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Si APD

S12426 series

Low bias operation, high-speed Si APD for 900 nm

This Si APD is suitable for detecting light in the 900 nm band, which is increasingly used in optical rangefinders. The S12426 series deliver faster response and lower bias operation than our existing Si APD (S9251 series).

Features

- **Peak sensitivity wavelength: 840 nm (M=100)**
- **Low bias operation: Breakdown voltage=200 V max.**
- **High-speed response: Cutoff frequency=650 MHz typ. (S12426-02, λ=900 nm, M=100)**

Applications

- **Optical rangefinders**

Structure

Parameter	Symbol	S12426-02	S12426-05	Unit
Photosensitive area size*1	A	ϕ0.2	ϕ0.5	mm
Effective photosensitive area	-	0.03	0.19	mm^2
Package	-	TO-18		-
Window material	-	Borosilicate glass		-

*1: Photosensitive area in which a typical gain can be obtained

Absolute maximum ratings

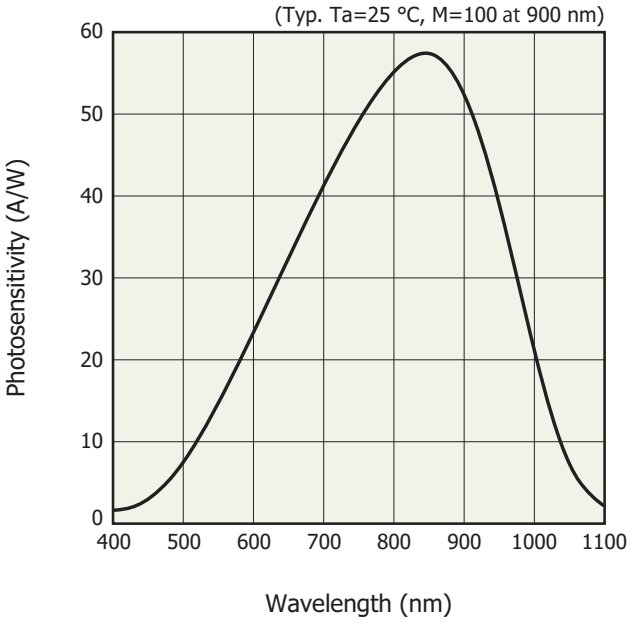
Parameter	Symbol	Value	Unit
Operating temperature	Topr	-20 to +85	°C
Storage temperature	Tstg	-55 to +125	°C
Reverse current (DC)	Irmax	0.2	mA
Forward current	Ifmax	10	mA
Soldering conditions	-	260 °C or less, within 10 s	-

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	S12426-02			S12426-05			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Spectral response range	λ		400 to 1100			400 to 1100			nm
Peak sensitivity wavelength	λp	M=100	-	840	-	-	840	-	nm
Photosensitivity	S	λ=900 nm, M=1	-	0.52	-	-	0.52	-	A/W
Quantum efficiency	QE	λ=900 nm, M=1	-	70	-	-	70	-	%
Breakdown voltage	V_{BR}	I_D=100 μA	120	160	200	120	160	200	V
Temp. coefficient of V_{BR}	ΔTV_{BR}		-	1.1	-	-	1.1	-	V/°C
Dark current	I_D	M=100	-	0.1	1	-	0.2	2	nA
Temp. coefficient of I_D	ΔT_{ID}	λ=900 nm, M=100	-	1.1	-	-	1.1	-	times/°C
Cutoff frequency	fc	M=100, R_L=50 Ω λ=900 nm, -3 dB	-	650	-	-	600	-	MHz
Rise time	tr	M=100, R_L=50 Ω λ=900 nm, 10% to 90%	-	0.55	-	-	0.6	-	ns
Terminal capacitance	Ct	M=100, f=1 MHz	-	0.5	-	-	1.1	-	pF
Excess noise figure	x	M=100, λ=900 nm	-	0.3	-	-	0.3	-	-
Gain	M	λ=900 nm	-	100	-	-	100	-	-

