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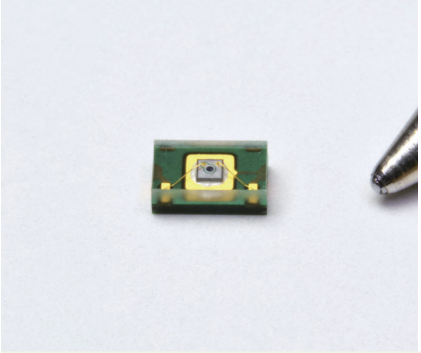
NEW

Si APD



S14643-02

High speed, compact Si APD for the 700 nm band featuring low-bias operation

This Si APD is suitable for detecting light in the 700 nm 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 × 1.0^{t} mm**
- **Peak sensitivity wavelength: 760 nm (M=100)**
- **Low-bias operation: Breakdown voltage=120 V max.**
- **High-speed response: Cutoff frequency=2 GHz typ. (λ=760 nm, M=100)**
- **Reduction of breakdown voltage variation 100 ± 20 V**

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

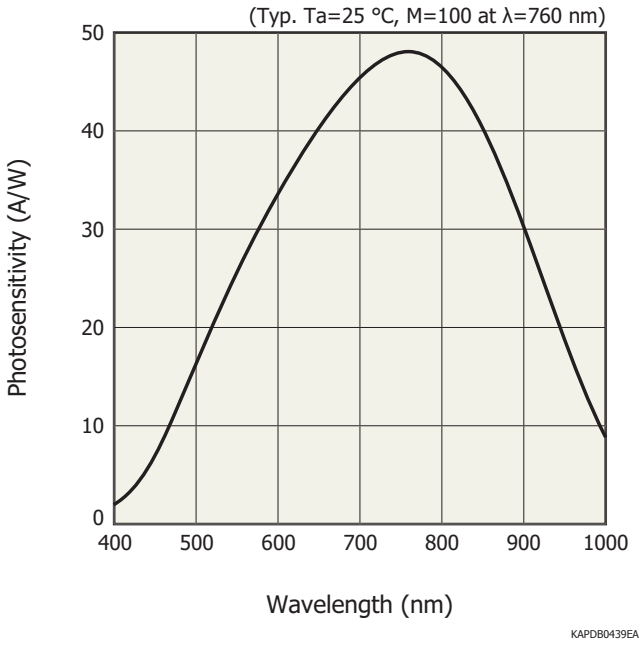
Parameter	Symbol	Specification	Unit
Operating temperature	Topr	-30 to +100	°C
Storage temperature	Tstg	-40 to +100	°C
Reverse current (DC)	I_R max	0.2	mA
Forward current	I_F max	10	mA
Soldering conditions	-	Peak temperature: 260 °C (see P.4), JEDEC level 2a	-

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.

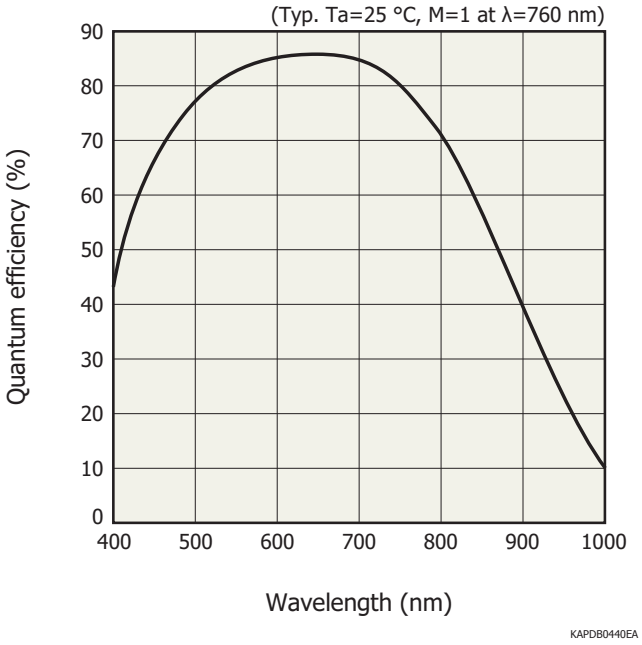
Electrical and optical characteristics (Ta=25 °C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Spectral response range	λ			400 to 1000		nm
Peak sensitivity wavelength	λp		-	760	-	nm
Photosensitivity	S	λ=760 nm, M=1	-	0.48	-	A/W
Quantum efficiency	QE	λ=760 nm, M=1	-	78	-	%
Breakdown voltage	V_{BR}	I_D=100 μA	80	100	120	V
Temperature coefficient of breakdown voltage	ΔTV_{BR}		-	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	fc	M=100, R_L=50 Ω λ=760 nm, -3 dB	-	2	-	GHz
Terminal capacitance	Ct	M=100, f=1 MHz	-	0.7	-	pF
Excess noise figure	x	M=100, λ=760 nm	-	0.3	-	-
Gain	M	λ=760 nm	-	100	-	-

