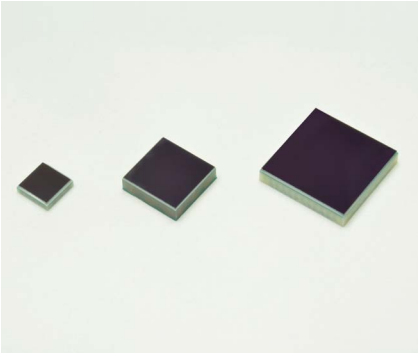
HAMAMATSU
PHOTON IS OUR BUSINESS

Si photodiodes



S13955-01 S13956-01 S13957-01

Back-illuminated photodiodes with CSP structure

A scintillator can be coupled directly on the chip by using a back-illuminated photodiode. It is designed with minimal dead space around the product. This makes it possible to arrange multiple products side by side.

Features

- **Spectral response range: 400 to 1100 nm**
- **Package size: 7.52 × 7.52 mm (S13955-01)**
  3 × 3 mm (S13956-01)
  5 × 5 mm (S13957-01)
- **Easy coupling with a scintillator**
  Because there are no wires in the photosensitive area and the optical coupling efficiency with an scintillator can be maximized, it suitable for non-destructive X-ray inspection equipment.

Applications

- **General industrial measurement**
- **X-ray test equipment**

Structure

Parameter	S13955-01	S13956-01	S13957-01	Unit
Package size	7.52 × 7.52	3 × 3	5 × 5	mm
Element size	7.37 × 7.37	2.8 × 2.8	4.86 × 4.86	mm
Photosensitive area	6.97 × 6.97	2.5 × 2.5	4.7 × 4.7	mm
Package	Glass epoxy			-

Absolute maximum ratings

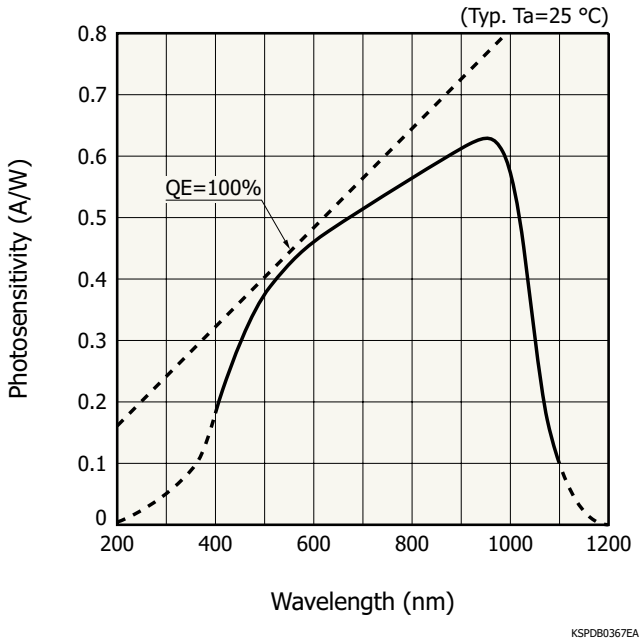
Parameter	Symbol	Condition	Value	Unit
Maximum reverse voltage	V_R max	Ta=25 °C	10	V
Operating temperature	Topr		-20 to +60	°C
Storage temperature	Tstg		-20 to +80	°C
Reflow soldering conditions	Tsol	JEDEC level 5a	Peak temperature: 260 °C (see P.4)	-

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)

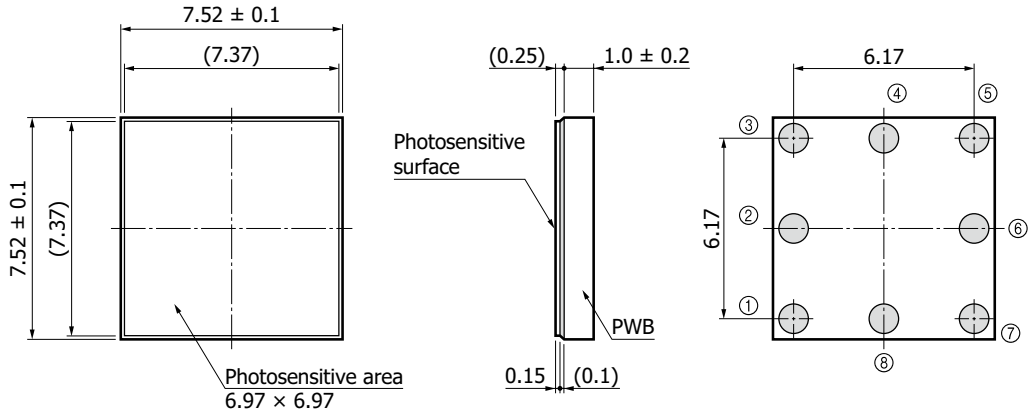
Parameter	Symbol	Condition	S13955-01			S13956-01			S13957-01			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
Spectral response range	λ		400 to 1100			400 to 1100			400 to 1100			nm
Peak sensitivity wavelength	λp		-	960	-	-	960	-	-	960	-	nm
Photosensitivity	S	λ=540 nm	0.38	0.42	-	0.38	0.42	-	0.38	0.42	-	A/W
		λ=920 nm	0.55	0.61	-	0.55	0.61	-	0.55	0.61	-	
Short circuit current	Isc	100 *lx*, 2856 K	36	46	-	4.5	5.5	-	18	22	-	μA
Dark current	I_D	V_R=10 mV	-	50	1000	-	10	300	-	40	1000	pA
Rise time	tr	V_R=0 V, R_L=1 kΩ λ=650 nm	-	15	-	-	15	-	-	15	-	μs
Terminal capacitance	Ct	V_R=0 V, f=10 kHz	300	500	700	40	60	90	-	230	350	pF

