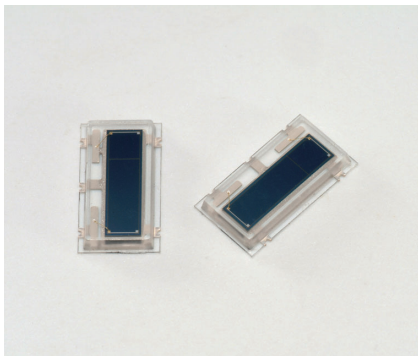


# Si PIN photodiode



S9345

## Dual-element photodiode using newly developed small, thin package

The S9345 is a dual-element Si PIN photodiode employing a newly developed small, thin plastic package. The cubic volume reduced to one-fifth that of similar type photodiodes using conventional package. In order to extend the detection area when used as a reflection-mode optical switch, the entire photodiode photosensitive area of 1.5 mm wide and 5.6 mm long is asymmetrically segmented into 2 longitudinal sections of 1.5 mm and 4.1 mm.

### Features

- Miniature and thin plastic package: 3.4 × 7.0 × 0.95<sup>t</sup> mm
- Surface mount type
- Asymmetrical dual-element PIN photodiode
- Photosensitive area  
Photodiode A: 1.5 × 1.5 mm  
Photodiode B: 1.5 × 4.1 mm
- High sensitivity

### Applications

- Optical switches

### Absolute maximum ratings (Ta=25 °C)

Parameter	Symbol	Value	Unit
Reverse voltage	V <sub>R</sub> max	20	V
Operating temperature	T <sub>opr</sub>	-25 to +85	°C
Storage temperature	T <sub>stg</sub>	-40 to +100	°C
Reflow soldering conditions*1	T <sub>sol</sub>	Peak temperature 235 °C, 1 time (see page 3)	-

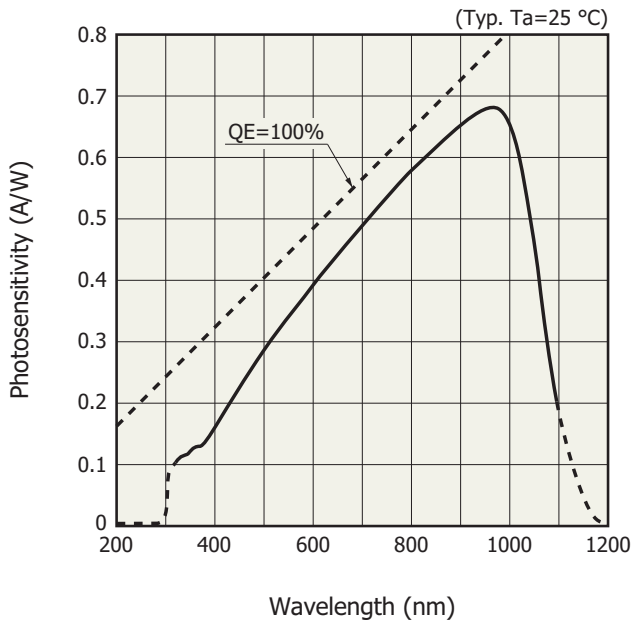
\*1: JEDEC level 5a

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.

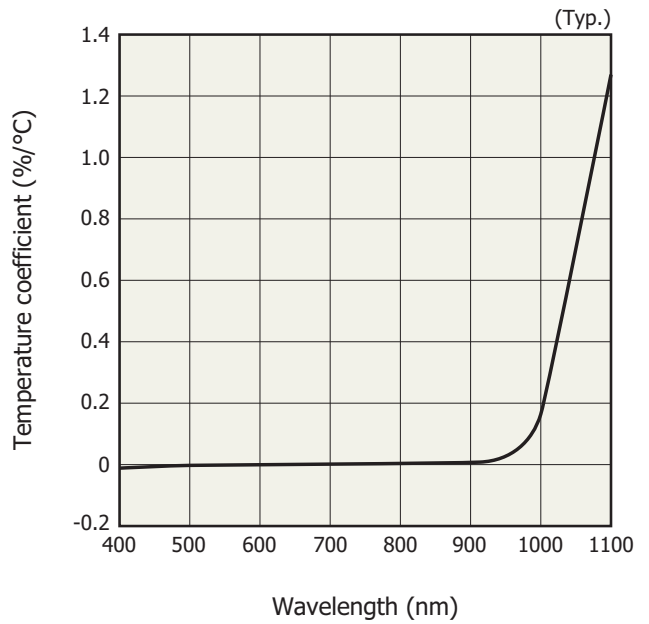
### Electrical and optical characteristics (Ta=25 °C, per 1 element)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Spectral response range	λ		-	320 to 1100	-	nm
Peak sensitivity wavelength	λ <sub>p</sub>		-	960	-	nm
Photosensitivity	S	λ=780 nm	0.5	0.55	-	A/W
Short circuit current	Photodiode A	V <sub>R</sub> =0 V, 2856 K 100 lx	-	2.6	-	μA
	Photodiode B		-	7.1	-	
Dark current	I <sub>D</sub>	V <sub>R</sub> =10 V, all elements	-	0.4	5	nA
Terminal capacitance	Photodiode A	V <sub>R</sub> =10 V, f=1 MHz	-	4	8	pF
	Photodiode B		-	10	20	
Cutoff frequency	f <sub>c</sub>	V <sub>R</sub> =10 V, R <sub>L</sub> =50 Ω λ=780 nm, -3 dB	7	15	-	MHz

