

# 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 % ( $\lambda=410$  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 <sup>2</sup> )	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 $\lambda$ (nm)	Peak sensitivity wavelength $\lambda_p$ (nm)	Photo sensitivity S (A/W)			Short circuit current $I_{sc}$ 100 lx ( $\mu$ 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 <sup>1/2</sup> )						
			$\lambda_p$	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	$7.4 \times 10^{-15}$					
S5972		800	0.57											0.55	0.42	0.01 *3	0.5 *3	0.5 *3
S5973	320 to 1000	760	0.52	0.51	0.47	0.09	0.001 *4	0.1 *4	1 *4	1.6 *4	1.1 *4	$1.1 \times 10^{-15}$ *4						
S5973-01													0.42					
S5973-02													0.45	0.3 *2	0.42	0.37	0.09	

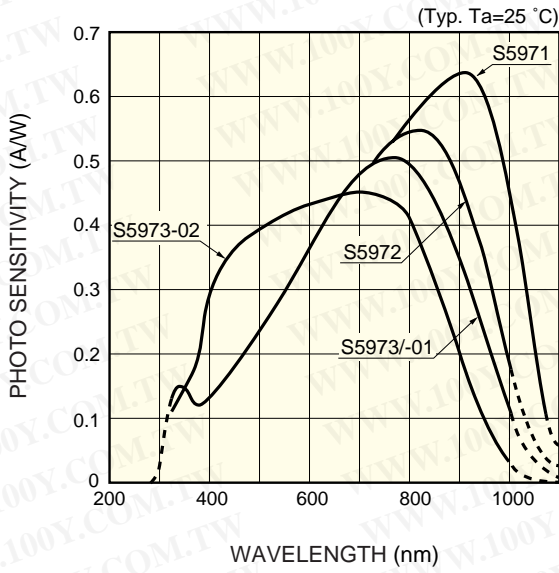
\*1: Window material K: borosilicate glass, L: lens type borosilicate glass

