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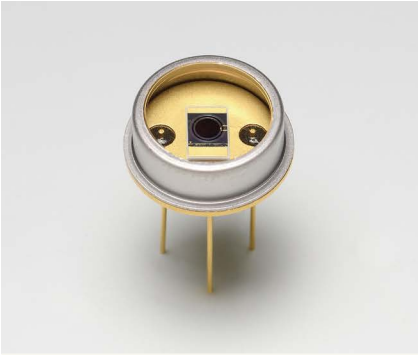
Si APD



S14124-20

High-sensitivity Si APD for detection of light with a wavelength of 266 nm

The S14124-20 is an improved Si APD from the S8664 series for highly sensitive detection of light with a wavelength of 266 nm used in semiconductor inspection and laser processing equipment. We have achieved a quantum efficiency of 87% at λ=266 nm.

Features

- **High sensitivity: QE=87% (λ=266 nm)**
- **Low capacitance**
- **Low noise**
- **High gain**

Applications

- **Semiconductor inspection system**
- **Laser processing equipment**
- **Photomask defect inspection system**

Structure

Parameter	Symbol	Specification	Unit
Photosensitive area	A	ϕ2.0	mm
Package	-	TO-8	-
Window material	-	AR-coated quartz	-

Absolute maximum ratings (Ta=25 °C)

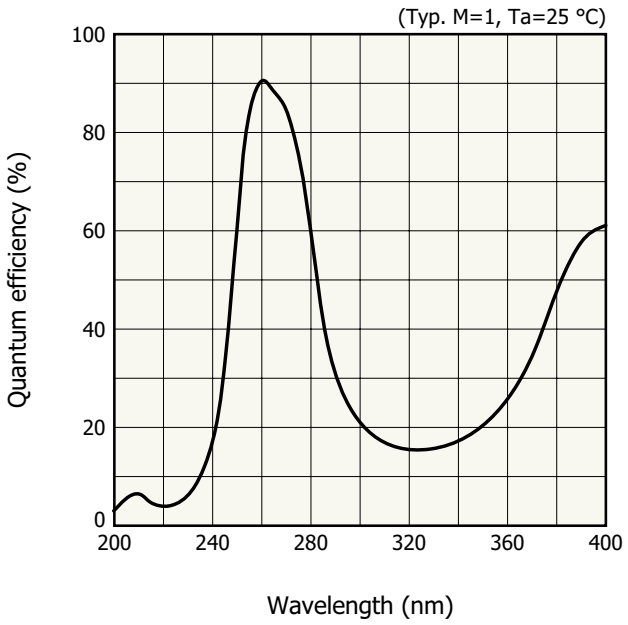
Parameter	Symbol	Condition	Valu	Unit
Forward current	I_F max		10	mA
Reverse current (DC)	I_R max		200	μA
Operating temperature	Topr	No dew condensation*1	-20 to +60	°C
Starage temperature	Tstg	No dew condensation*1	-55 to +100	°C
Soldering conditions	-		260 °C or less, within 10 s	-

*1: When there is a temperature difference between a product and the surounding area in high humidity environment, 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 (Ta=25 °C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Peak sensitivity wavelength	λp	M=50	-	600	-	nm
Quantum efficiency	QE	M=1, λ=266 nm	70	87	-	%
Breakdown voltage	V_{BR}	I_D=100 μA	360	400	500	V
Temperature coefficient of breakdown voltage	ΔTV_{BR}			0.78		V/°C
Dark current	I_D	M=50	-	3	10	nA
Temperature coefficient of dark current	ΔT_{ID}		-	1.1	-	times/°C
Cutoff frequency	fc	M=50, λ=266 nm R_L=50 Ω, -3 dB	-	250	-	MHz
Terminal capacitance	Ct	M=50, f=1 MHz	-	11	-	pF
Excess noise index	x	M=50, λ=266 nm	-	0.2	-	-
Gain	M	λ=266 nm	-	50 to 400	-	-