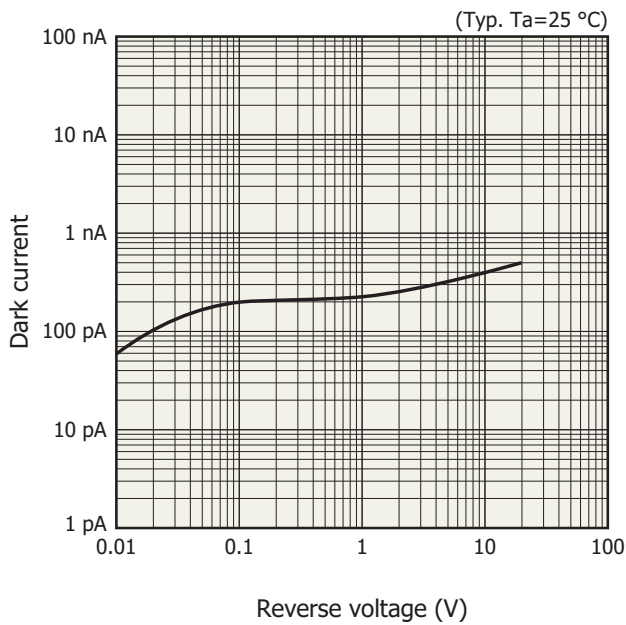
**Spectral response**



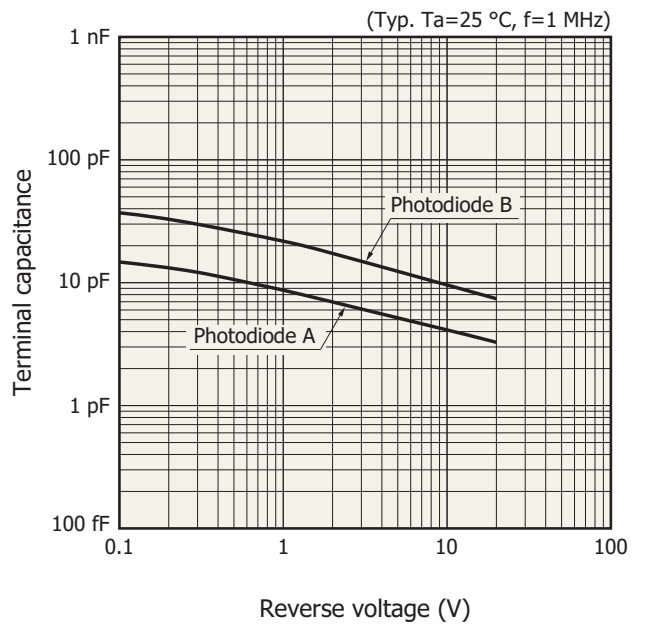
**Photosensitivity temperature characteristics**



