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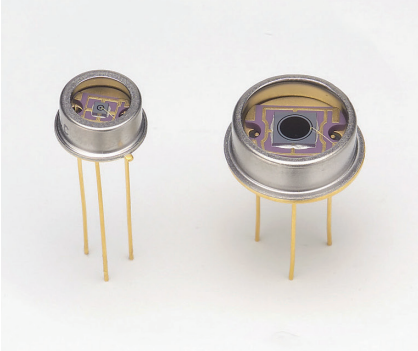
Si APD

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 (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		

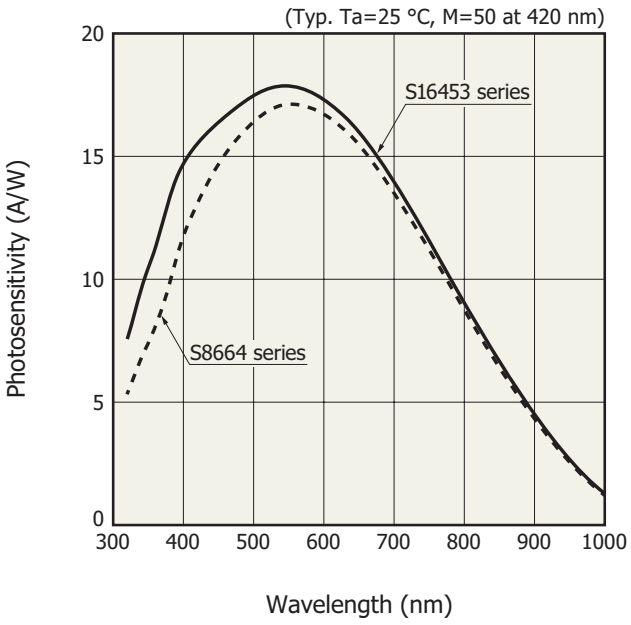
*1: K: Borosilicate glass
*2: Area in which a typical gain can be obtained
*3: No dew condensation. When there is a temperature difference between a product and the surrounding area in high humidity environments, dew condensation may occur on the product surface. Dew condensation on the product may cause 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 λp (nm)	Photo-sensitivity S M=1 λ=420 nm (A/W)	Quantum efficiency QE M=1 λ=420 nm (%)	Breakdown voltage V_{BR} I_D=100 μA		Temperature coefficient of V_{BR} (V/°C)	Dark current*4 I_D		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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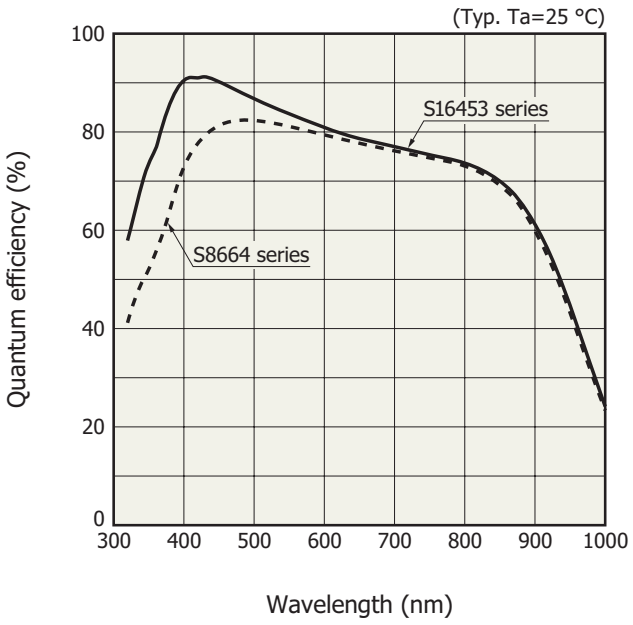
Quantum efficiency vs. wavelength



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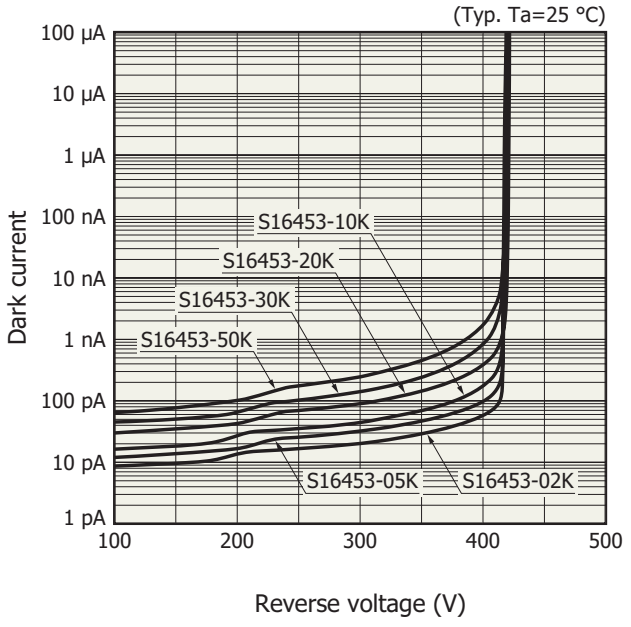
Dark current vs. reverse voltage



