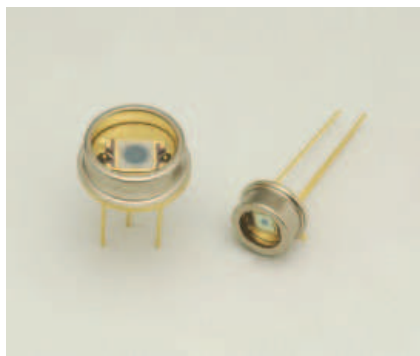


## IR-enhanced Si APD



S11519 series

## Enhanced near IR sensitivity, using a MEMS technology

HAMAMATSU has developed various types of Si detectors that offer enhanced near-infrared sensitivity due to a MEMS structure formed on the back side of the photodiode. The S11519 series are a family of Si APDs with improved sensitivity in the near infrared region.

The S11519 series provides significantly higher sensitivity to YAG laser light (1.06  $\mu\text{m}$ ) compared to our conventional product (S8890 series).

The S11519 series is a low bias operation type with enhanced sensitivity in the near infrared region. Compared to the conventional product S8890 series, the S11519 series has improved various characteristics such as breakdown voltage, dark current, and cut-off frequency.

## Features

- High sensitivity in the near infrared region
- High gain
- Stable operation at low bias

## Applications

- YAG laser monitor
- Long wavelength light detection

## General ratings / absolute maximum ratings

Type no.	Window material*1	Package	Active area size*2 (mm)	Absolute maximum ratings	
				Operating temperature Topr (°C)	Storage temperature Tstg (°C)
S11519-10	K	TO-5	$\phi 1.0$	-20 to +85	-55 to +125
S11519-30	K	TO-8	$\phi 3.0$		

\*1: K=borosilicate glass

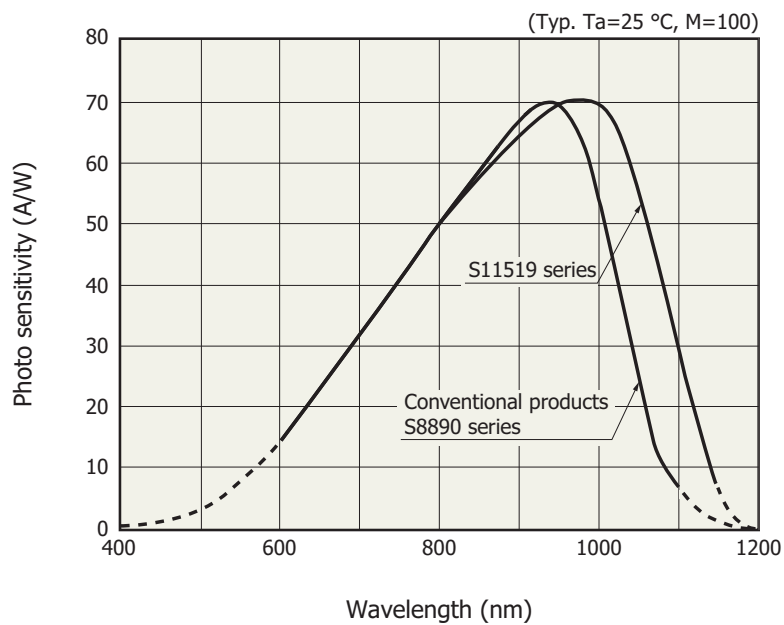
\*2: Area in which a typical gain can be obtained

