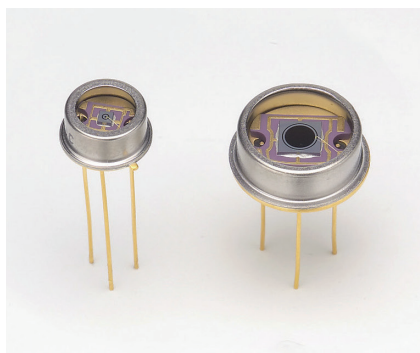


Si APD

S16453 series



Short wavelength type APD

The S16453 series is a Si APD that has significantly higher sensitivity at short wavelength than previous product (S8664 series). (There are products that are slower than previous products. See the S8664 series datasheet.)

Features

- ➔ High sensitivity at short wavelength
QE: 90% ($\lambda=420$ nm)
- ➔ Low noise
- ➔ High gain

Applications

- ➔ Low-level light measurement
- ➔ Analytical instrument

Structure / Absolute maximum ratings

Type no.	Dimensional outline /Window material*1	Package	Effective photosensitive area size*2 (mm)	Effective photosensitive area (mm ²)	Absolute maximum ratings	
					Operating temperature*3 Topr (°C)	Storage temperature*3 Tstg (°C)
S16453-02K	①/K	TO-5	φ0.2	0.03	-20 to +60	-55 to +100
S16453-05K			φ0.5	0.19		
S16453-10K			φ1.0	0.78		
S16453-20K			φ2.0	3.14		
S16453-30K	②/K	TO-8	φ3.0	7.0		
S16453-50K			φ5.0	19.6		

*1: K: Borosilicate glass

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

*3: No dew condensation. When there is a temperature difference between a product and the surrounding area in high humidity environments, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.

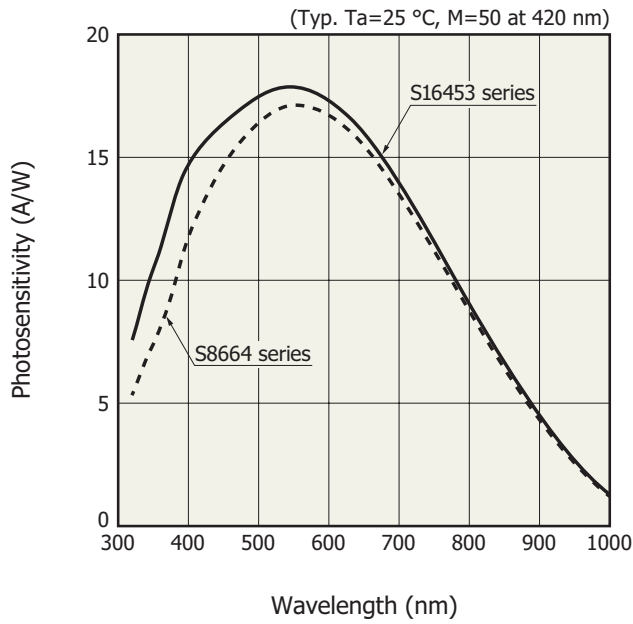
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

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

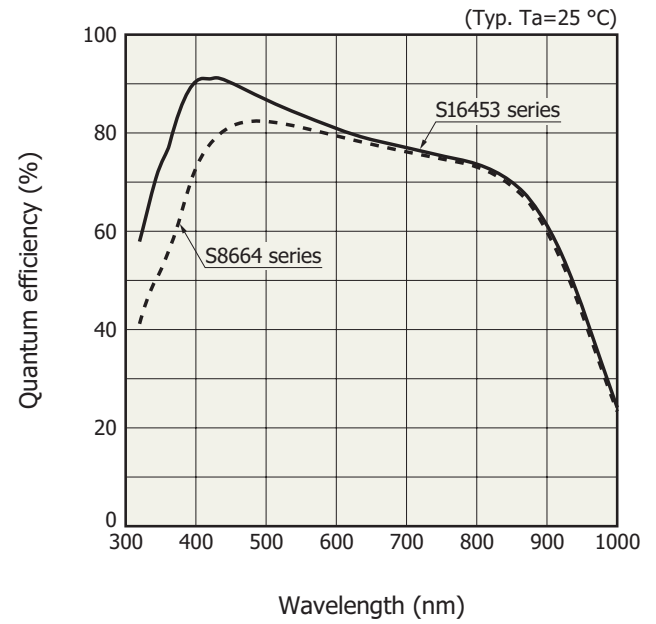
Type no.	Spectral response range λ (nm)	Peak sensitivity wavelength*4 λ_p (nm)	Photo-sensitivity S M=1 $\lambda=420$ nm (A/W)	Quantum efficiency QE M=1 $\lambda=420$ nm (%)	Breakdown voltage VBR ID=100 μ A		Temperature coefficient of VBR (V/°C)	Dark current*4 ID		Cutoff frequency*4 fc (MHz)	Terminal capacitance*4 Ct (pF)	Excess noise index*4 $\lambda=420$ nm	Gain M $\lambda=420$ nm								
					Typ. (V)	Max. (V)		Typ. (nA)	Max. (nA)												
S16453-02K	320 to 1000	550	0.3	90	400	500	0.78	0.1	1	700	0.8	0.2	50								
S16453-05K								0.2	1.5					680	1.6						
S16453-10K								0.3	3							470	4				
S16453-20K								0.6	6									165	11		
S16453-30K								1	15											75	22
S16453-50K								3	35												