\*2:  $\lambda=410$  nm

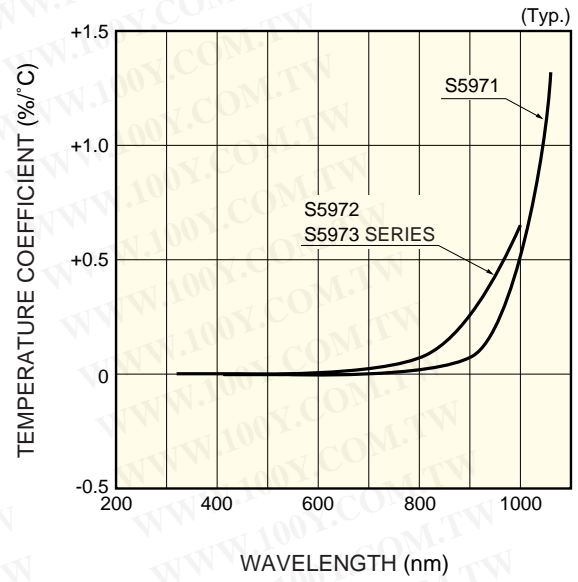
\*3:  $V_R=10$  V

\*4:  $V_R=3.3$  V

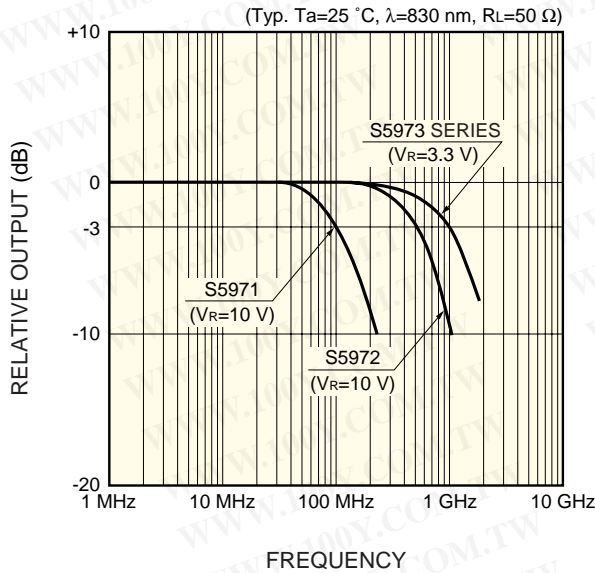
■ Spectral response



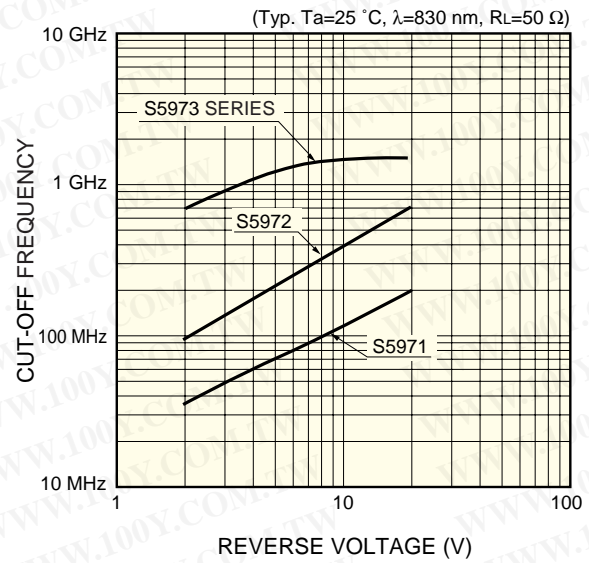
■ Photo sensitivity temperature characteristics



