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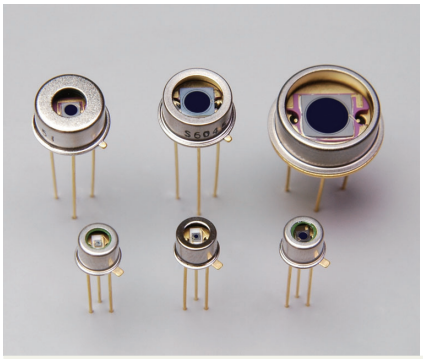
Si APD



S6045/S12060 series

Low temperature coefficient type APD for 800 nm band

The S6045 and S12060 series are near infrared Si APDs developed for use in the 800 nm wavelength band. These APDs are designed so that the temperature coefficient of the operating voltage is low enough to ensure stable operation over a wide temperature range. They are suitable for applications such as optical rangefinders and FSO (free space optics).

Features

- **Temperature coefficient of breakdown voltage: 0.4 V/°C**
- **High-speed response**
- **High sensitivity and low noise**

Applications

- **Optical rangefinders**
- **FSO**
- **Optical fiber communications**

Structure / Absolute maximum ratings

Type no.	Dimensional outline/ Window material*1	Package	Effective*2 photosensitive area size (mm)	Absolute maximum ratings		
				Operating temperature Topr (°C)	Storage temperature Tstg (°C)	Soldering conditions
S12060-02	(1)/K	TO-18	ϕ0.2	-40 to +85	-55 to +125	260 °C or less, within 10 s
S12060-05			ϕ0.5			
S12060-10			ϕ1.0			
S6045-04	(2)/K	TO-5	ϕ1.5			
S6045-05	(3)/K		ϕ3.0			
S6045-06	(4)/K	TO-8	ϕ5.0			

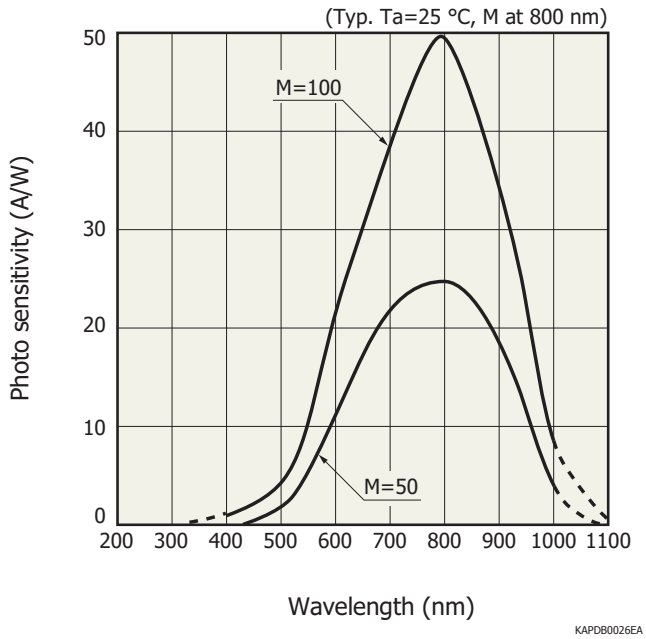
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.
*1: K=borosilicate glass
*2: Area in which a typical gain can be obtained

