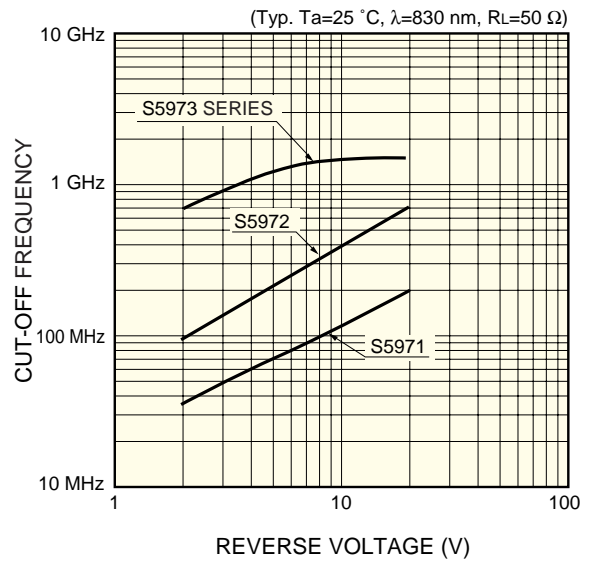
KPINB0158EA

■ Frequency response



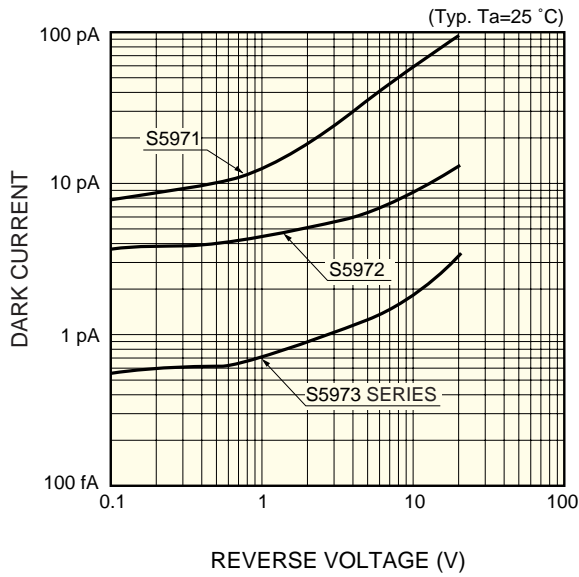
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■ Cut-off frequency vs. reverse voltage



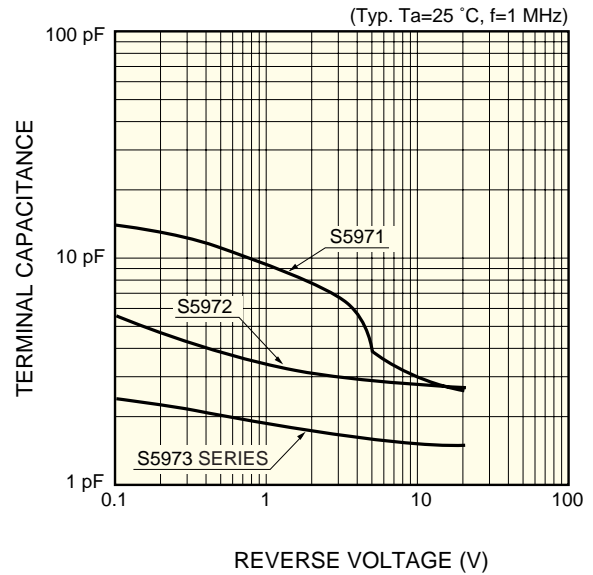
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■ Dark current vs. reverse voltage



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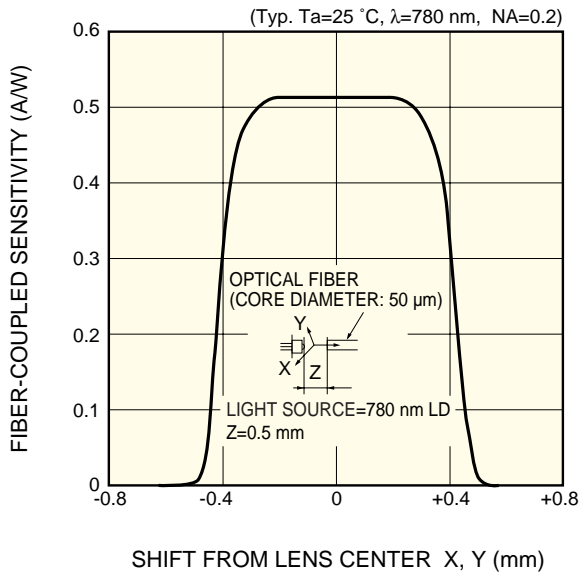
■ Terminal capacitance vs. reverse voltage