Spectral response



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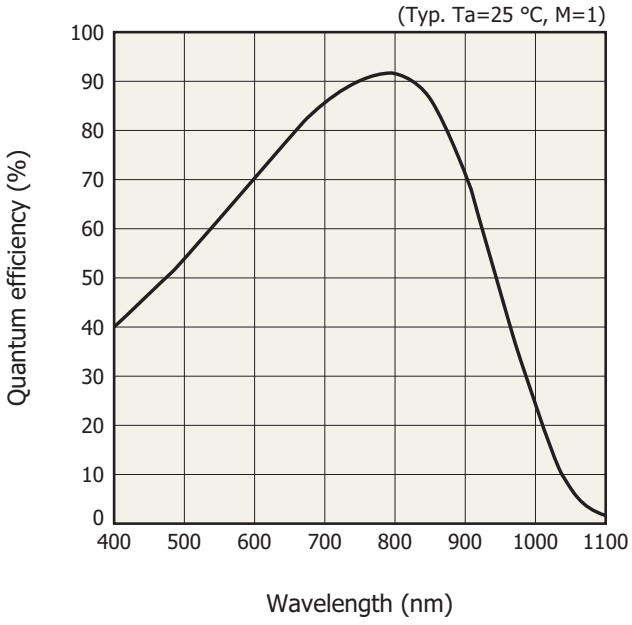
Quantum efficiency vs. wavelength



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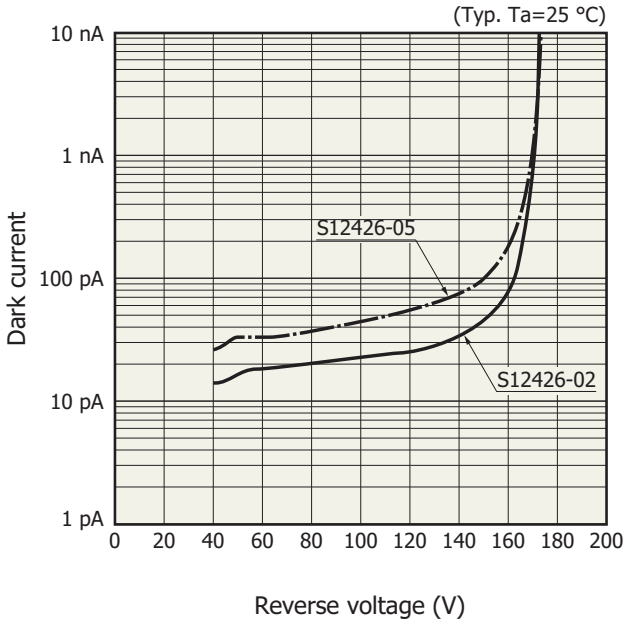
Dark current vs. reverse voltage



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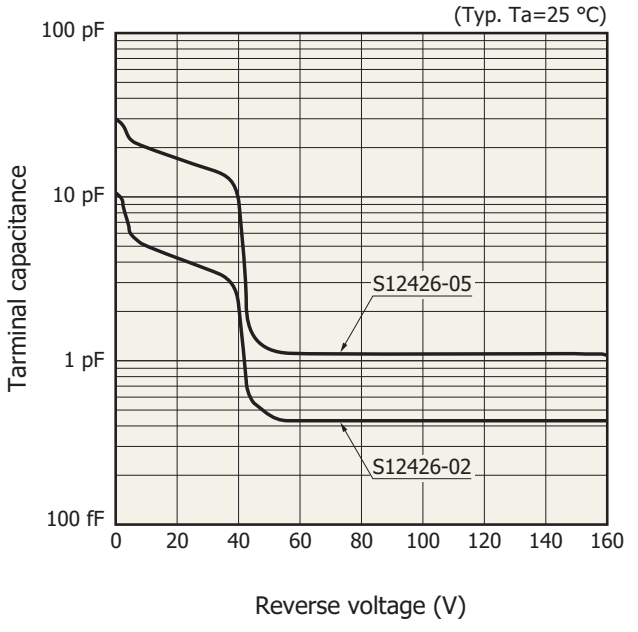
Tarminal capacitance vs. reverse voltage



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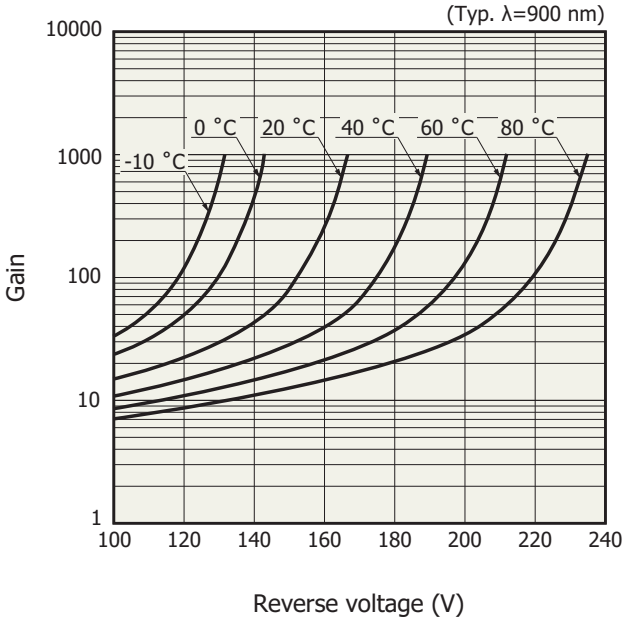
Gain vs. reverse voltage