Quantum efficiency vs. wavelength



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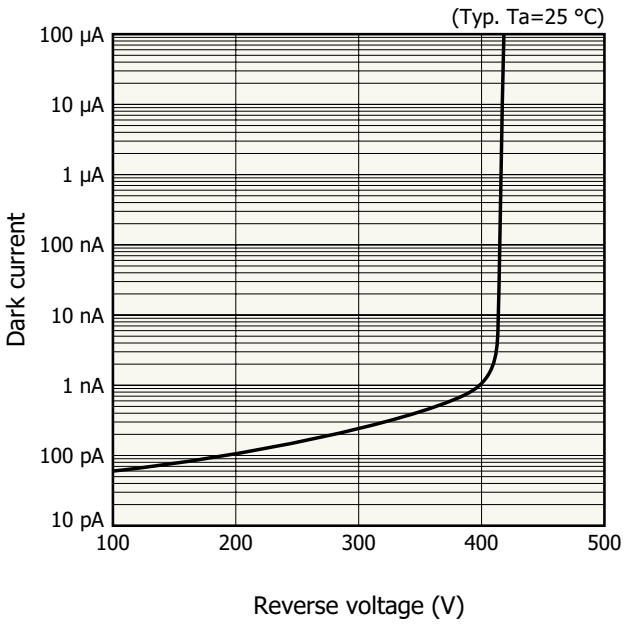
Dark current vs. reverse voltage



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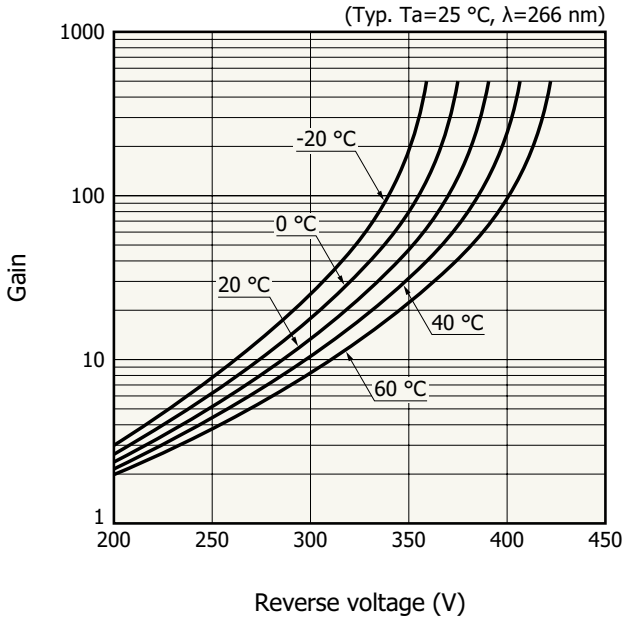
Gain vs. reverse voltage



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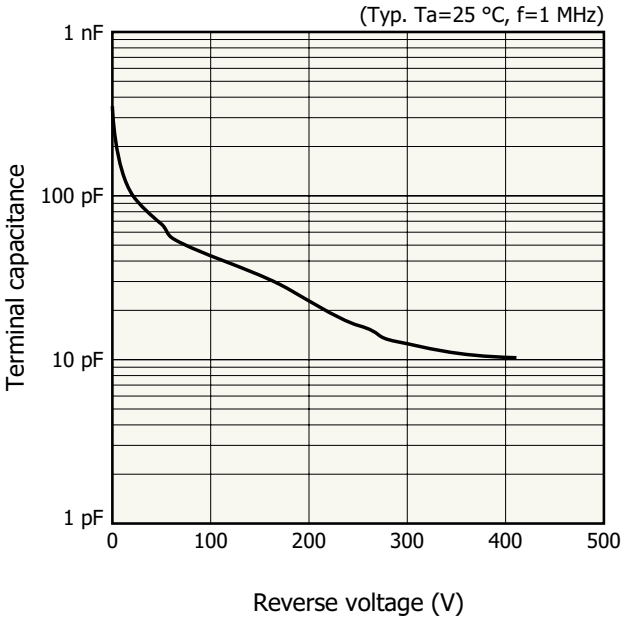
Terminal capacitance vs. reverse voltage



