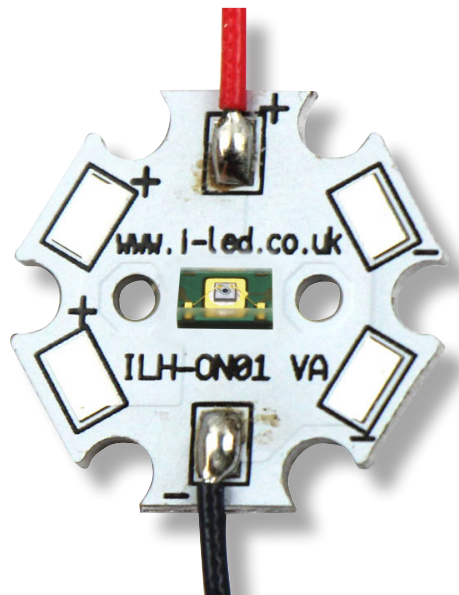




ILS Si APD 700nm 1 PowerStar

ILH-S14643-02-SC201-WIR200.

High speed, compact Si APD for LiDAR (700nm band) featuring low-bias operation. This Si APD is suitable for detecting light in the 700nm band, which is increasingly used in optical rangefinders. With the same shape as the previous product (S10341 series), this Si APD features less variation in breakdown voltage, reduced dark current, and expanded storage and operating temperatures.



FEATURES

- » Small package: 3.1 × 1.8 × 1.0mm
- » Peak sensitivity wavelength: 760nm (M=100)
- » Low-bias operation: Breakdown voltage=120 V max.
- » High-speed response: Cut off frequency=2 GHz typ.
- » ($\lambda=760$ nm, M=100)
- » Reduction of breakdown voltage variation 100 ± 20 V
- » Size (L x W x H): 20mm x 20mm x 3.85mm
- » 200mm wires

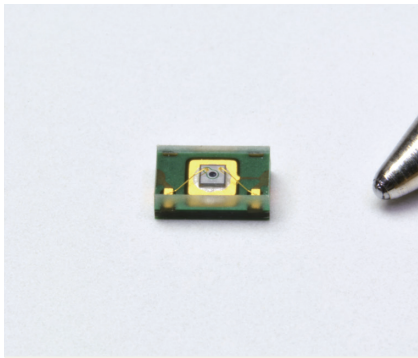
APPLICATIONS

- » Optical rangefinders

All photographs shown are for illustration purpose only. Actual product may vary.

Si APD

S14643-02



High speed, compact Si APD for LiDAR (700 nm band) featuring low-bias operation

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Features

- **Small package: 3.1 × 1.8 × 1.0^t mm**
- **Peak sensitivity wavelength: 760 nm (M=100)**
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- **High-speed response: Cutoff frequency=2 GHz typ. (λ=760 nm, M=100)**
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Applications

- **Optical rangefinders**

Structure

Parameter	Symbol	Specification	Unit
Photosensitive area*1	A	φ0.2	mm
Effective photosensitive area	-	0.03	mm ²
Package	-	Plastic (silicone resin)	-

