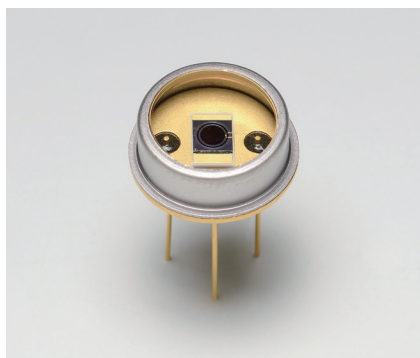


Si APD



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 $\lambda=266$ nm.

Features

- High sensitivity: QE=87% ($\lambda=266$ 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	$\phi 2.0$	mm
Package	-	TO-8	-
Window material	-	AR-coated quartz	-

Absolute maximum ratings (Ta=25 °C)

Parameter	Symbol	Condition	Value	Unit
Forward current	IF max		10	mA
Reverse current (DC)	IR max		200	μ A
Operating temperature	Topr	No dew condensation*1	-20 to +60	°C
Storage temperature	Tstg	No dew condensation*1	-55 to +100	°C
Soldering conditions	-		260 °C or less, within 10 s	-

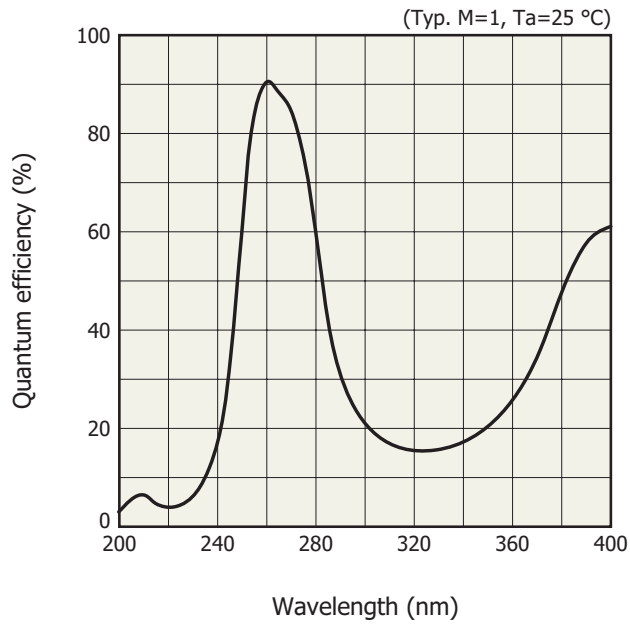
*1: When there is a temperature difference between a product and the surrounding area in high humidity environment, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.

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.

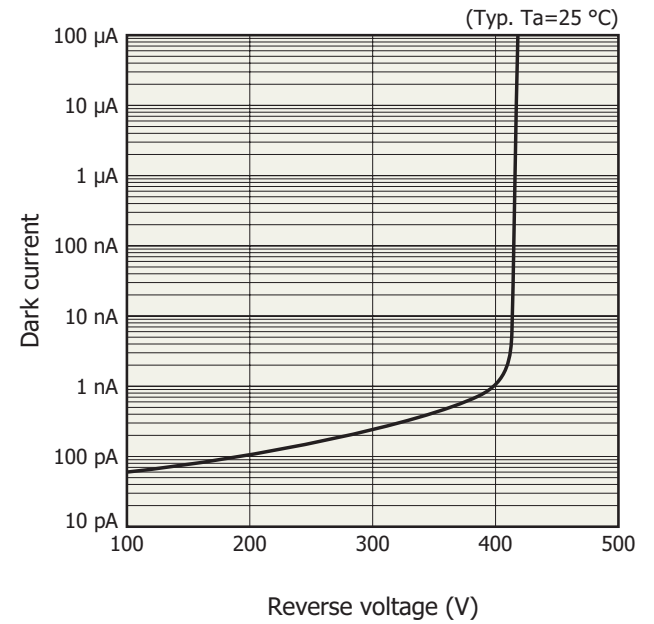
Electrical and optical characteristics (Ta=25 °C)

