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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% (λ=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 (mm²)	Absolute maximum ratings			
					Operating temperature*3 Topr (°C)	Storage temperature*3 Tstg (°C)	Forward current IF max (mA)	Reverse current IR max (μA)
S16453-02K	①/K	TO-5	φ0.2	0.03	-20 to +60	-55 to +100	10	200
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				

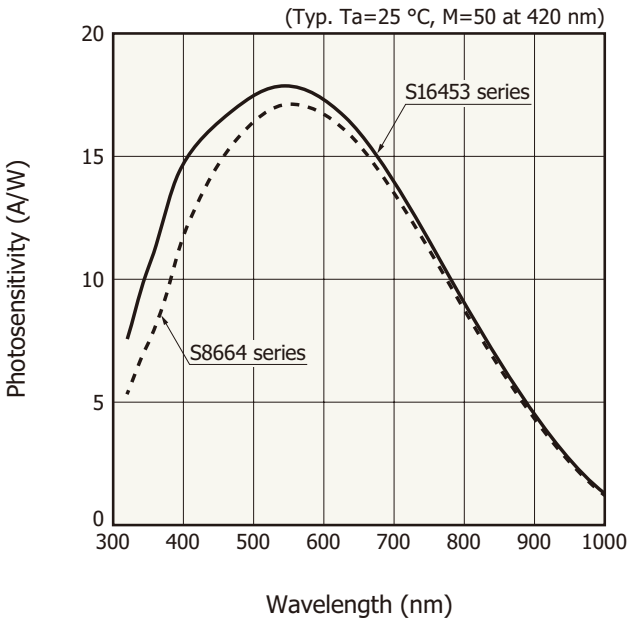
*1: K: Borosilicate glass
*2: Area in which a typical gain can be obtained
*3: No dew condensation. When there is a temperature difference between a product and the surrounding area in high humidity environments, dew condensation may occur on the product surface. Dew condensation on the product may cause 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 λp (nm)	Photo-sensitivity S M=1 λ=420 nm (A/W)	Quantum efficiency QE M=1 λ=420 nm (%)	Breakdown voltage VBR ID=100 μA		Temperature coefficient of VBR (V/°C)	Dark current*4 ID		Cutoff frequency*4 fc (MHz)	Terminal capacitance*4 Ct (pF)	Excess noise index*4 λ=420 nm	Gain M λ=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	30	55		

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

Spectral response



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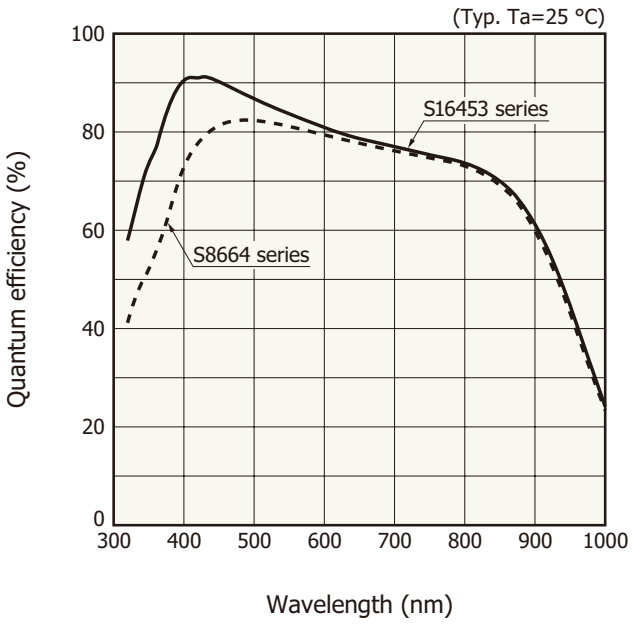
Quantum efficiency vs. wavelength



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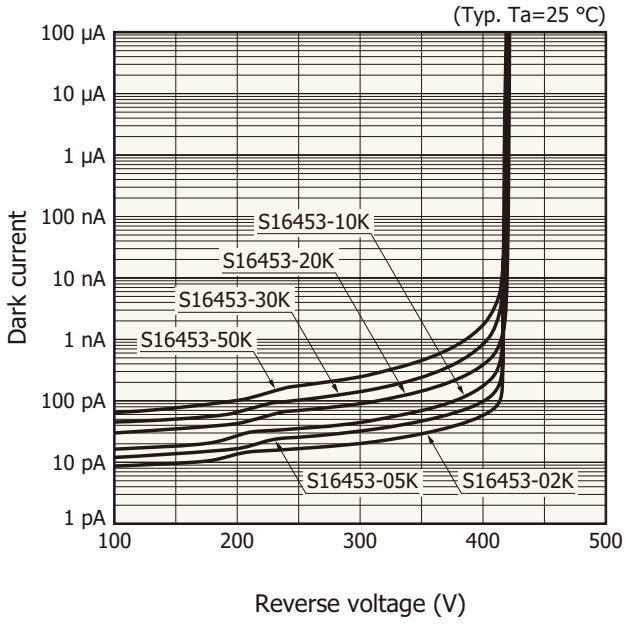
Dark current vs. reverse voltage