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

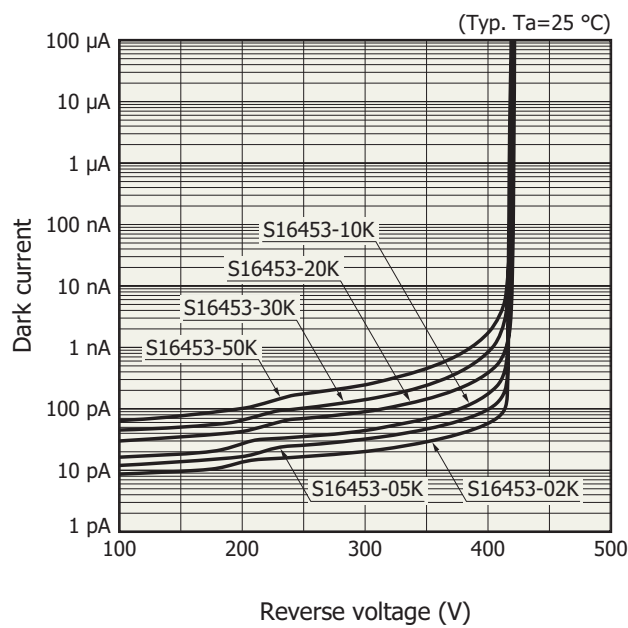
Spectral response



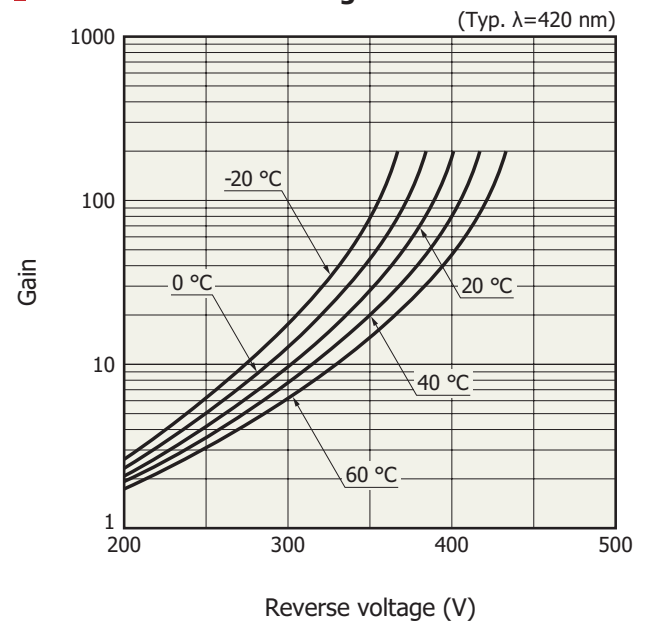
Quantum efficiency vs. wavelength

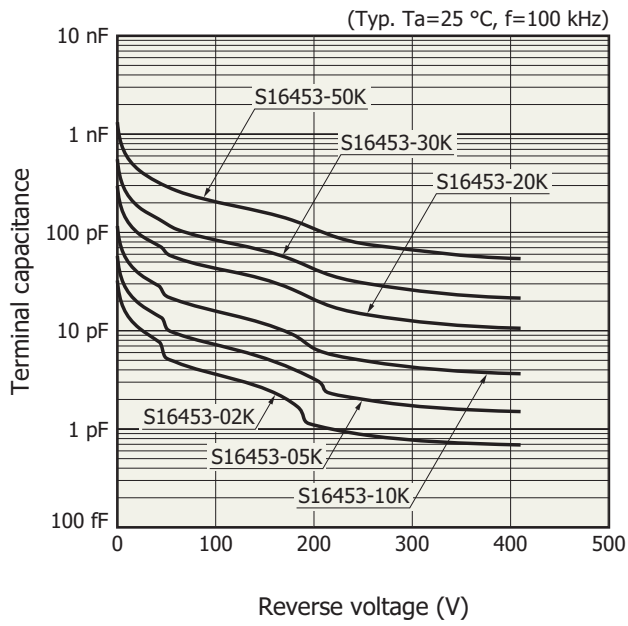


Dark current vs. reverse voltage



Gain vs. reverse voltage

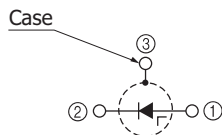
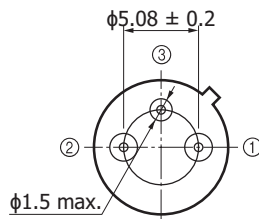
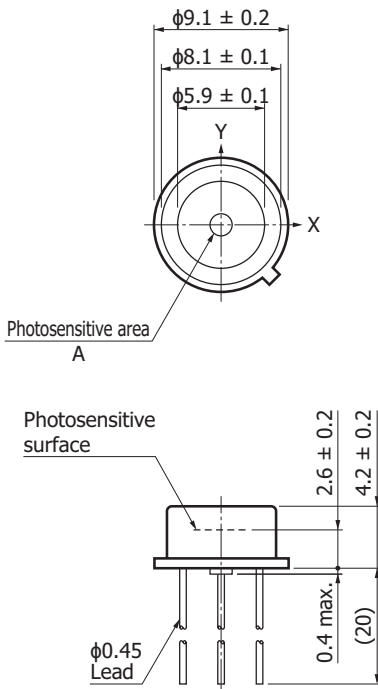


Terminal capacitance vs. reverse voltage

KAPDB0638EA

Dimensional outlines (unit: mm)

① S16453-02K/-05K/-10K/-20K

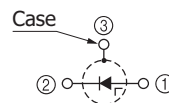
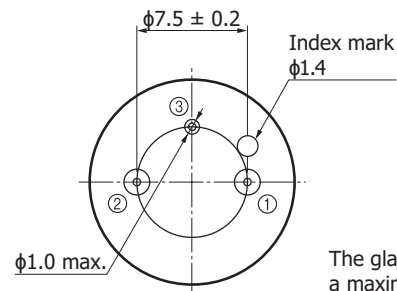
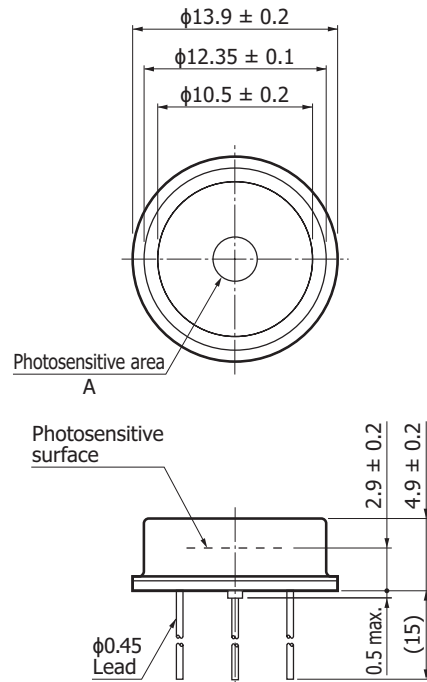


The glass window may extend a maximum of 0.2 mm above the top surface of the cap.

Type no.	A
S16453-02K	$\phi 0.2$
S16453-05K	$\phi 0.5$
S16453-10K	$\phi 1.0$
S16453-20K	$\phi 2.0$

KAPDA0226EA

② S16453-30K/-50K



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

Type no.	A
S16453-30K	$\phi 3.0$
S16453-50K	$\phi 5.0$

KAPDA0227EA

Recommended soldering conditions

Solder temperature: 260 °C (10 s or less, once)

Solder the leads at a point at least 1 mm away from the package body.

Related information

www.hamamatsu.com/sp/ssd/doc_en.html

Precautions

- Disclaimer
- Metal, ceramic, plastic package products

Technical note

- Si APD

Information described in this material is current as of October 2022.

Product specifications are subject to change without prior notice due to improvements or other reasons. This document has been carefully prepared and the information contained is believed to be accurate. In rare cases, however, there may be inaccuracies such as text errors. Before using these products, always contact us for the delivery specification sheet to check the latest specifications.

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