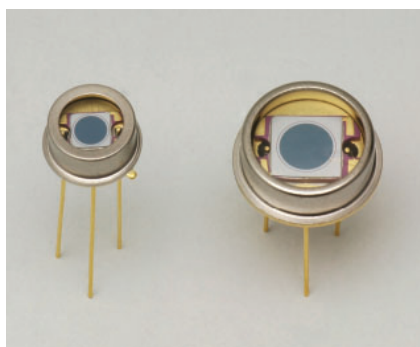


IR-enhanced Si PIN photodiodes

S11499 series



**Large area, 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 S11499 series is a family of Si PIN photodiodes with drastically improved sensitivity in the near infrared region at wavelengths longer than 900 nm. Compared to our conventional product, the S11499 series has much higher sensitivity to YAG laser light (1.06 μm). It also offers improved temperature characteristics of sensitivity at wavelengths longer than 950 nm.

Features

- **High sensitivity: 0.6 A/W ($\lambda=1060$ nm)**
- **Large active area: $\phi 5.0$ mm (S11499-01)**
- **High reliability package: TO-5/TO-8 metal package**

Applications

- **YAG laser monitor**

General ratings

Parameter	S11499	S11499-01	Unit
Package	TO-5	TO-8	-
Active area	$\phi 3.0$	$\phi 5.0$	mm

Absolute maximum ratings

Parameter	Symbol	Condition	S11499	S11499-01	Unit
Reverse voltage	V_R max.	$T_a=25$ °C	30		V
Operating temperature	T_{opr}		-40 to +100		°C
Storage temperature	T_{stg}		-55 to +125		°C

Electrical and optical characteristics ($T_a=25$ °C)

Parameter	Symbol	Condition	S11499			S11499-01			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Spectral response range	λ		-	360 to 1140	-	-	360 to 1140	-	nm
Peak sensitivity wavelength	λ_p		-	1000	-	-	1000	-	nm
Photo sensitivity	S	$\lambda=1060$ nm	0.54	0.6	-	0.54	0.6	-	A/W
Short circuit current	I_{sc}	100 lx	6.0	7.8	-	15	21	-	μA
Dark current	I_D	$V_R=20$ V	-	0.05	5	-	0.1	10	nA
Cut-off frequency	f_c	$V_R=20$ V, -3 dB	-	30	-	-	15	-	MHz
Terminal capacitance	C_t	$V_R=20$ V, $f=1$ MHz	-	13	-	-	33	-	pF

Spectral response

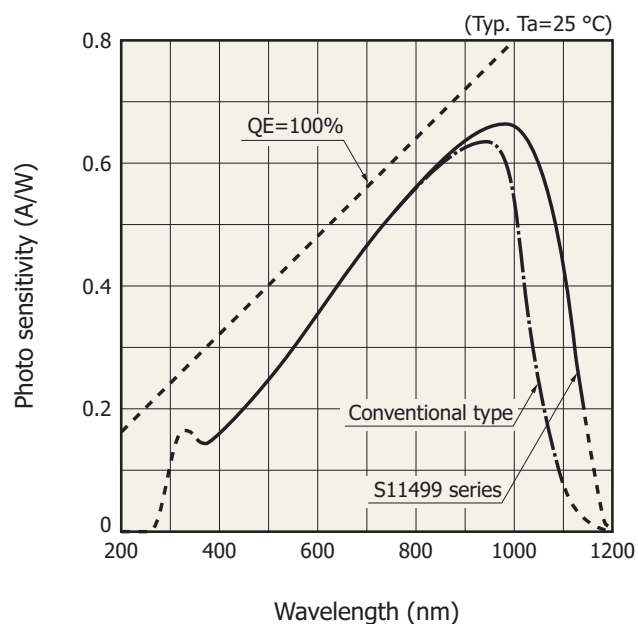
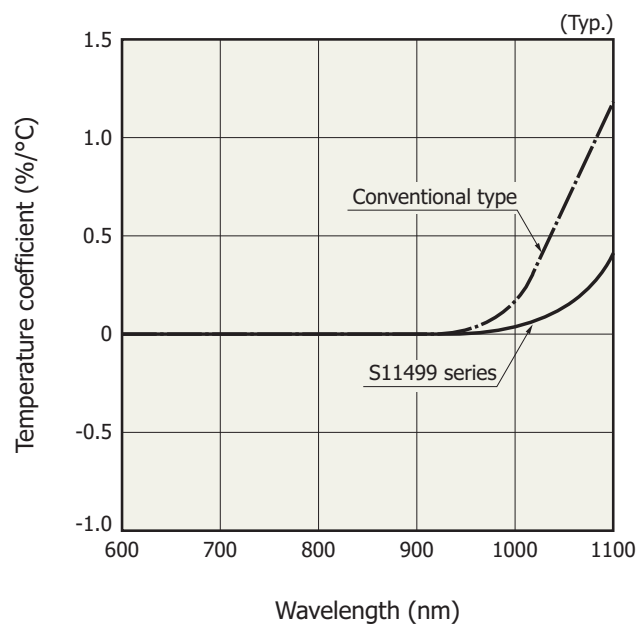
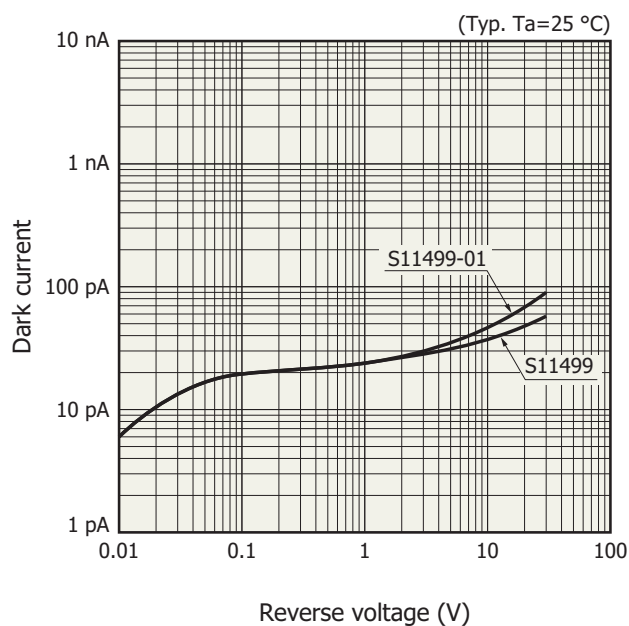