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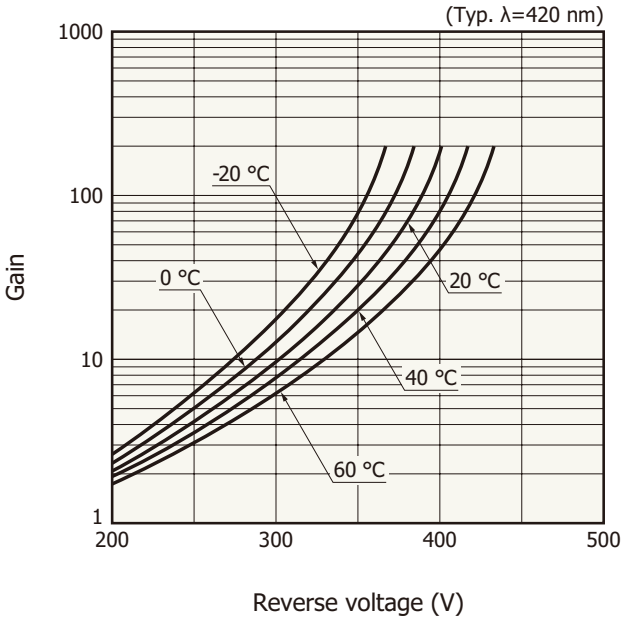
Gain vs. reverse voltage



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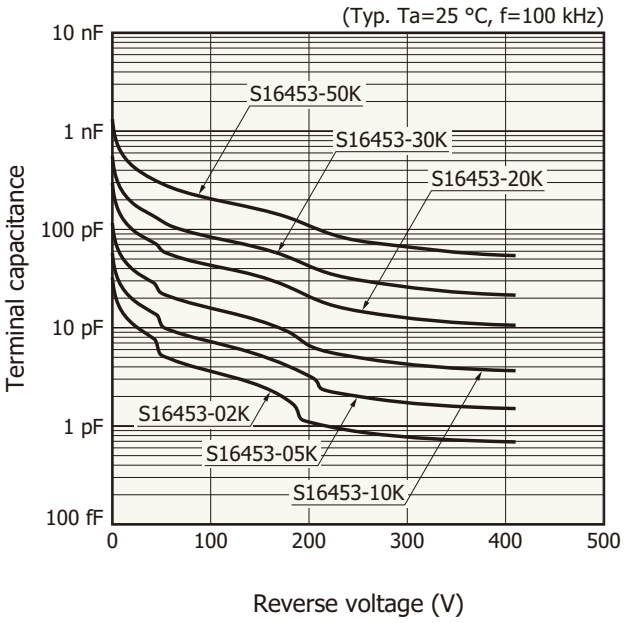
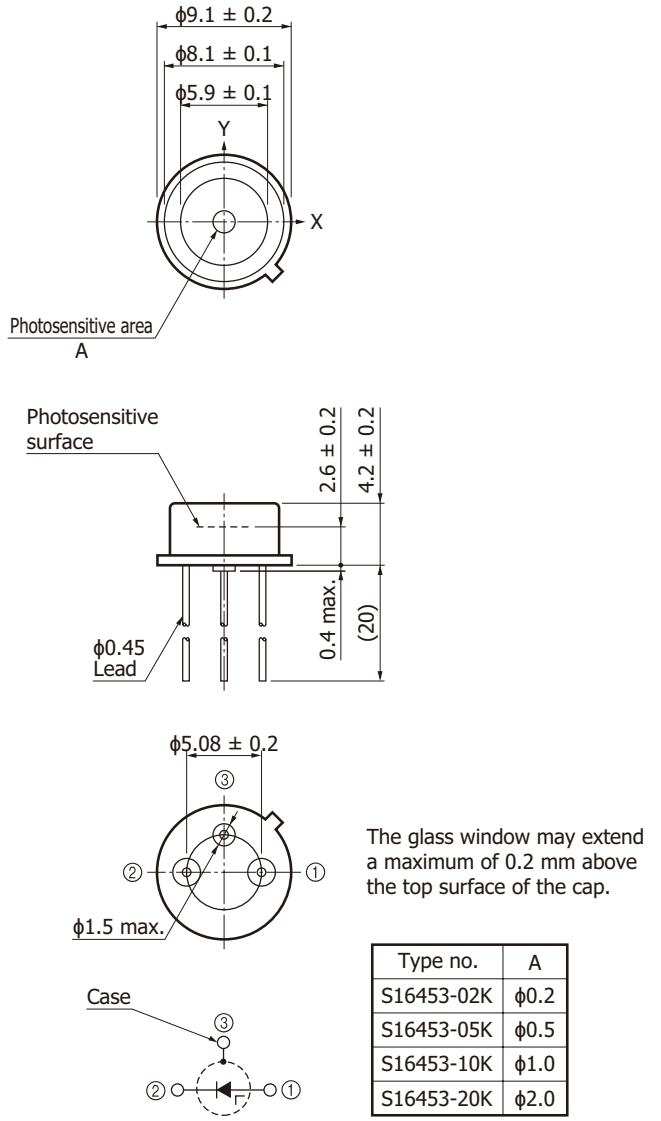
Terminal capacitance vs. reverse voltage