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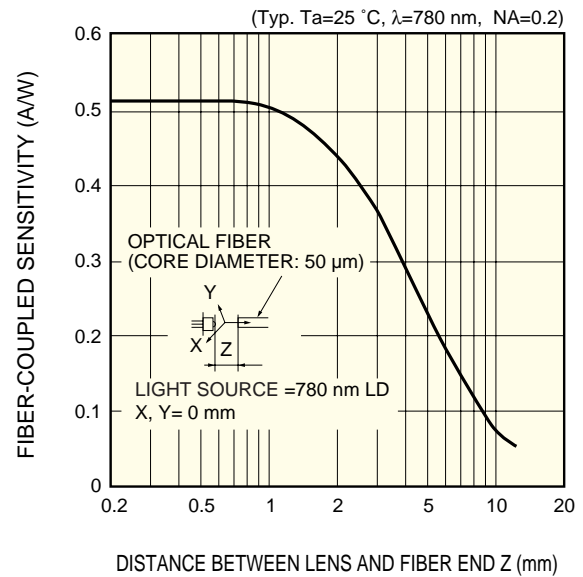
■ Fiber coupling characteristics (S5973-01)

X, Y direction



KPINB0088EA

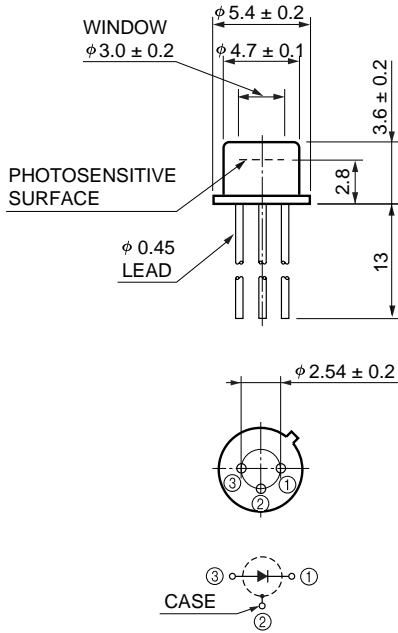
Z direction



KPINB0089EA

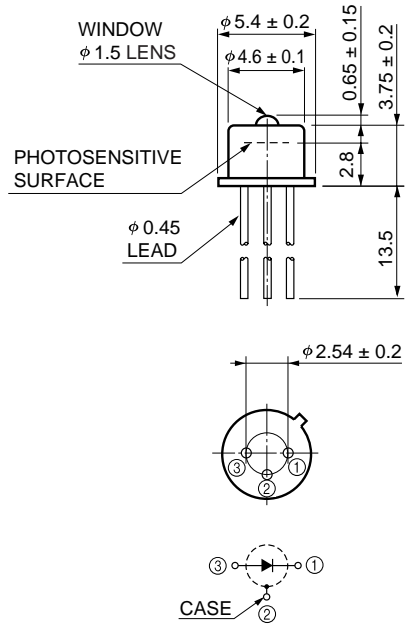
■ Dimensional outlines (unit: mm)

① S5971, S5972, S5973



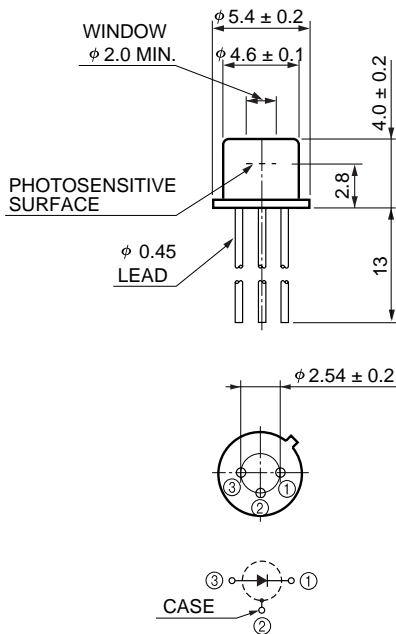
KPINA0022EB

② S5973-01



KPINA0023EA

③ S5973-02



KPINA0061EA

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