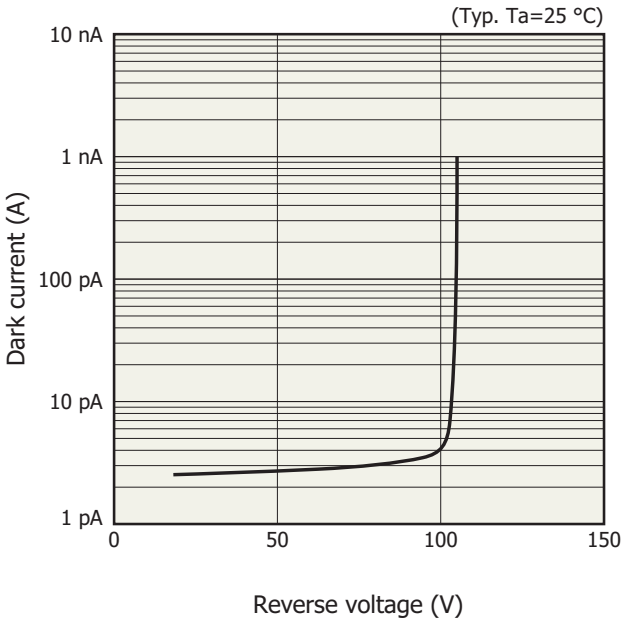
Spectral response



Quantum efficiency vs. wavelength



Dark current vs. reverse voltage



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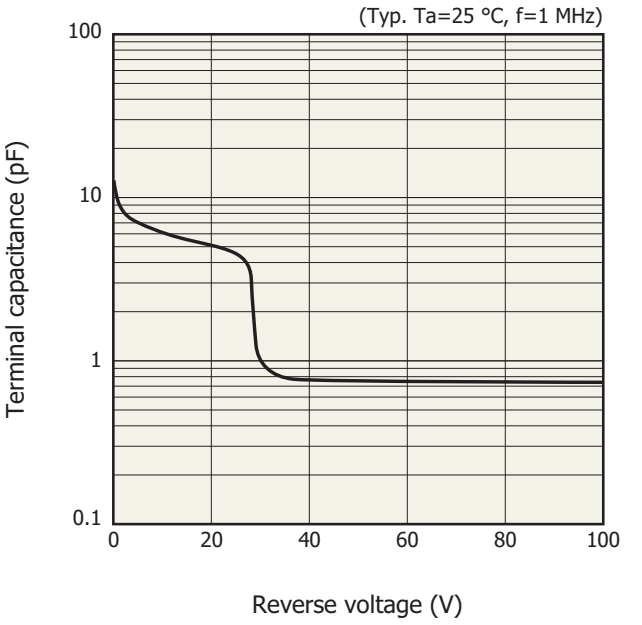
Terminal capacitance vs. reverse voltage