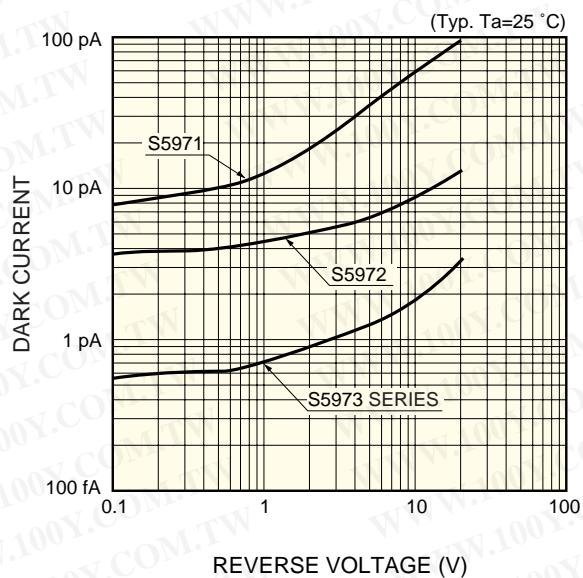
■ Frequency response



■ Cut-off frequency vs. reverse voltage

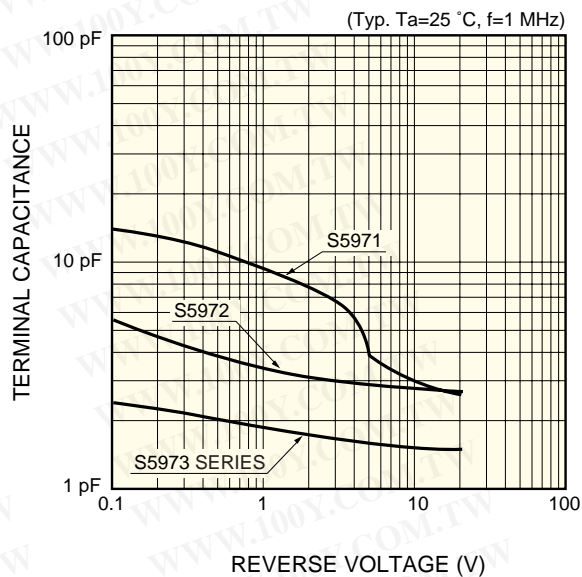


■ Dark current vs. reverse voltage



KPINB0161EA

■ Terminal capacitance vs. reverse voltage

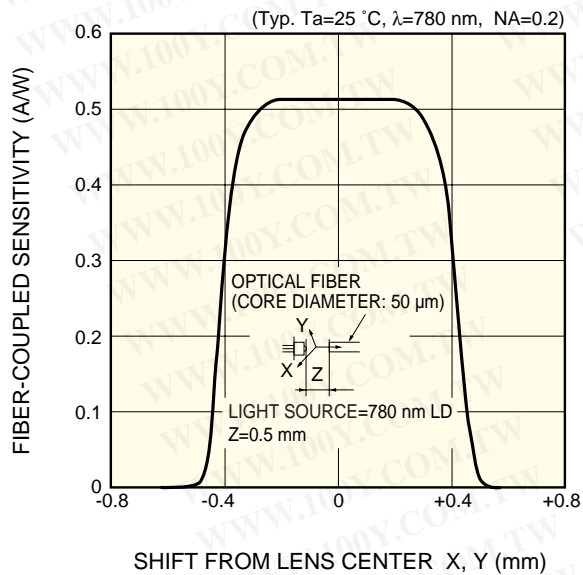


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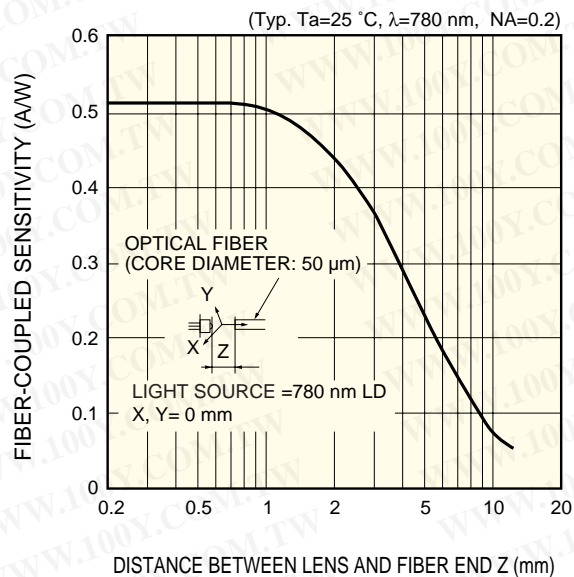
■ Fiber coupling characteristics (S5973-01)

X, Y direction

Z direction



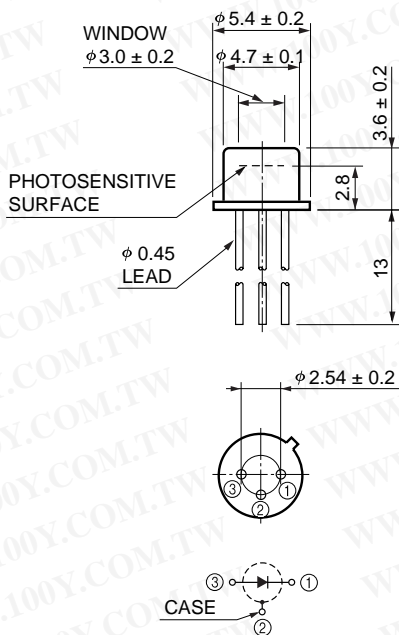
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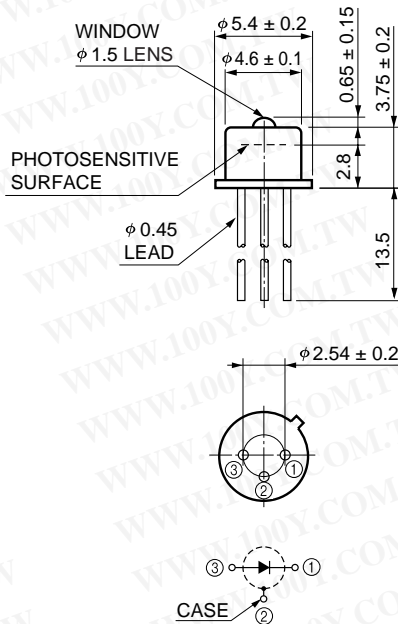
Dimensional outlines (unit: mm)

① S5971, S5972, S5973



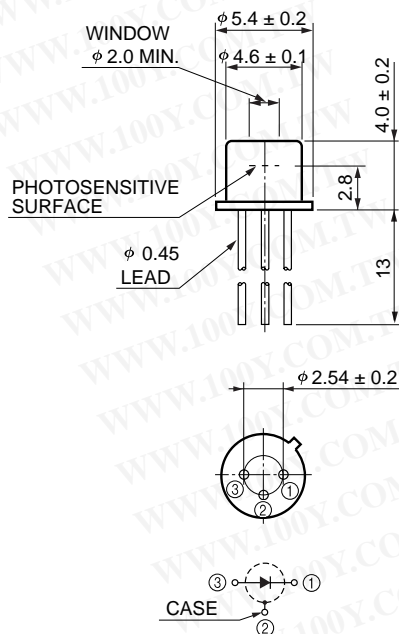
KPINA0022EB

② S5973-01



KPINA0023EA

③ S5973-02



KPINA0061EA

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