

S10043

## Highly reliable photodiode for VUV detection

The S10043 is a Si photodiode designed to detect high-power ArF excimer lasers (193 nm) with high accuracy and stability. By combining our newly developed technologies for forming ultra-thin PN junctions and high-reliability ultra-thin metal films, the S10043 shows almost no change in sensitivity even after exposure to ArF excimer laser beam of 1 kJ/cm<sup>2</sup>.

### Features

- Greatly improved sensitivity stability even after exposure to ArF ( $\lambda=193$  nm) excimer laser
- Windowless package\*<sup>1</sup>

### Applications

- ArF excimer laser detection
- Various UV detection

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

Parameter	Symbol	Value	Unit
Reverse voltage	VR max	5	V
Operating temperature* <sup>2</sup>	Topr	-20 to +60	°C
Storage temperature* <sup>2</sup>	Tstg	-55 to +80	°C

\*1: The S10043 uses a windowless package with no protection on the photodiode chip, and is shipped with the package held with glass tape. Remove the glass tape when using.

\*2: No dew condensation

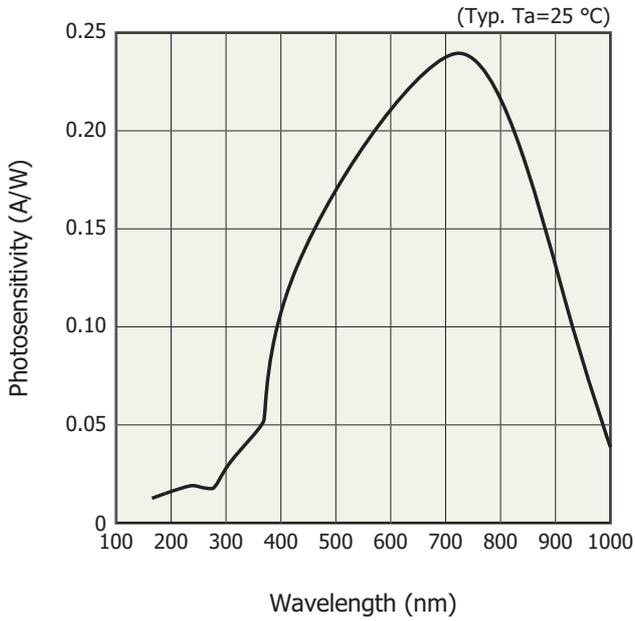
When there is a temperature difference between a product and the surrounding area in high humidity environment, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.

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)

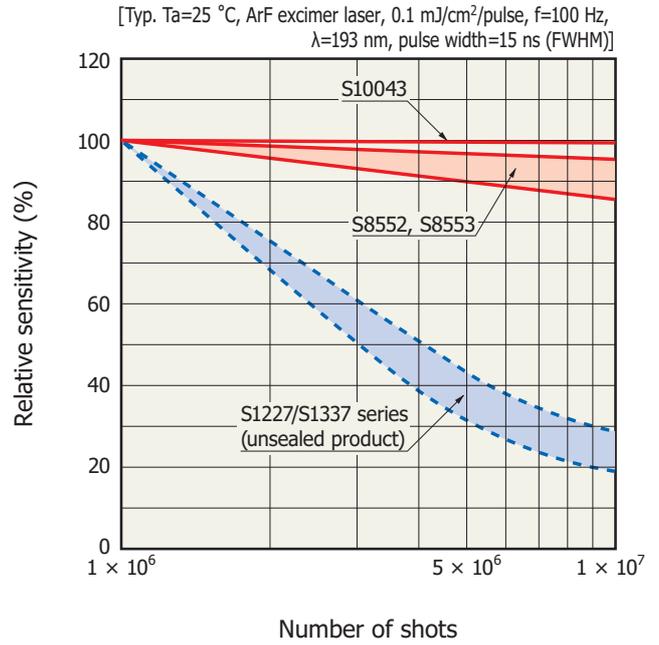
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Spectral response range	$\lambda$		-	190 to 1000	-	nm
Peak sensitivity wavelength	$\lambda_p$		-	720	-	nm
Photosensitivity	S	$\lambda=193$ nm	10	15	-	mA/W
Dark current	ID	VR=10 mV	-	0.1	1	nA
Terminal capacitance	Ct	VR=0 V, f=10 kHz	-	4	-	nF
Rise time	tr	VR=0 V, RL=1 k $\Omega$ 10 to 90%	-	9	-	$\mu$ s

**Spectral response**



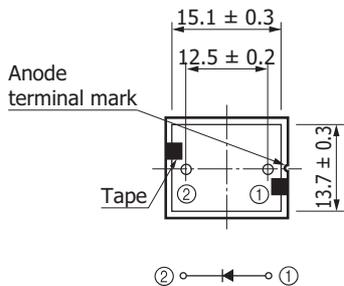
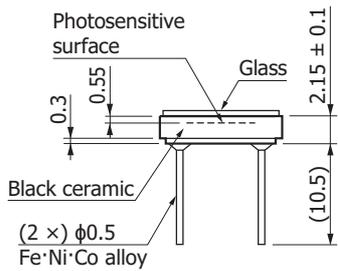
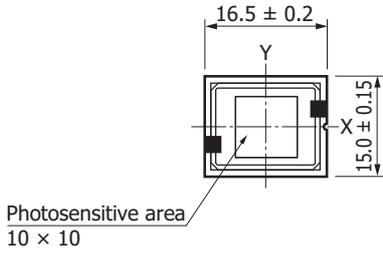
KSPDB0257EA

**Variation in sensitivity due to VUV exposure**



KSPDB0264EE

**Dimensional outline (unit: mm)**



Chip position accuracy  
with respect to the package center  
-0.3 ≤ X, Y ≤ +0.3

KSPDA0171EB

## Handling precautions

- Handle the photodiodes in a clean room.
- Never touch the photodiode chip surface and wire bonding.
- Wear dust-proof gloves and dust-proof mask.
- Use an air dust cleaner to blow away dust and foreign matter on the photodiode chip surface.
- Do not clean the photodiodes by any method other than air blow.

## Precautions against UV light exposure

- When UV light irradiation is applied, the product characteristics may degrade. Such examples include degradation of the product's UV sensitivity and increase in dark current. This phenomenon varies depending on the irradiation level, irradiation intensity, usage time, and ambient environment and also varies depending on the product model. Before employing the product, we recommend that you check the tolerance under the ultraviolet light environment that the product will be used in.

## Related information

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

### ■ Precautions

- Disclaimer
- Metal, ceramic, plastic package products
- Unsealed products

### ■ Technical information

- Si photodiode/Application circuit examples

Information described in this material is current as of December 2016.

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. Copying or reprinting the contents described in this material in whole or in part is prohibited without our prior permission.

# HAMAMATSU

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