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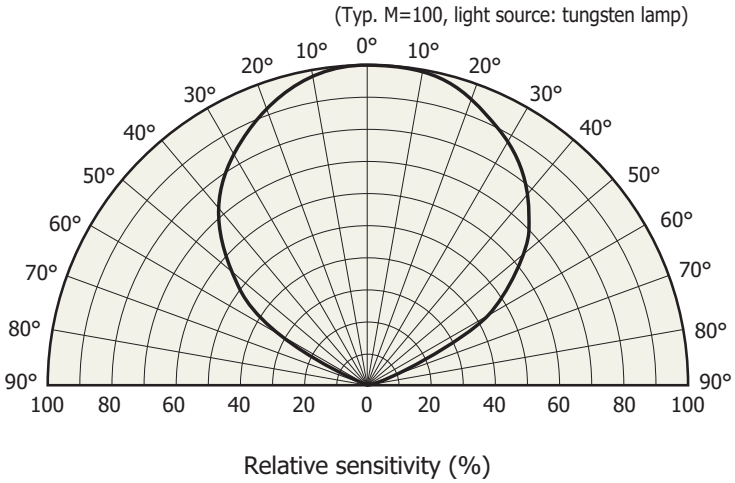
Directivity



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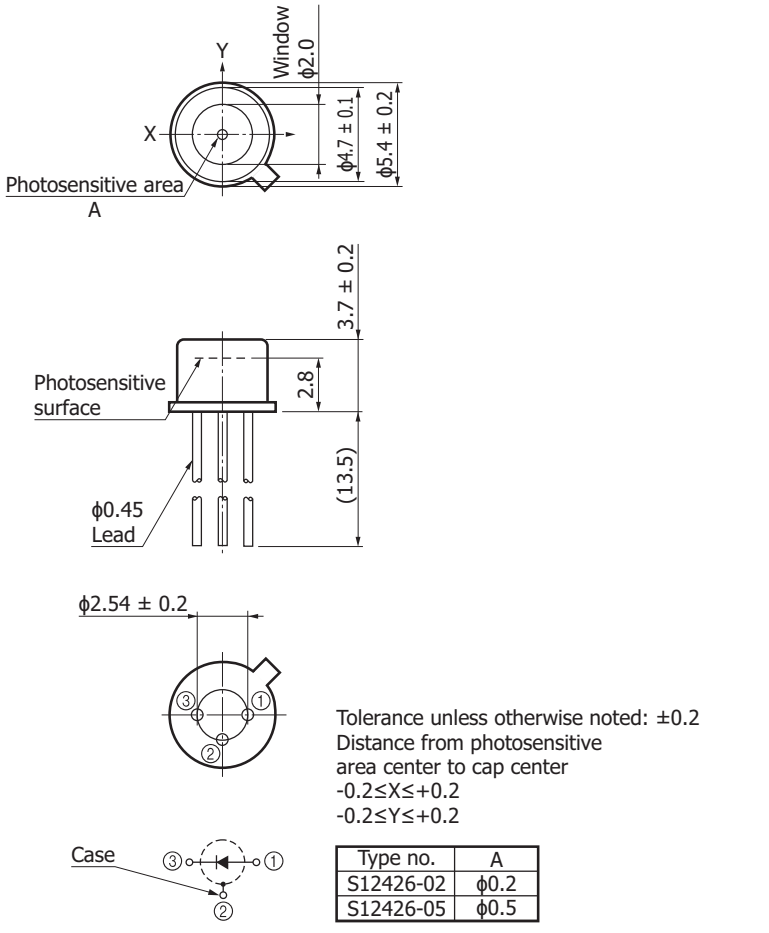
Dimensional outline (unit: mm)



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

Type no.	A
S12426-02	φ0.2
S12426-05	φ0.5

KAPDA0148EA

Related information

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

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

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