

# Si PIN photodiodes



S3096-02

S4204

## Dual-element, plastic package photodiode

The S3096-02 and S4204 are dual-element Si PIN photodiodes molded into plastic packages. Having high sensitivity and low noise, these photodiodes have low crosstalk between the elements.

Custom devices (with different element shapes, number of elements, characteristics and packages) are also available to meet you specific needs. Please feel free to contact our sales office.

### Features

- High sensitivity
- Uniform element sensitivity
- Low crosstalk
- Low noise

### Applications

- Optical switches
- Various position detection applications

### Structure / Absolute maximum ratings

Parameter	Symbol	S3096-02	S4204	Unit
Photosensitive area	-	1.2 × 3 / 2 elements	1 × 2 / 2 elements	mm
Element gap	-	30	20	μm
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

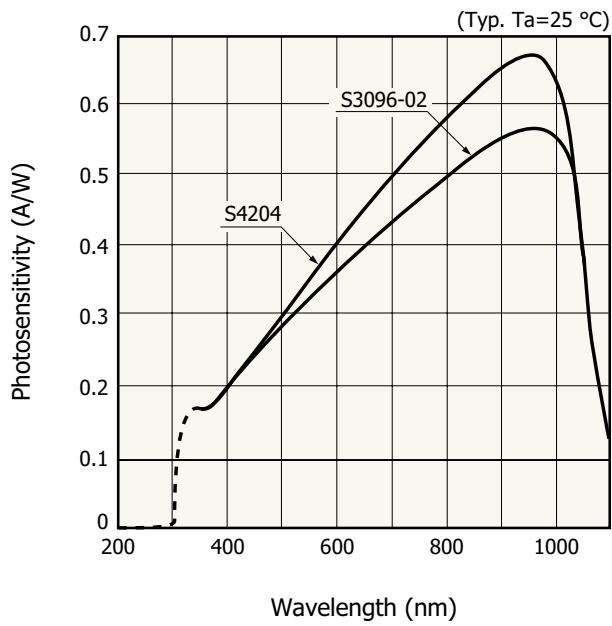
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

### Electrical and optical characteristics (Typ. T<sub>a</sub>=25 °C, unless otherwise noted, per 1 element)

Parameter	Symbol	Condition	S3096-02			S4204			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Spectral response range	λ		-	320 to 1100	-	-	320 to 1100	-	nm
Peak sensitivity wavelength	λ <sub>p</sub>		-	960	-	-	960	-	nm
Photosensitivity	S	λ=λ <sub>p</sub>	-	0.58	-	-	0.65	-	A/W
Dark current	I <sub>D</sub>	V <sub>R</sub> =10 V, all elements	-	0.05	0.5	-	0.1	1.0	nA
Temp. coefficient of I <sub>D</sub>	T <sub>CI<sub>D</sub></sub>		-	1.15	-	-	1.15	-	times/°C
Cutoff frequency	f <sub>c</sub>	V <sub>R</sub> =10 V, R <sub>L</sub> =50 Ω λ=780 nm, -3 dB	-	25	-	-	30	-	MHz
Terminal capacitance	C <sub>t</sub>	V <sub>R</sub> =10 V, f=1 MHz	-	5	-	-	3	-	pF
Noise equivalent power	NEP	V <sub>R</sub> =10 V	-	7.2 × 10 <sup>-15</sup>	-	-	8.7 × 10 <sup>-15</sup>	-	W/Hz <sup>1/2</sup>

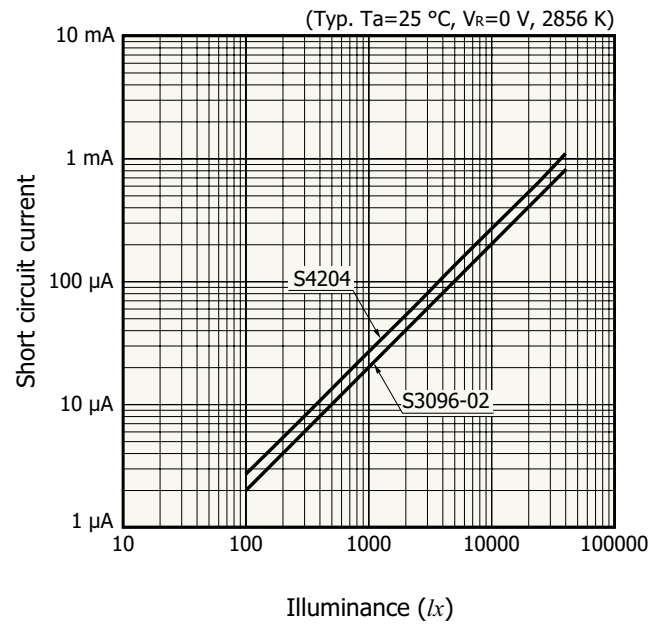
These products do not support lead-free soldering temperature. For details on reflow soldering conditions for surface mount types, please contact our sales office.