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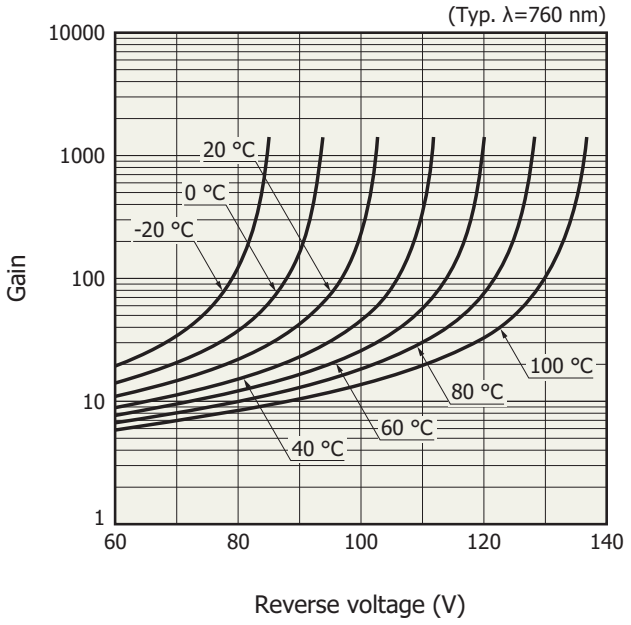
Gain vs. reverse voltage



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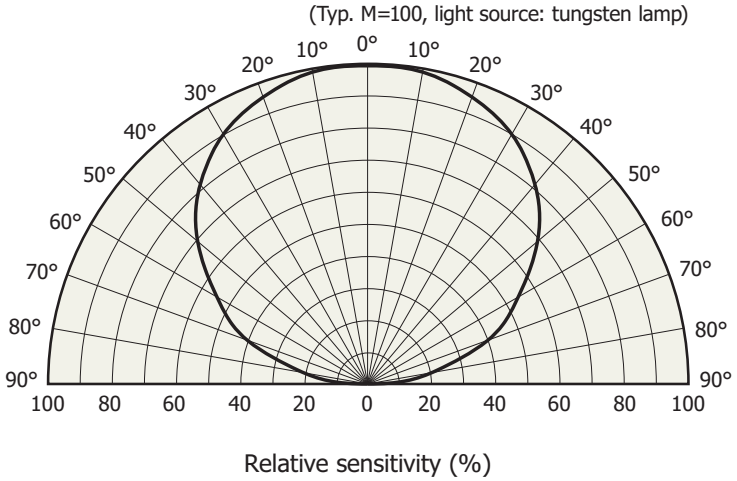
Directivity



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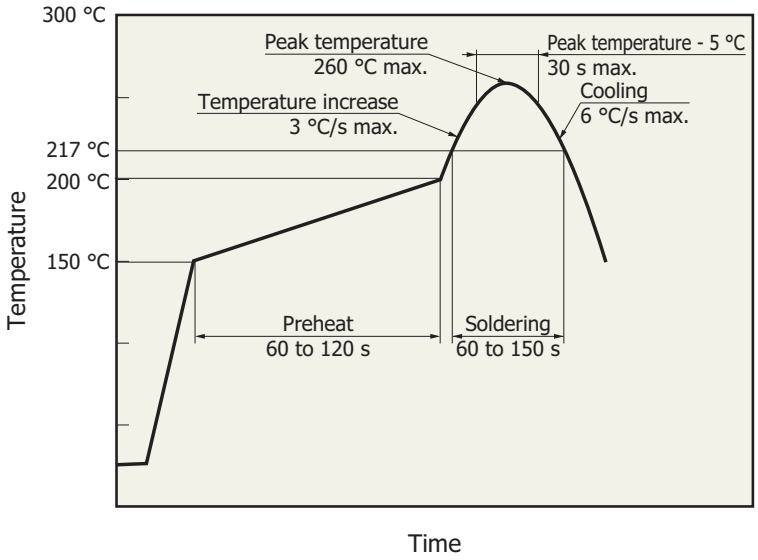
Recommended solder reflow conditions