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

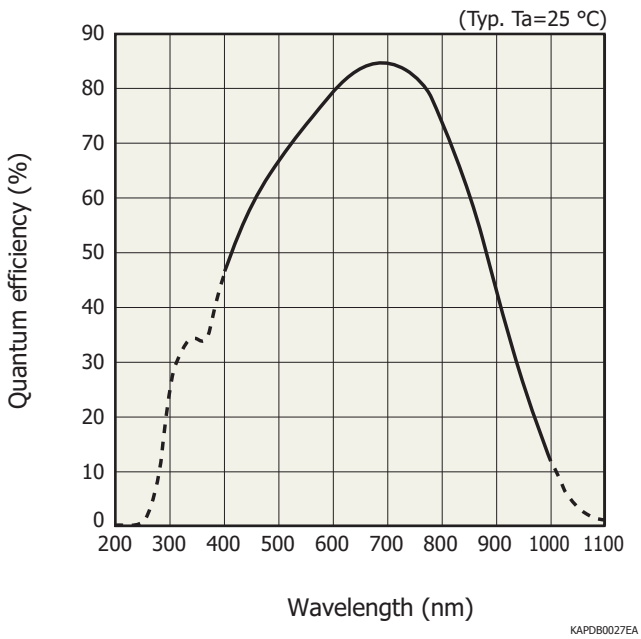
Type no.	Spectral response range λ (nm)	Peak*3 sensitivity wavelength λp (nm)	Photo-sensitivity S M=1 λ=800 nm (A/W)	Quantum efficiency QE M=1 λ=800 nm (%)	Breakdown voltage VBR ID=100 μA		Temp. coefficient of VBR (V/°C)	Dark*3 current ID		Cutoff*3 frequency fc RL=50 Ω (MHz)	Terminal*3 capacitance Ct (pF)	Excess*3 noise figure x λ=800 nm	Gain M λ=800 nm
					Typ. (V)	Max. (V)		Typ. (nA)	Max. (nA)				
S12060-02	400 to 1000	800	0.5	75	200	300	0.4	0.05	0.5	1000	1.5	0.3	100
S12060-05								0.1	1	900	2.5		
S12060-10								0.2	2	600	6		
S6045-04								0.5	5	350	12		
S6045-05								1	10	80	50		60
S6045-06								3	30	35	120		40