**Spectral response**



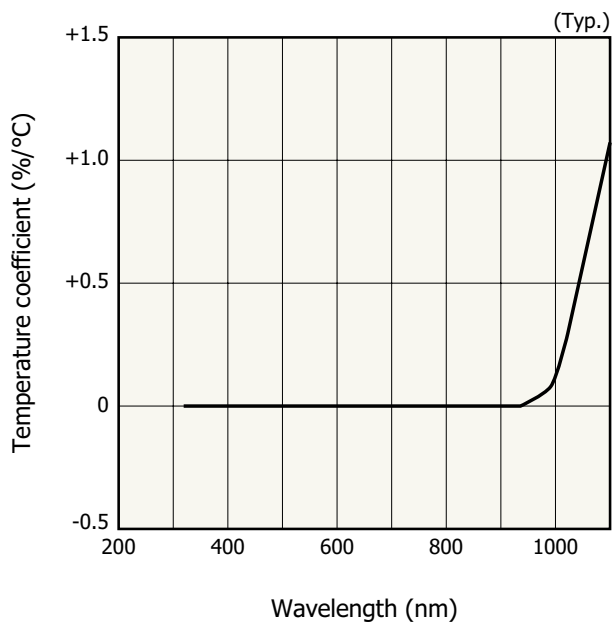
KMPDB0134EC

**Linearity**



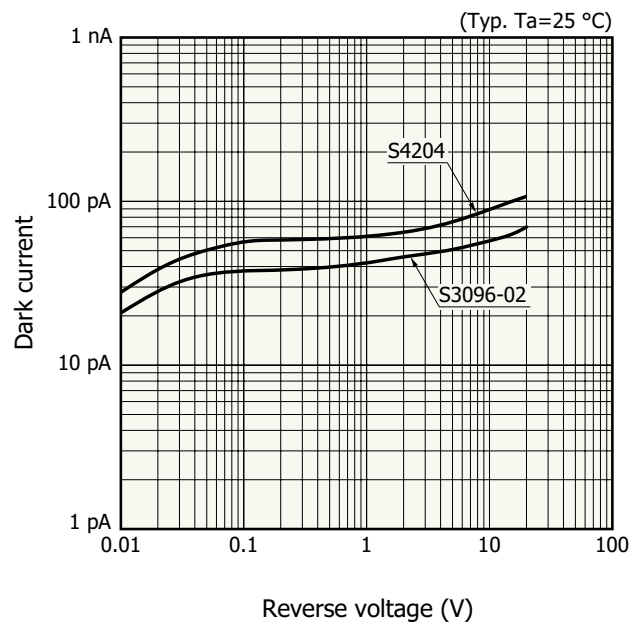
KMPDB0378EA

**Photosensitivity temperature characteristics**



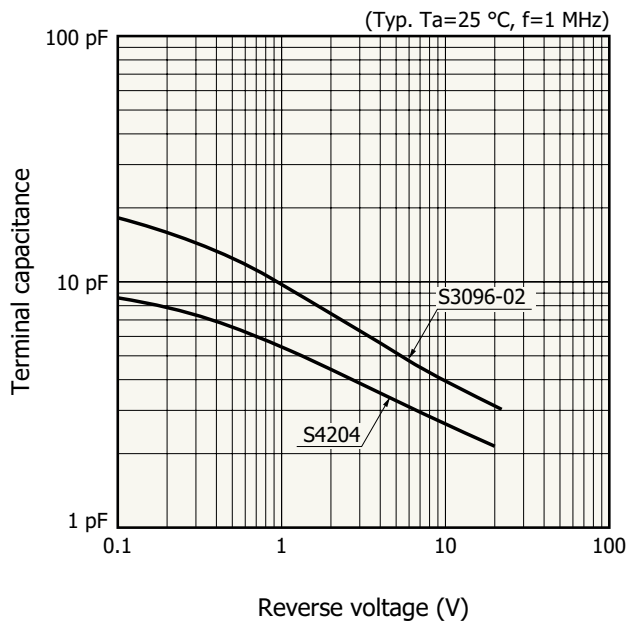
KMPDB0135ED

**Dark current vs. reverse voltage**



KMPDB0136ED

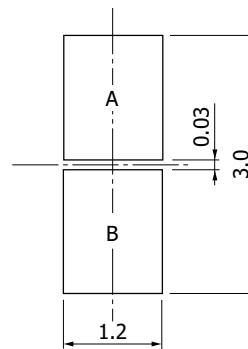
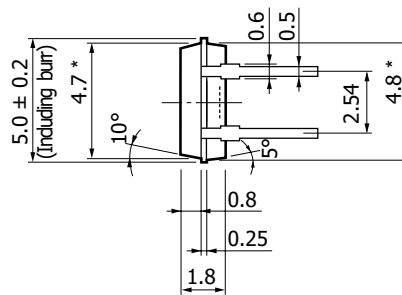
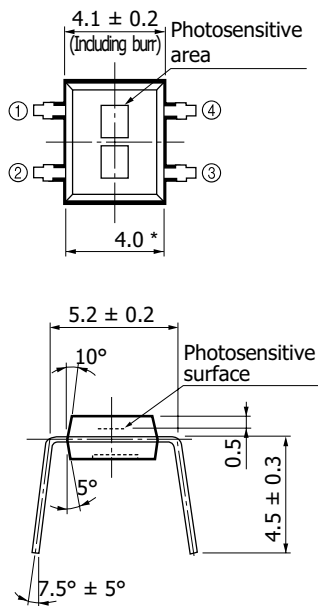
Terminal capacitance vs. reverse voltage



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Dimensional outlines (unit: mm)

S3096-02



Details of photosensitive area

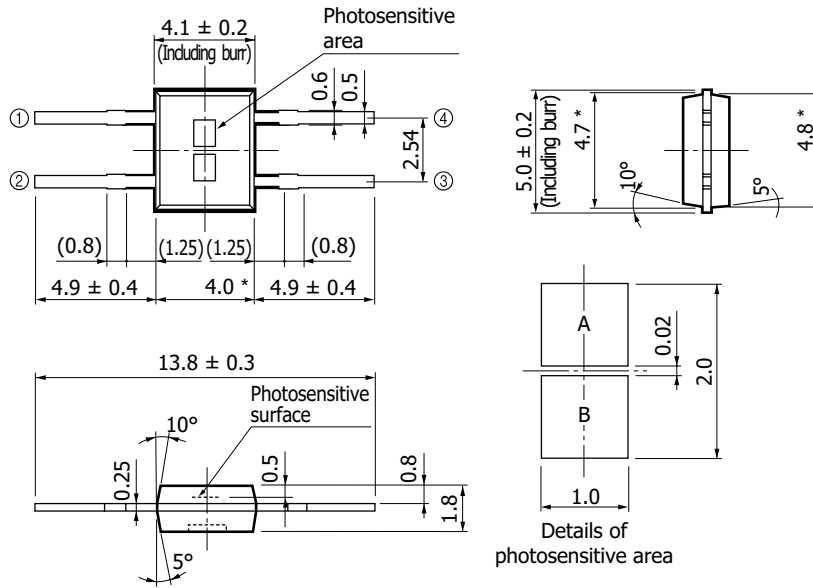
- ① Anode A
- ② Cathode common
- ③ Anode B
- ④ Cathode common

Tolerance unless otherwise noted:  $\pm 0.1$   
 Chip position accuracy with respect to the package dimensions marked \*  
 $X, Y \leq \pm 0.2$   
 $\theta \leq \pm 2^\circ$

Lead surface finish: Silver plating  
 Standard packing: Stick (50 pcs/stick)

KMPDA0119EB

## S4204



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

Tolerance unless otherwise noted:  $\pm 0.1$   
 Chip position accuracy with respect  
 to the package dimensions marked \*  
 $X, Y \leq \pm 0.2$   
 $\theta \leq \pm 2^\circ$

Lead surface finish: Silver plating  
 Standard packing: Stick (50 pcs/stick)

KMPDA0120EB

Information described in this material is current as of July, 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. Copying or reprinting the contents described in this material in whole or in part is prohibited without our prior permission.

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