*1: Area in which a typical gain can be obtained

Absolute maximum ratings

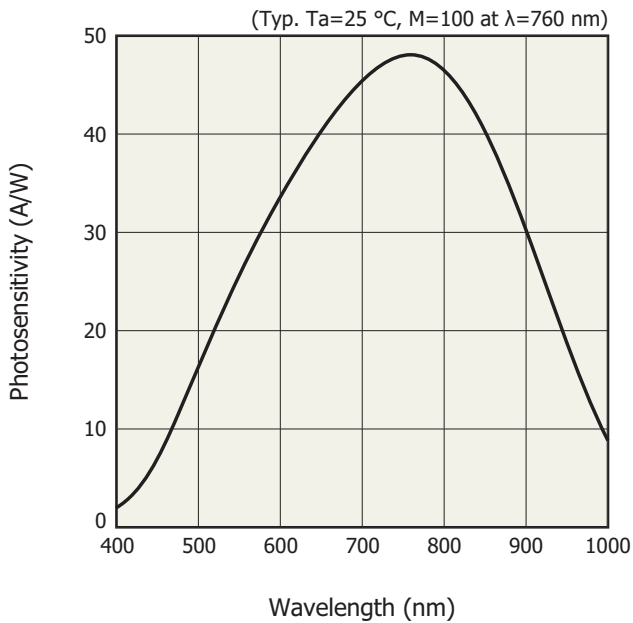
Parameter	Symbol	Specification	Unit
Operating temperature	Topr	-30 to +100	°C
Storage temperature	Tstg	-40 to +100	°C
Reverse current (DC)	IR max	0.2	mA
Forward current	IF max	10	mA
Soldering conditions	-	Peak temperature: 260 °C (see P.4), JEDEC level 2a	-

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.

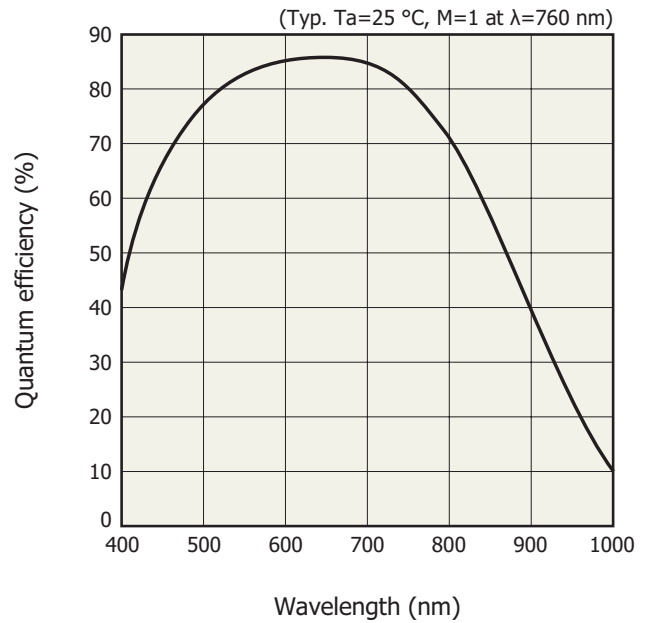
Electrical and optical characteristics (Ta=25 °C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Spectral response range	λ			400 to 1000		nm
Peak sensitivity wavelength	λ_p		-	760	-	nm
Photosensitivity	S	$\lambda=760$ nm, M=1	-	0.48	-	A/W
Quantum efficiency	QE	$\lambda=760$ nm, M=1	-	78	-	%
Breakdown voltage	V _{BR}	I _D =100 μ A	80	100	120	V
Temperature coefficient of breakdown voltage	ΔT_{VBR}		-	0.42	-	V/°C
Dark current	I _D	M=100	-	20	200	pA
Temperature coefficient of dark current	ΔT_{ID}	M=100	-	1.1	-	times/°C
Cutoff frequency	f _c	M=100, R _L =50 Ω $\lambda=760$ nm, -3 dB	-	2	-	GHz
Terminal capacitance	C _t	M=100, f=1 MHz	-	0.7	-	pF
Excess noise figure	x	M=100, $\lambda=760$ nm	-	0.3	-	-
Gain	M	$\lambda=760$ nm	-	100	-	-