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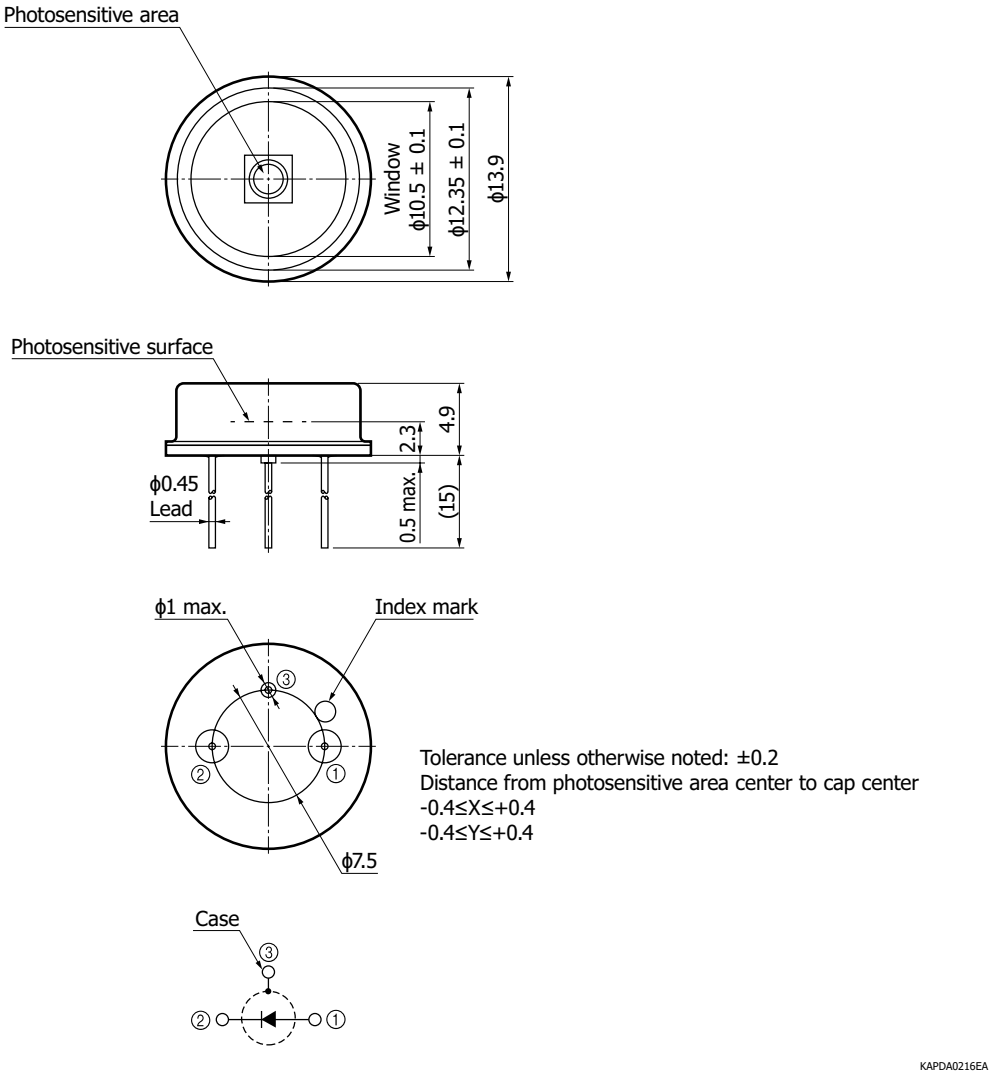
Dimensional outline (unit: mm)



Tolerance unless otherwise noted: ±0.2
Distance from photosensitive area center to cap center
-0.4≤X≤+0.4
-0.4≤Y≤+0.4

KAPDA0216EA

Related information

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

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

Information described in this material is current as of May 2025
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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