## Electrical and optical characteristics (Typ. Ta=25 °C, unless otherwise noted)

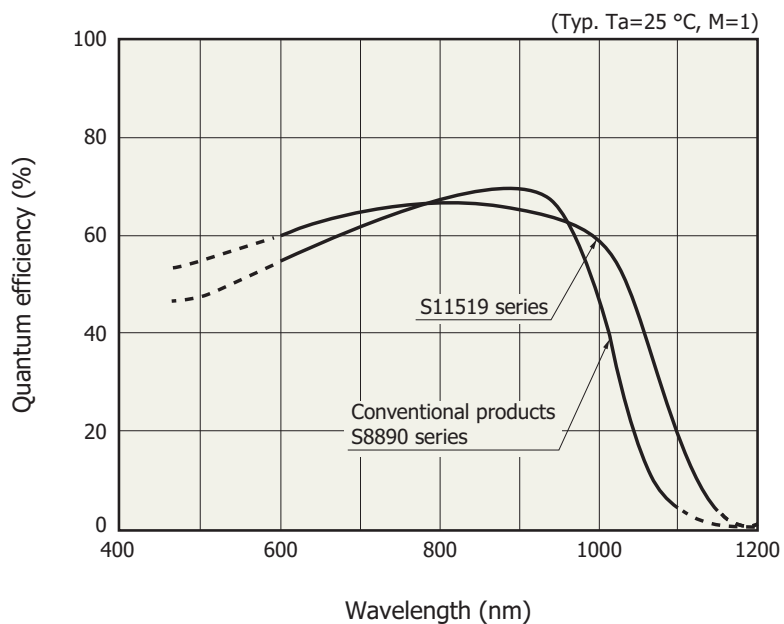
Type no.	Spectral response range $\lambda$ (nm)	Peak sensitivity wavelength*3 $\lambda_p$ (nm)	Breakdown voltage VBR ID=100 $\mu\text{A}$		Temp. coefficient of VBR ID=100 $\mu\text{A}$ (V/°C)	Dark current*3 ID		Terminal capacitance*3 Ct (pF)	Cut-off frequency*3 fc RL=50 $\Omega$ (MHz)	Excess noise figure*3 x $\lambda=890$ nm	Gain M $\lambda=890$ nm
			Typ. (V)	Max. (V)		Typ. (nA)	Max. (nA)				
S11519-10	600 to 1150	960	350	500	1.7	3	30	2.0	400	0.3	100
S11519-30						9	90	12.0	230		

\*3: Values measured at a gain listed in the characteristics table

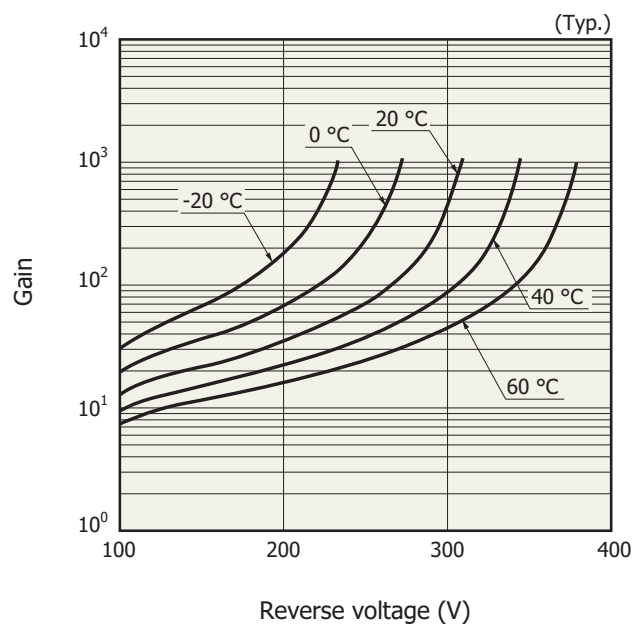
### Spectral response



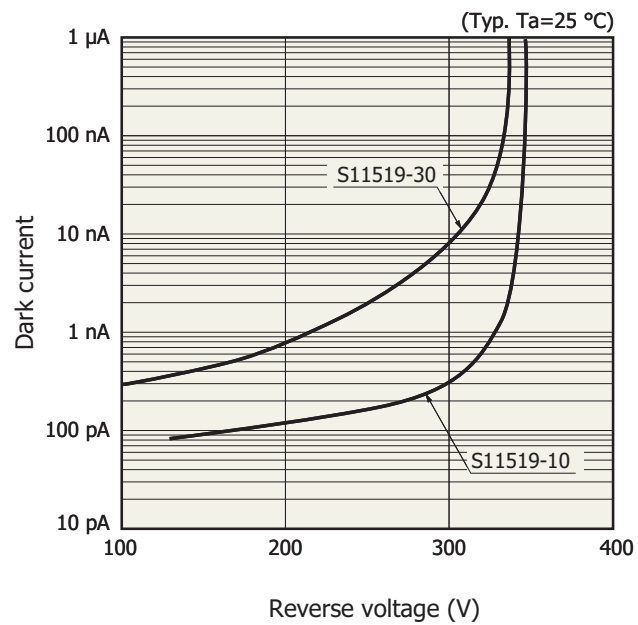
### Spectral response (quantum efficiency)