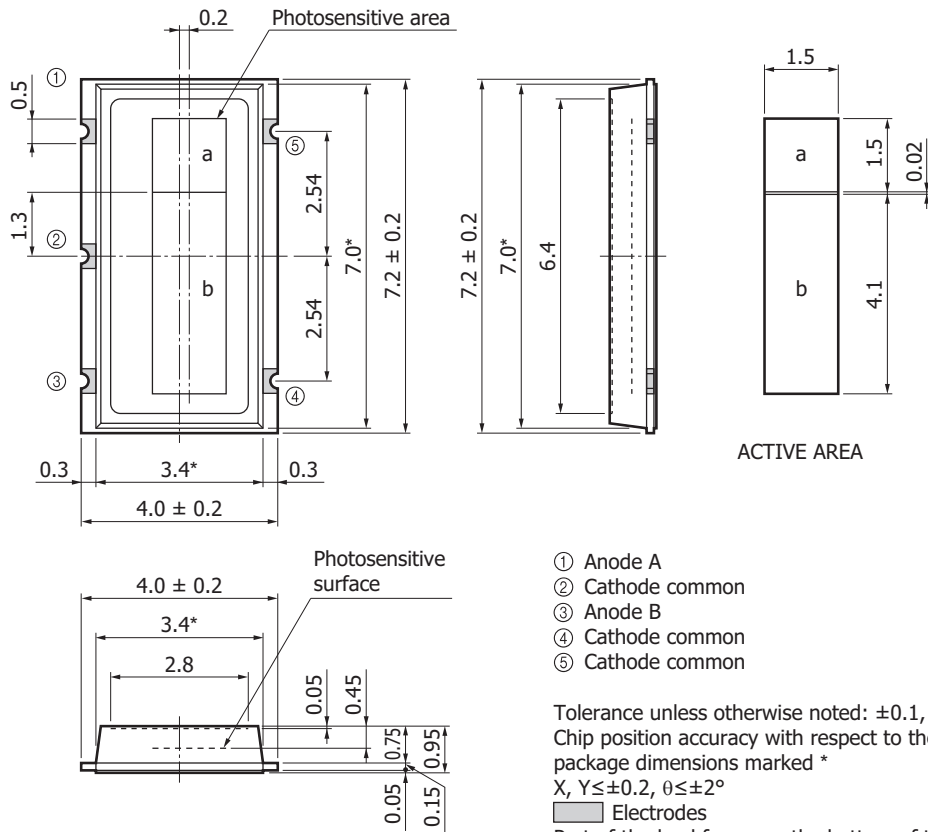
**Dark current vs. reverse voltage**



**Terminal capacitance vs. reverse voltage**



**Dimensional outline (unit: mm)**



- ① Anode A
- ② Cathode common
- ③ Anode B
- ④ Cathode common
- ⑤ Cathode common

Tolerance unless otherwise noted:  $\pm 0.1$ ,  $\pm 2^\circ$

Chip position accuracy with respect to the package dimensions marked \*

X, Y  $\leq \pm 0.2$ ,  $\theta \leq \pm 2^\circ$

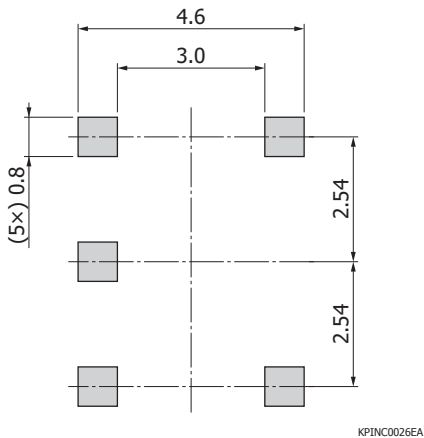
■ Electrodes

Part of the lead frame on the bottom of the package might not be covered with epoxy resin.

Don't contact this device to a conductor for protecting from short circuit.

KPINA0095EB

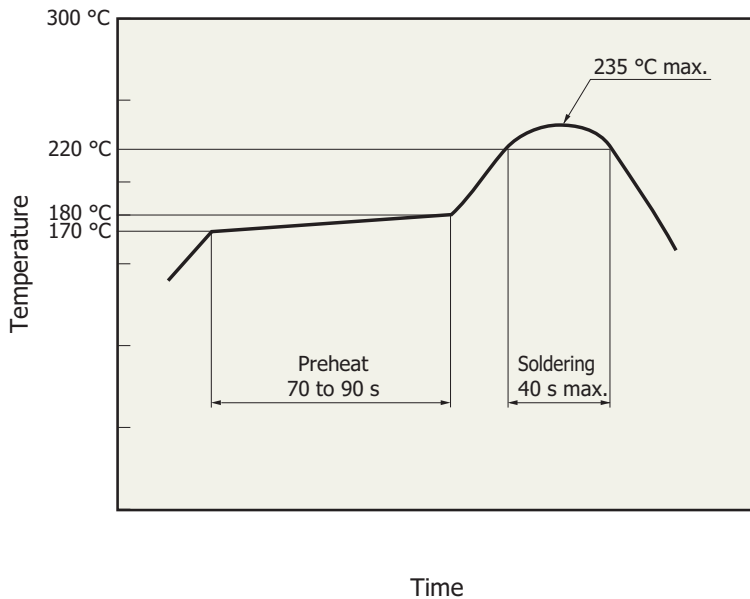
**Recommended land pattern (unit: mm)**



KPINC0026EA

### Measured example of temperature profile with our hot-air reflow oven for product testing

This product supports lead-free soldering. After unpacking, store it in an environment at a temperature of from 5 to 30 °C and a humidity of 60% or less, and perform soldering within 24 hours.



KPINB0394EB

### Related information

[www.hamamatsu.com/sp/ssd/doc\\_en.html](http://www.hamamatsu.com/sp/ssd/doc_en.html)

#### ■ Precautions

- Notice
- Surface mount type products

#### ■ Technical information

- Si photodiode / Application circuit examples

Information described in this material is current as of November, 2014.

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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# HAMAMATSU

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