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

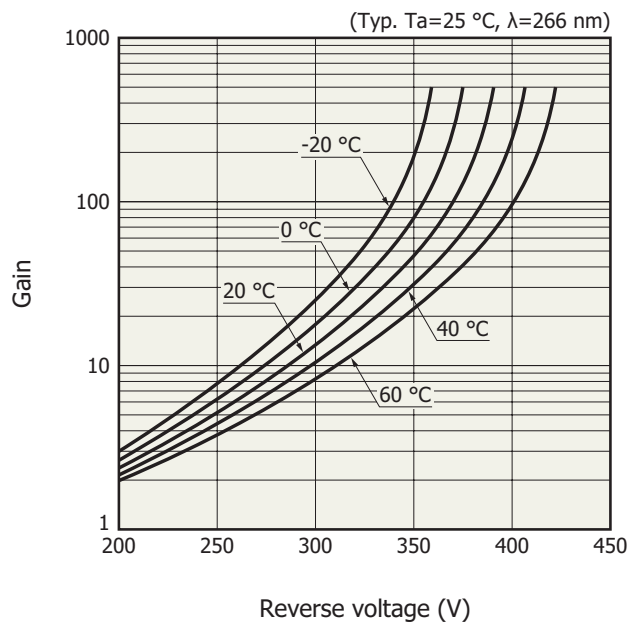
Quantum efficiency vs. wavelength



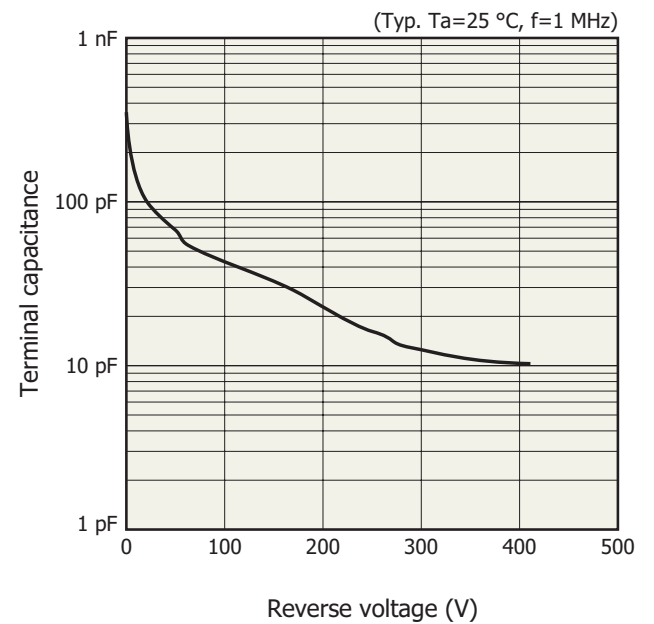
Dark current vs. reverse voltage



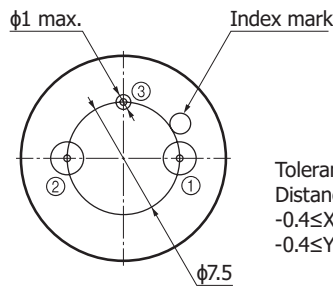
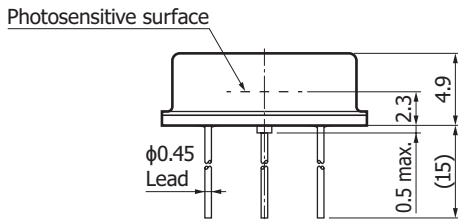
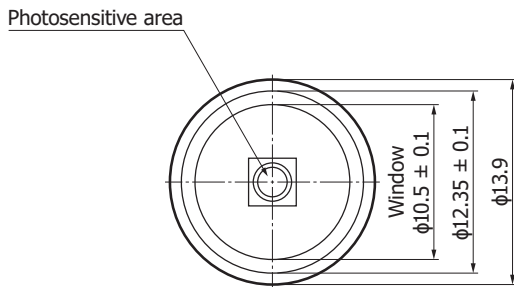
Gain vs. reverse voltage



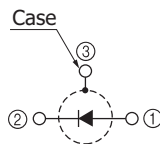
Terminal capacitance vs. reverse voltage



Dimensional outline (unit: mm)



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



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 June 2020

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