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

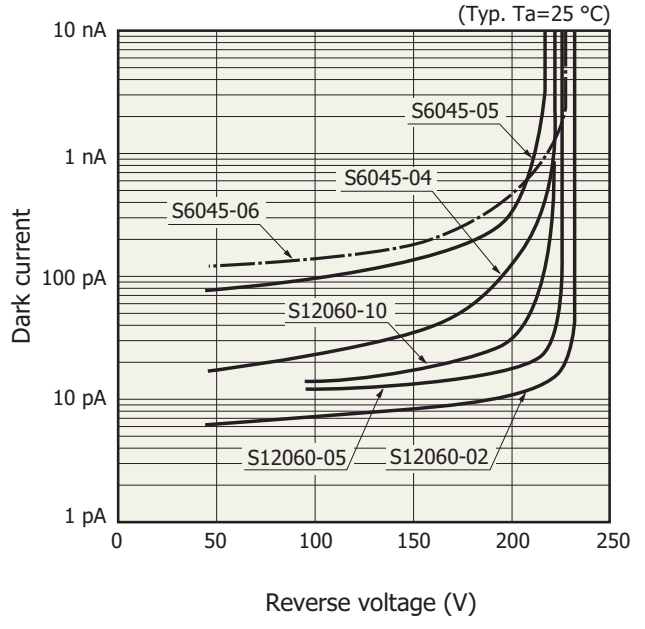
Spectral response



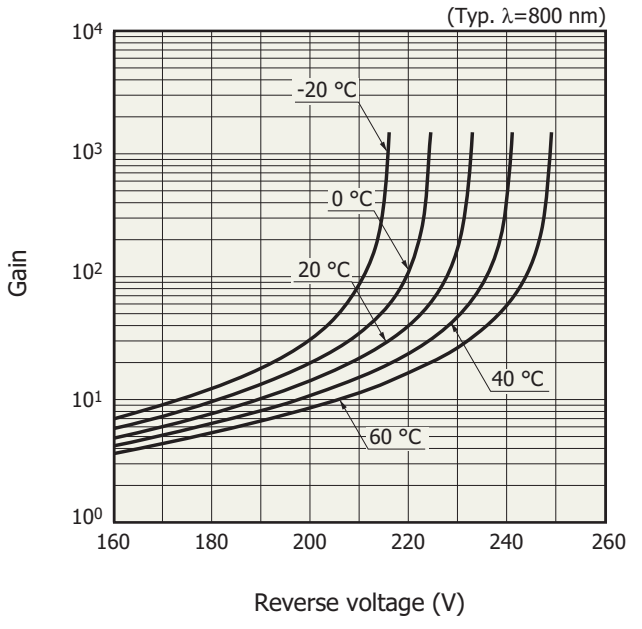
Quantum efficiency vs. wavelength



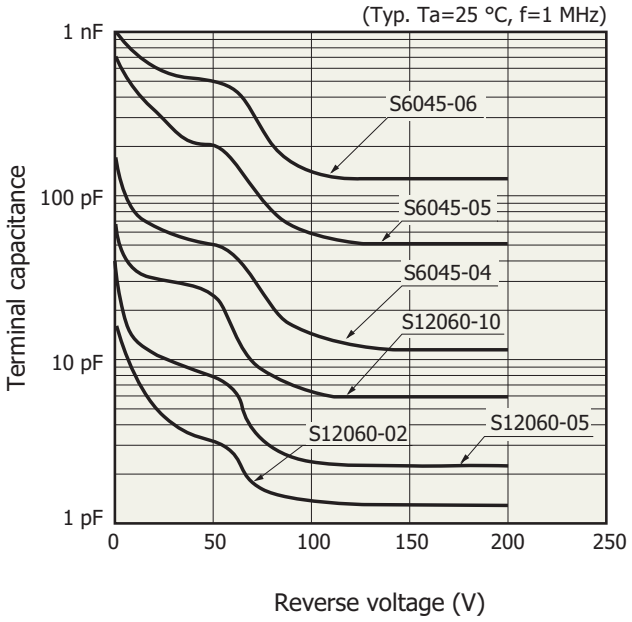
Dark current vs. reverse voltage



Gain vs. reverse voltage



Terminal capacitance vs. reverse voltage



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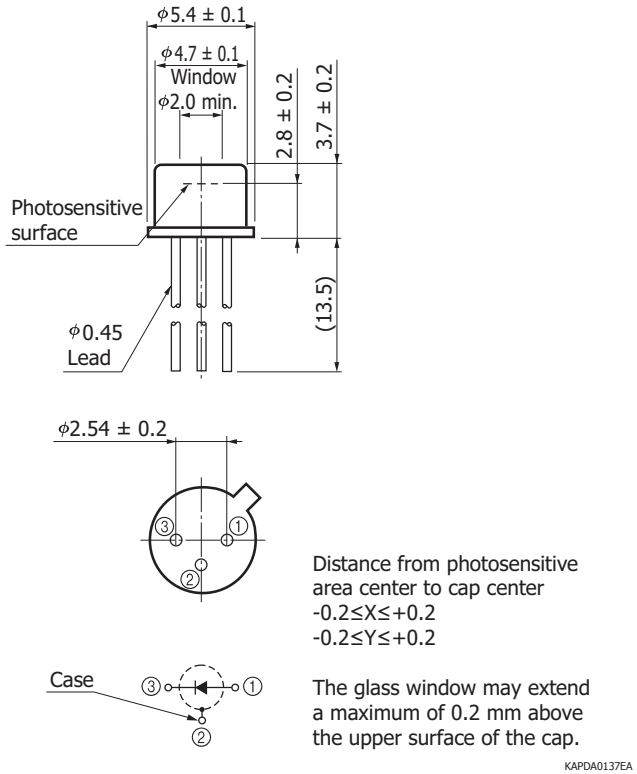
Dimensional outlines (unit: mm)