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	ϕ0.2
S16453-05K	ϕ0.5
S16453-10K	ϕ1.0
S16453-20K	ϕ2.0

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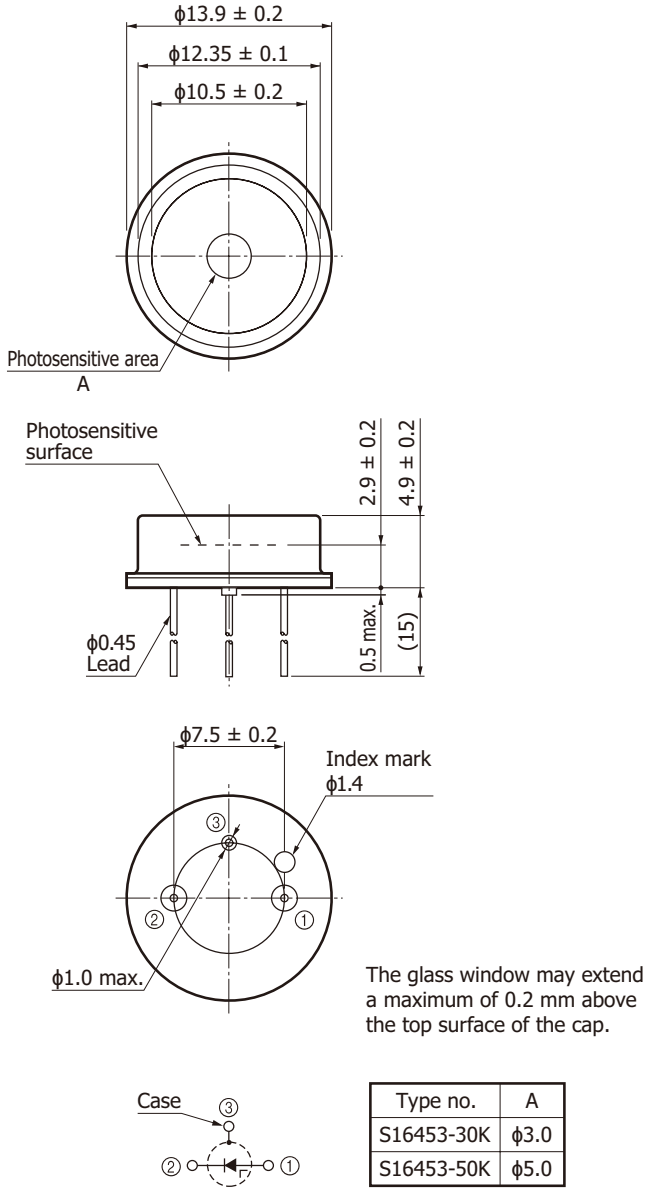
② S16453-30K/-50K



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

Type no.	A
S16453-30K	ϕ3.0
S16453-50K	ϕ5.0

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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.
Note: When you set soldering conditions, check that problems do not occur in the product by testing out the conditions in advance.

Related information

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

■ Precautions
· Disclaimer
· Precautions / Metal, ceramic, plastic package products

■ Catalogs
· Technical note / Si APD

Information described in this material is current as of February 2026.
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.
The product warranty is valid for one year after delivery and is limited to product repair or replacement for defects discovered and reported to us within that one year period. However, even if within the warranty period we accept absolutely no liability for any loss caused by natural disasters or improper product use.
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HAMAMATSU PHOTONICS K.K.
Visit our website for product and contact information.
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