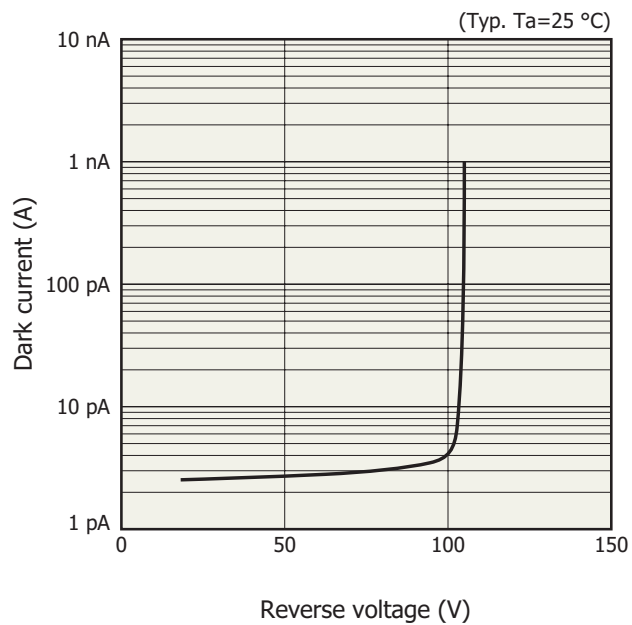
Spectral response



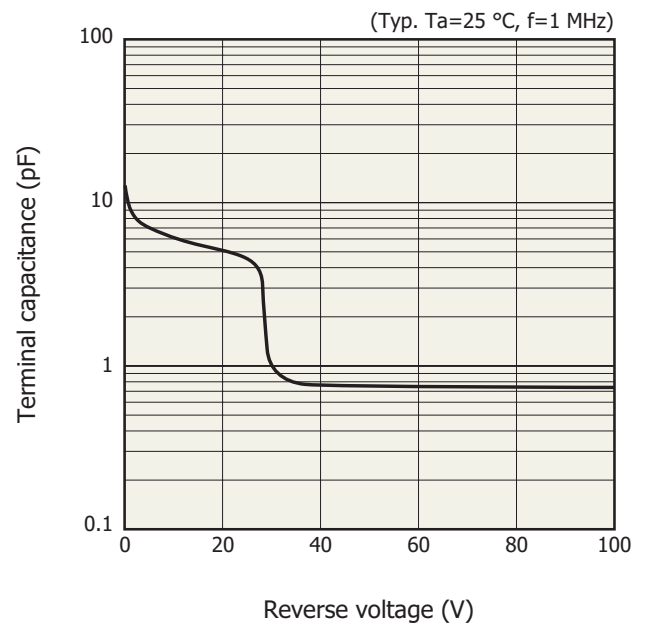
Quantum efficiency vs. wavelength



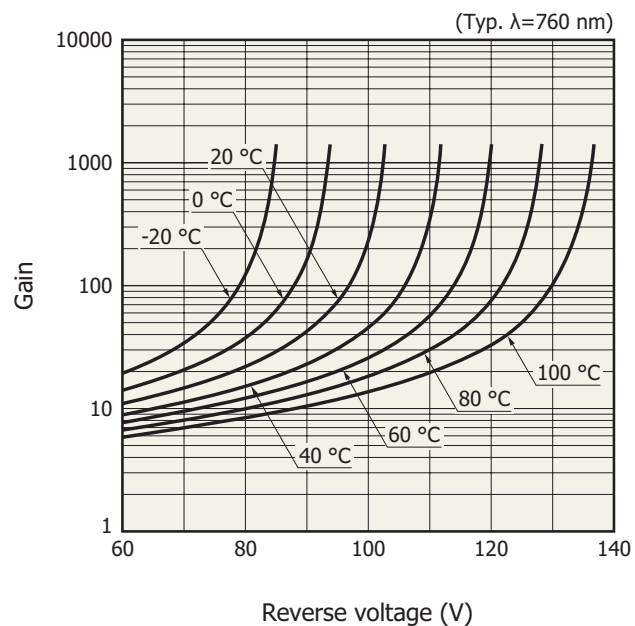
Dark current vs. reverse voltage



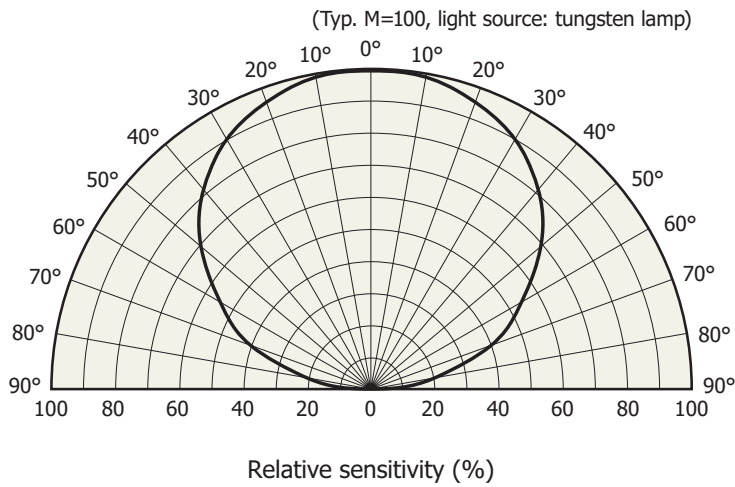
Terminal capacitance vs. reverse voltage