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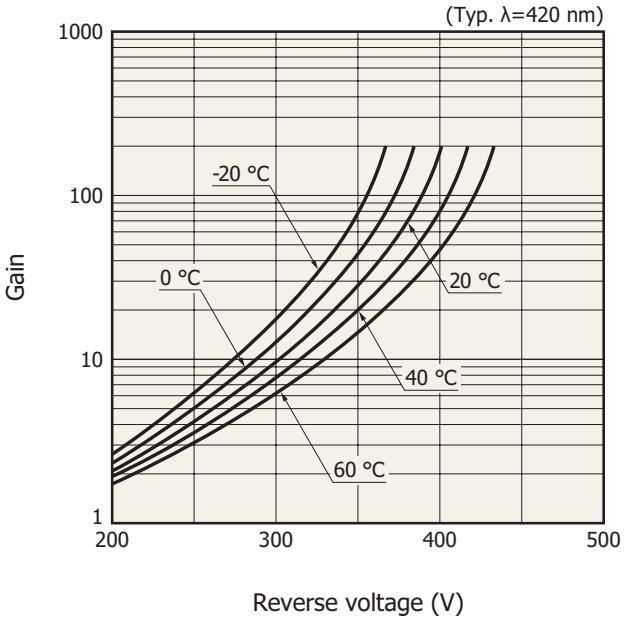
Gain vs. reverse voltage



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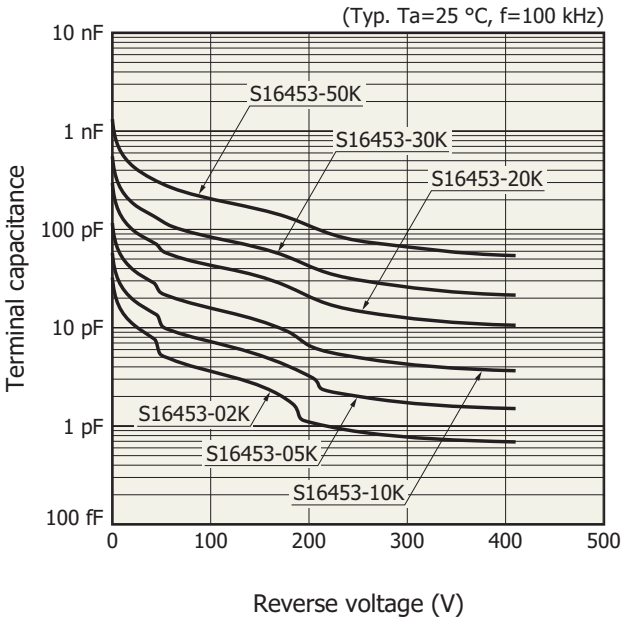
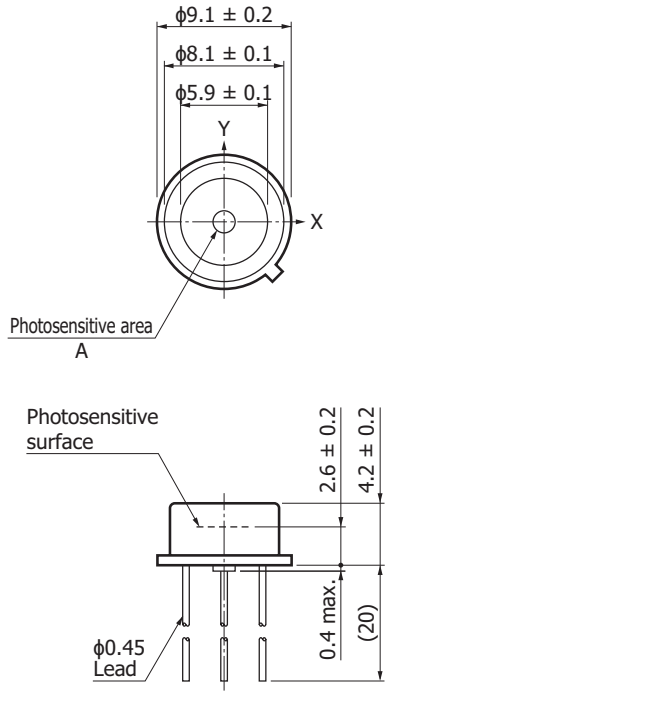
Terminal capacitance vs. reverse voltage



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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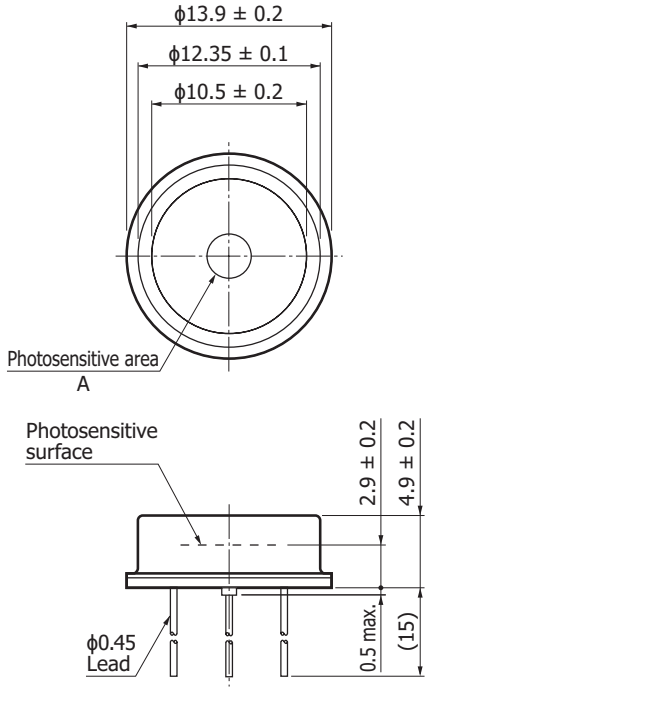
② S16453-30K/-50K



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.

Related information

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

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

■ Technical note
· Si APD

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