

S15137

Si PIN photodiode for visible to infrared photometry

The S15137 is a Si PIN photodiode developed for YAG lasers (1.06 μm). The photosensitivity at 1.06 μm is 0.57 A/W (typ.), which is about 1.5 times higher than that of previous products. The PIN structure allows high-speed response and low capacitance. The photosensitive area is as large as $\phi 5\text{ mm}$, making optical axis alignment easier.

Features

- High sensitivity in infrared region: 0.57 A/W ($\lambda=1.06\ \mu\text{m}$)
- High-speed response: $t_r=12.5\ \text{ns}$ ($V_R=100\ \text{V}$)
- Low capacitance: $C_t=10\ \text{pF}$ ($V_R=100\ \text{V}$)
- Large photosensitive area: $\phi 5\ \text{mm}$
- High reliability: TO-8 metal package

Applications

- Fiber laser detection
- YAG laser detection
- Analytical instrument, etc.

Structure

| Parameter | Symbol | Specification | Unit |
|---------------------|--------|--------------------|------|
| Photosensitive area | A | $\phi 5.0$ | mm |
| Package | - | TO-8 | - |
| Window material | - | Borosilicate glass | - |

Absolute maximum ratings ($T_a=25\ ^\circ\text{C}$)

| Parameter | Symbol | Condition | Value | Unit |
|-----------------------|-----------|-----------------------|-------------|------------------|
| Reverse voltage | V_R | | 150 | V |
| Operating temperature | T_{opr} | No dew condensation*1 | -40 to +100 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | No dew condensation*1 | -55 to +125 | $^\circ\text{C}$ |

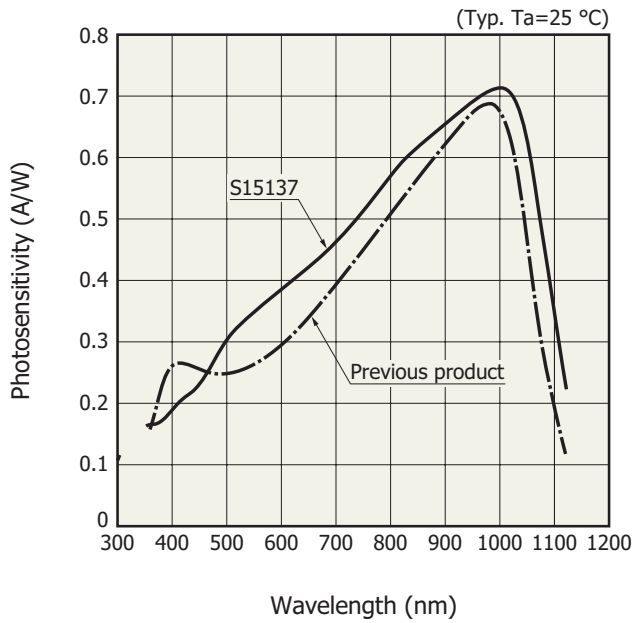
*1: When there is a temperature difference between a product and the surrounding area in high humidity environments, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.

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 ($T_a=25\ ^\circ\text{C}$)

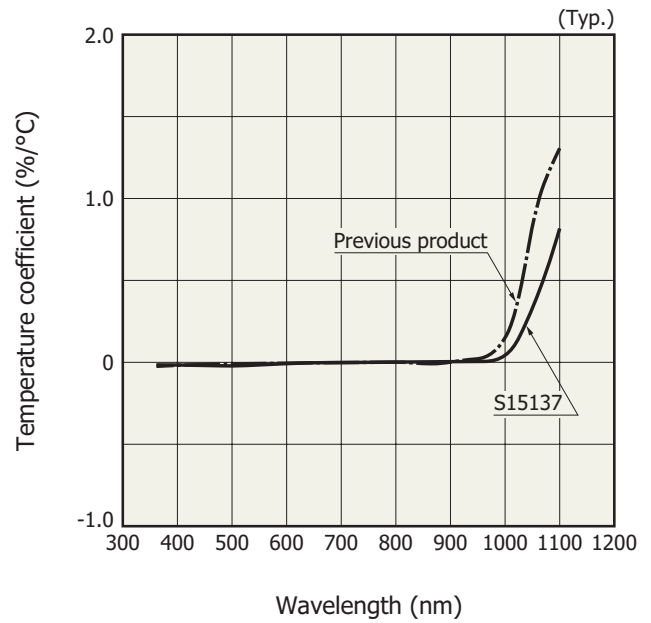
| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|----------------------------------|----------------|---|------|-------------|------|-------------------------|
| Spectral response range | λ | | - | 360 to 1120 | - | nm |
| Peak sensitivity wavelength | λ_p | | - | 1000 | - | nm |
| Photosensitivity | S | $\lambda=1.06\ \mu\text{m}$ | 0.51 | 0.57 | - | A/W |
| Short circuit current | I_{sc} | 2856 K, 100 lx | 17 | 22 | - | μA |
| Dark current | I_D | $V_R=100\ \text{V}$ | - | 1 | 10 | nA |
| Temperature coefficient of I_D | $\Delta T I_D$ | | - | 1.15 | - | times/ $^\circ\text{C}$ |
| Rise time | t_r | $V_R=100\ \text{V}$, $R_L=50\ \Omega$ $\lambda=1.06\ \mu\text{m}$, 10 to 90% | - | 12.5 | - | ns |
| Terminal capacitance | C_t | $V_R=100\ \text{V}$, $f=10\ \text{kHz}$ | - | 10 | - | pF |