Gain vs. reverse voltage

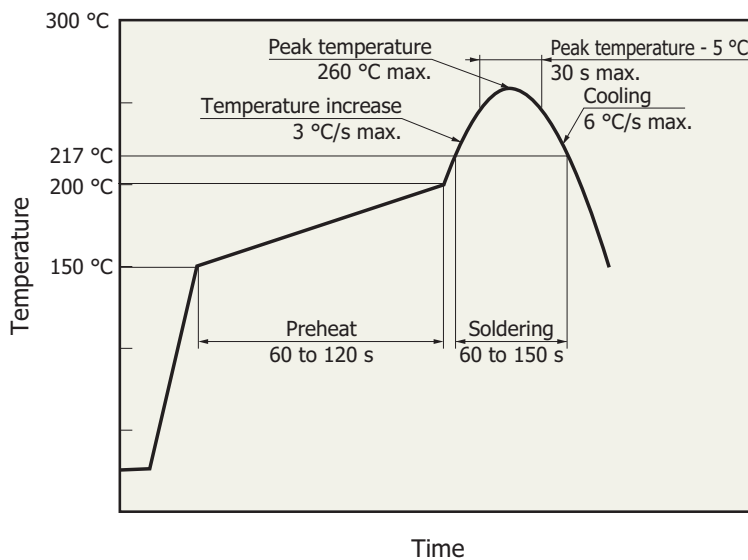


Directivity



KAPD0450EA

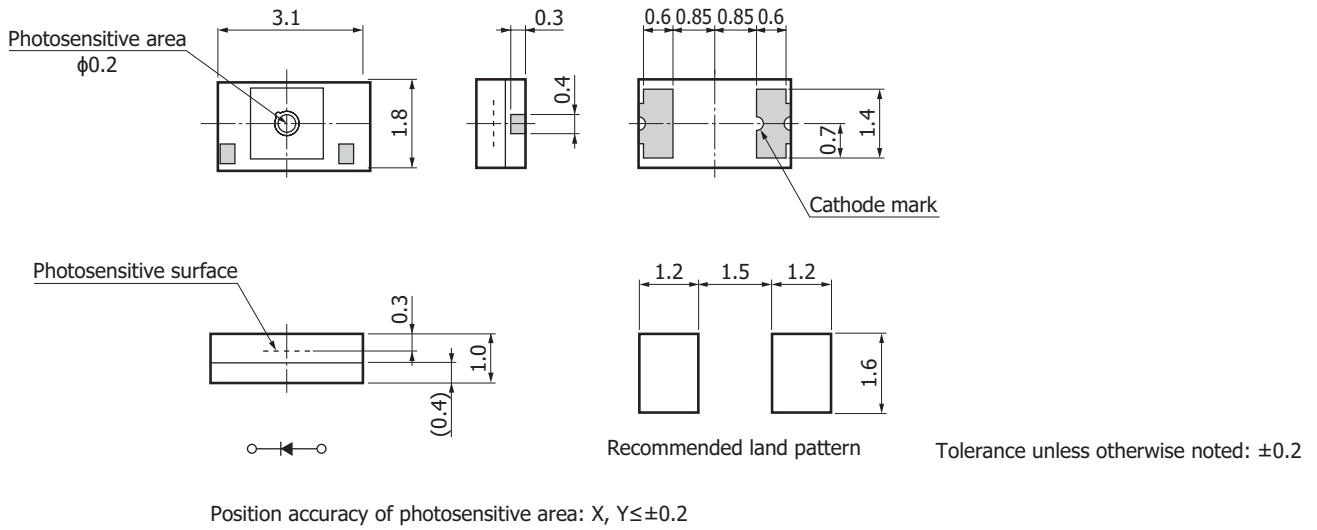
Recommended solder reflow conditions



KMPD0405EB

- After unpacking, keep it in an environment at 30 °C or less and a humidity of 60% or less, and perform soldering within 4 weeks.
- The effect that the product receives during reflow soldering varies depending on the circuit board and reflow oven that are used.
- When you set reflow soldering conditions, check that problems do not occur in the product by testing out the conditions in advance.

Dimensional outline (unit: mm)



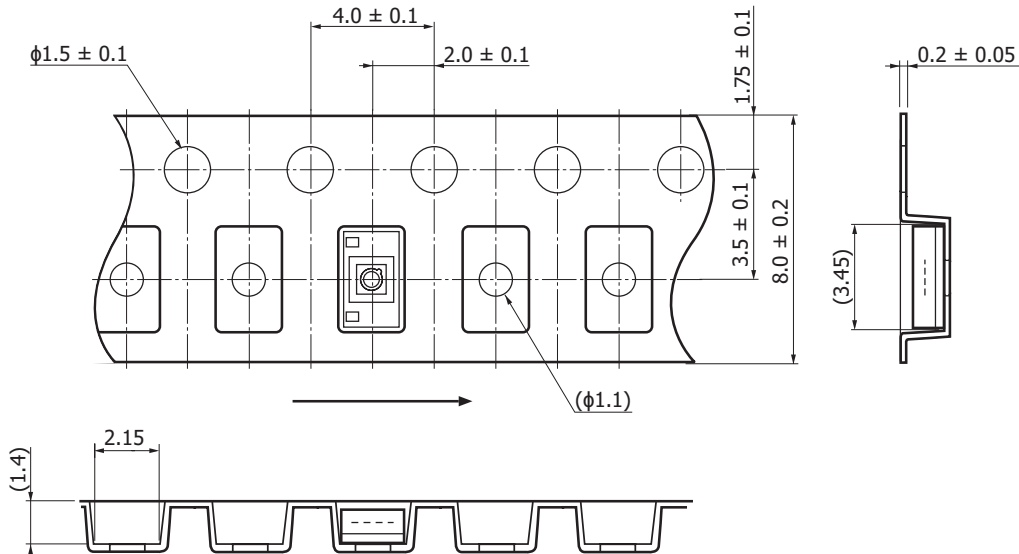
KAPDA0203EA

Standard packing specifications

- Reel (conforms to JEITA ET-7200)

Dimensions	Hub diameter	Tape width	Material	Electrostatic characteristics
180 mm	60 mm	8 mm	PS	Conductive

- Embossed tape (unit: mm, material: PS, conductive)



KPINC0023EA

- Packing quantity
1000 pcs/reel
- Packing type
Reel and desiccant in moisture-proof packaging (vacuum-sealed)

Related information

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

■ Precautions

- Disclaimer
- Surface mount type products



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Information described in this material is current as of January 2019.

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