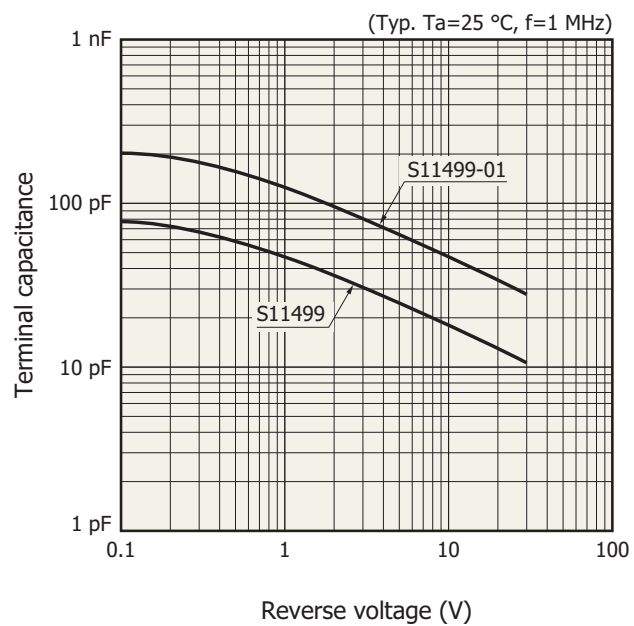
Photo sensitivity temperature characteristic



Dark current vs. reverse voltage

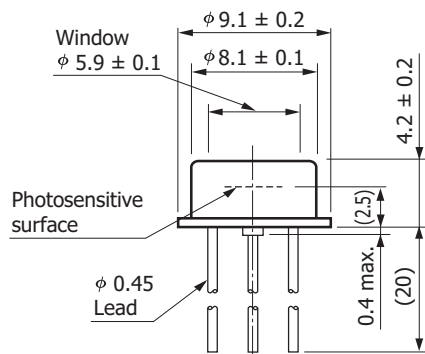
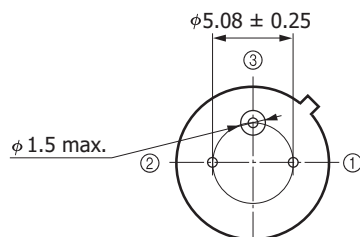
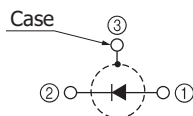


Terminal capacitance vs. reverse voltage



Dimensional outlines (unit: mm)

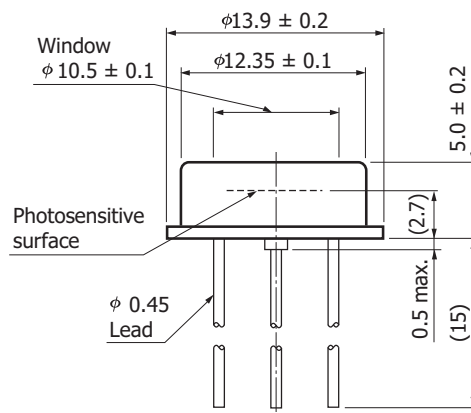
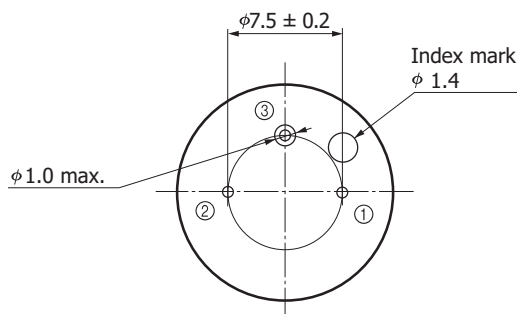
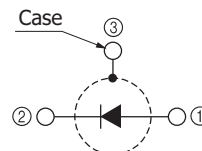
S11499



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

KPINA0024EB

S11499-01



The glass window may extend a maximum of 0.3 mm above the upper surface of the cap.

KPINA0027EC

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

Specifications are subject to change without notice. No patent rights are granted to any of the circuits described herein.

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.

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