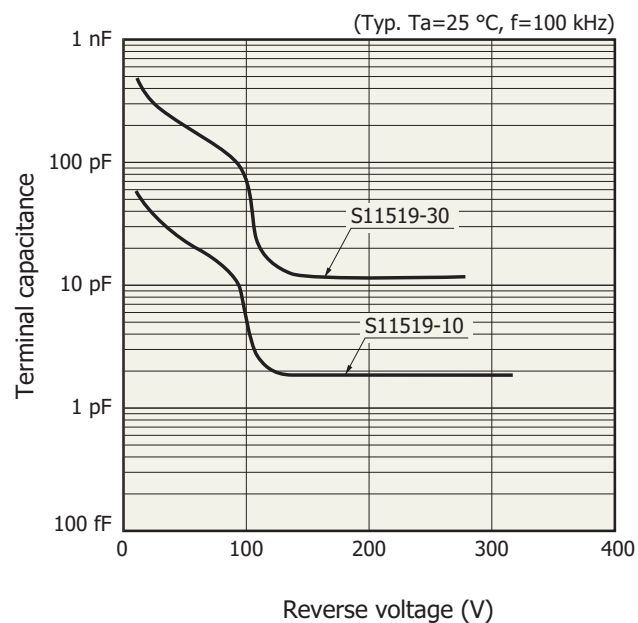
### Gain vs. reverse voltage



### Dark current vs. reverse voltage

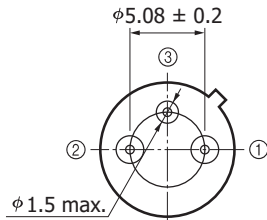
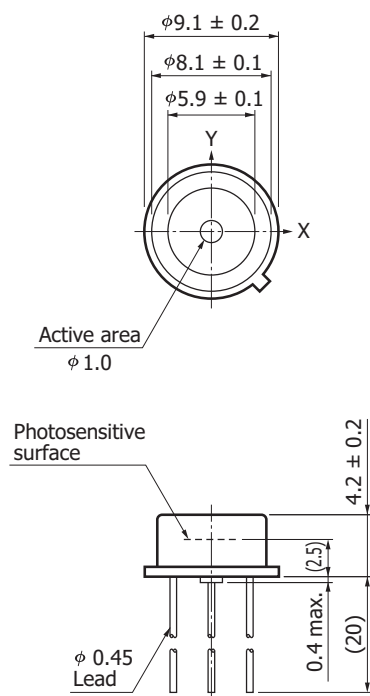


### Terminal capacitance vs. reverse voltage



## Dimensional outlines (unit: mm)

S11519-10

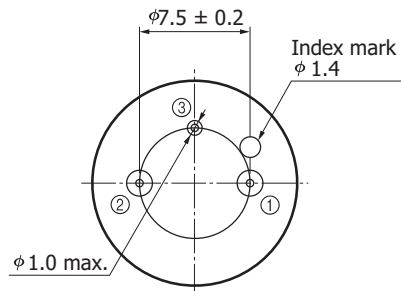
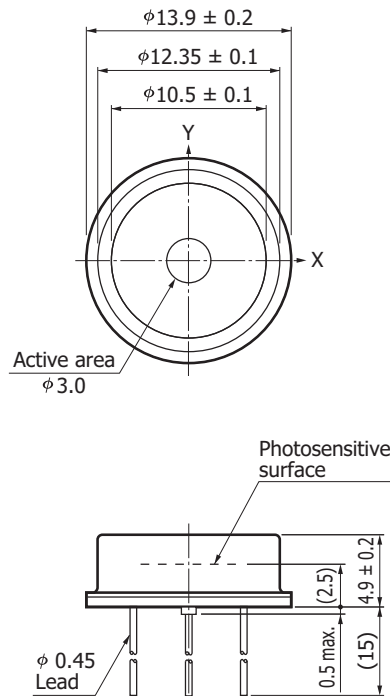


Chip position accuracy with respect to the cap center  
X, Y  $\leq \pm 0.3$

The glass window may extend a maximum of 0.2 mm beyond the upper surface of the cap.

KP1NA0024EA

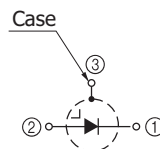
S11519-30



Chip position accuracy with respect to the cap center  
X, Y  $\leq \pm 0.4$

The glass window may extend a maximum of 0.2 mm beyond the upper surface of the cap.

KP1NA0025EA



Information furnished by HAMAMATSU is believed to be reliable. However, no responsibility is assumed for possible inaccuracies or omissions.

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Type numbers of products listed in the specification sheets or supplied as samples may have a suffix "(X)" which means tentative specifications or a suffix "(Z)" which means developmental specifications. ©2010 Hamamatsu Photonics K.K.

# HAMAMATSU

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