(1) S12060-02/-05/-10



Distance from photosensitive area center to cap center
-0.2≤X≤+0.2
-0.2≤Y≤+0.2

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

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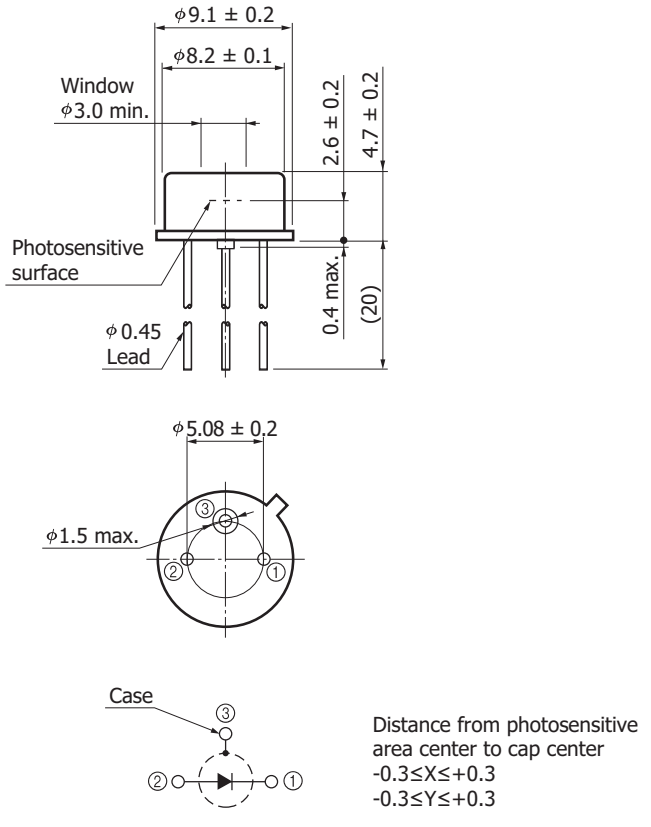
(2) S6045-04



Distance from photosensitive area center to cap center
-0.3≤X≤+0.3
-0.3≤Y≤+0.3

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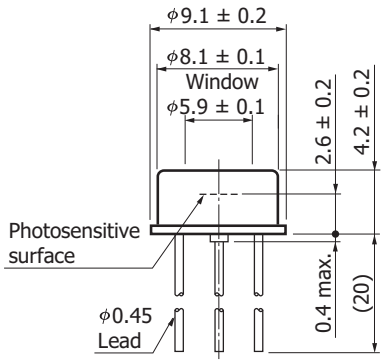
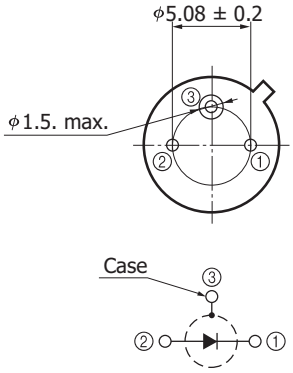
(3) S6045-05





Distance from photosensitive area center to cap center
-0.3≤X≤+0.3
-0.3≤Y≤+0.3

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

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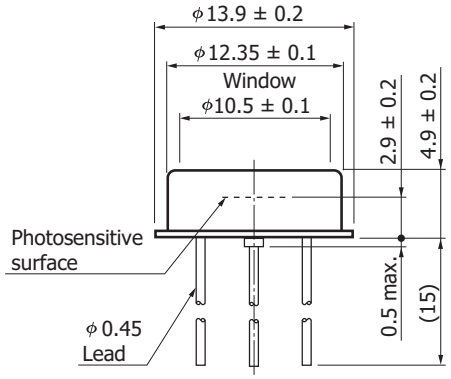
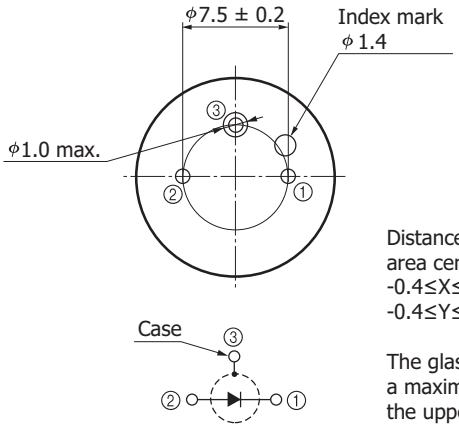
(4) S6045-06





Distance from photosensitive area center to cap center
-0.4≤X≤+0.4
-0.4≤Y≤+0.4

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

KAPDA0139EA

Replacements for previous products

Previous product (listed on the previous datasheet)	Replacement (listed on this datasheet)
S6045-01	S12060-02
S6045-02	S12060-05
S6045-03	S12060-10

* Products that have been removed from this datasheet

Related information

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

■ Precautions

· Notice
· Metal, ceramic, plastic package products / Precautions

■ Technical information

· Si APD / Technical information

Information described in this material is current as of October, 2013.
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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