Spectral response

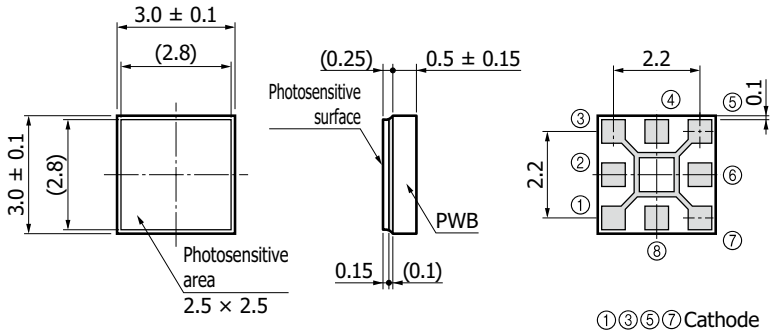


Dimensional outlines (unit: mm)

S13955-01



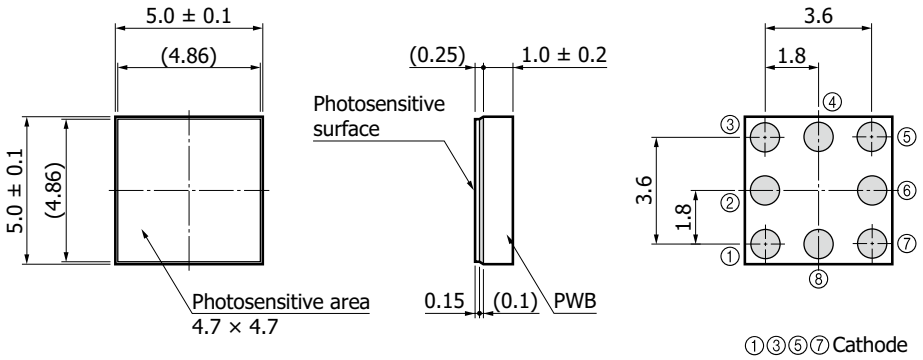
S13956-01



Tolerance unless otherwise noted: ±0.15

KSPDA0215EA

S13957-01



Tolerance unless otherwise noted: ±0.15

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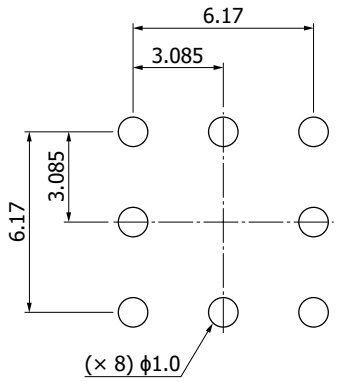
Recommended land patterns (unit: mm)

S13955-01



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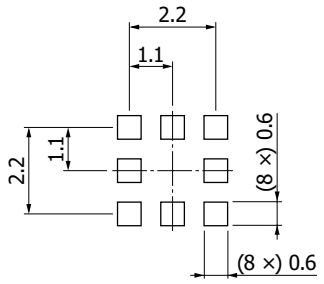
S13956-01



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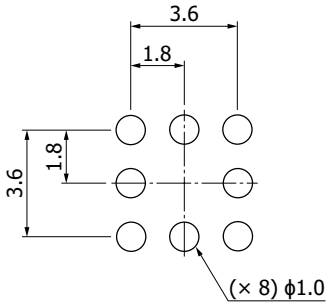
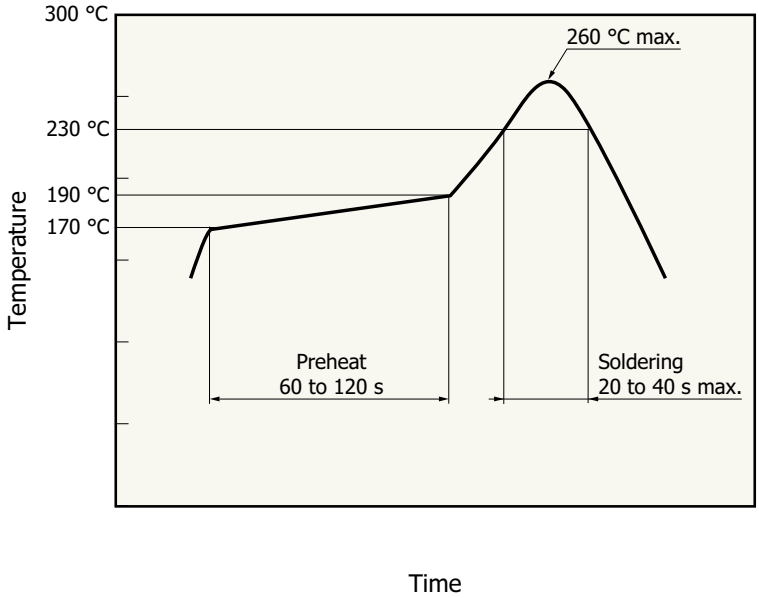
S13957-01



KSPDC0092EA

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 30 °C or less and a humidity of 60% or less, and perform soldering within 24 hours.



KPINB0385EB

Related information

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

■ Precautions
· Disclaimer
· Unsealed product / Precautions

■ Technical information
· Si photodiode

Information described in this material is current as of September 2023.
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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