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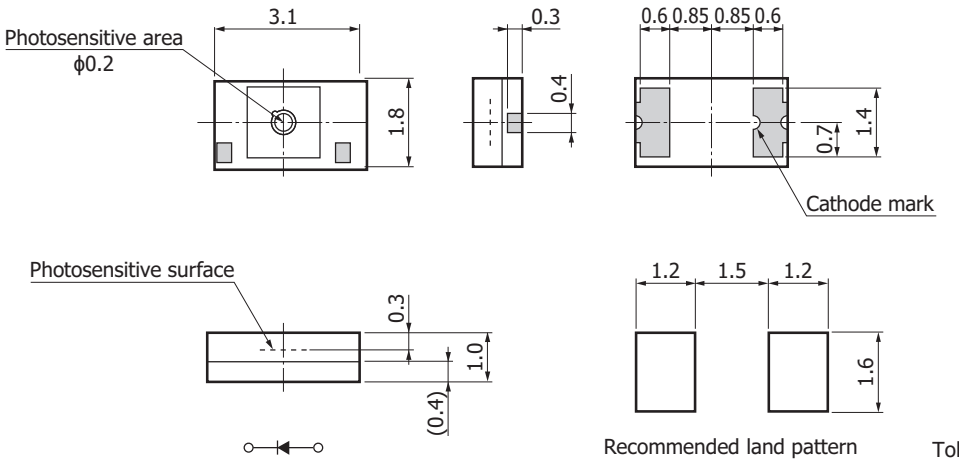
- After unpacking, keep it in an environment at 30 °C or less and a humidity of 60% or less, and perform soldering within 4 weeks.
- The effect that the product receives during reflow soldering varies depending on the circuit board and reflow oven that are used.
- When you set reflow soldering conditions,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

Dimensional outline (unit: mm)



Recommended land pattern

Tolerance unless otherwise noted: ±0.2

Position accuracy of photosensitive area: X, Y≤±0.2

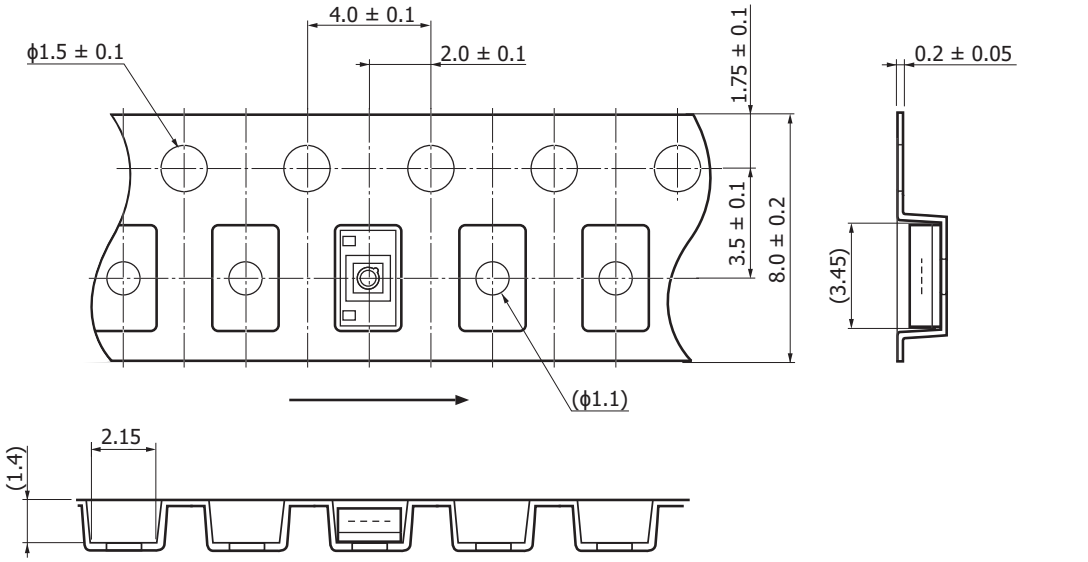
KAPDA0203EA

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)



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■ 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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Cat. No. KAPD1066E01 Jan. 2019 DN