Spectral response



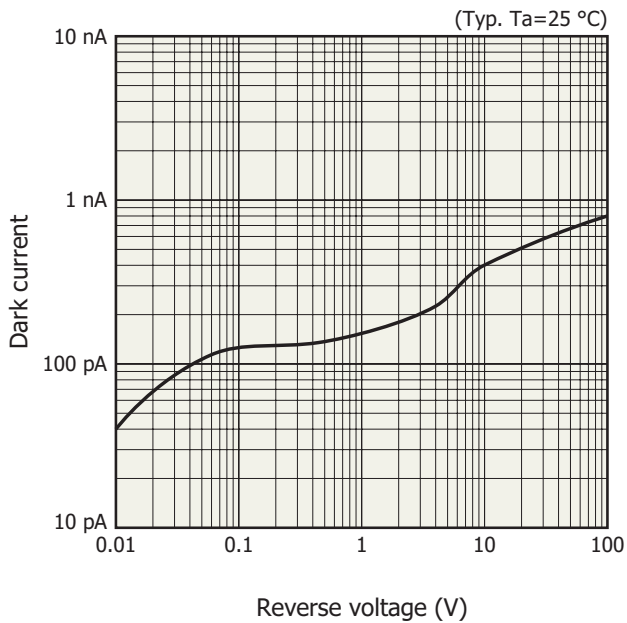
KPINB0443EB

Sensitivity temperature characteristics



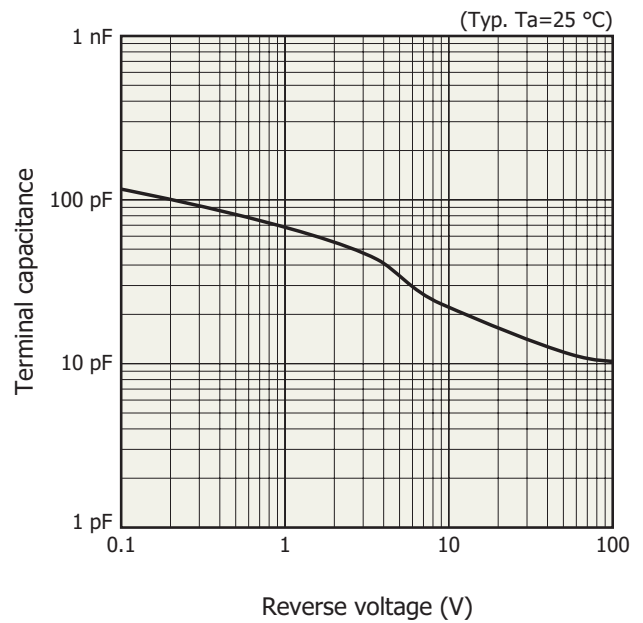
KPINB0444EA

Dark current vs. reverse voltage



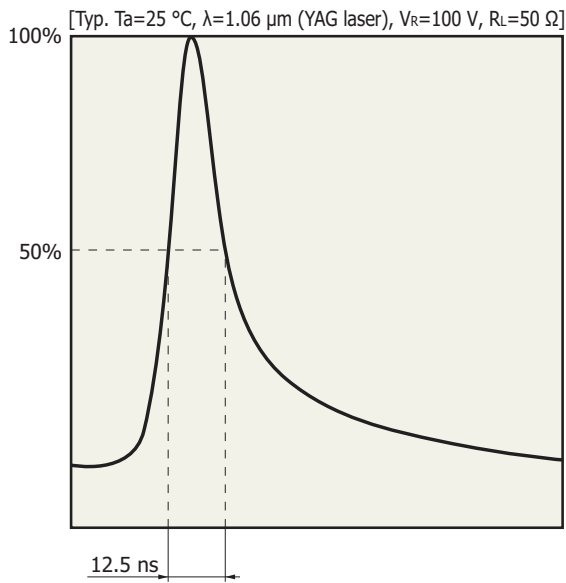
KPINB0281EA

Terminal capacitance vs. reverse voltage

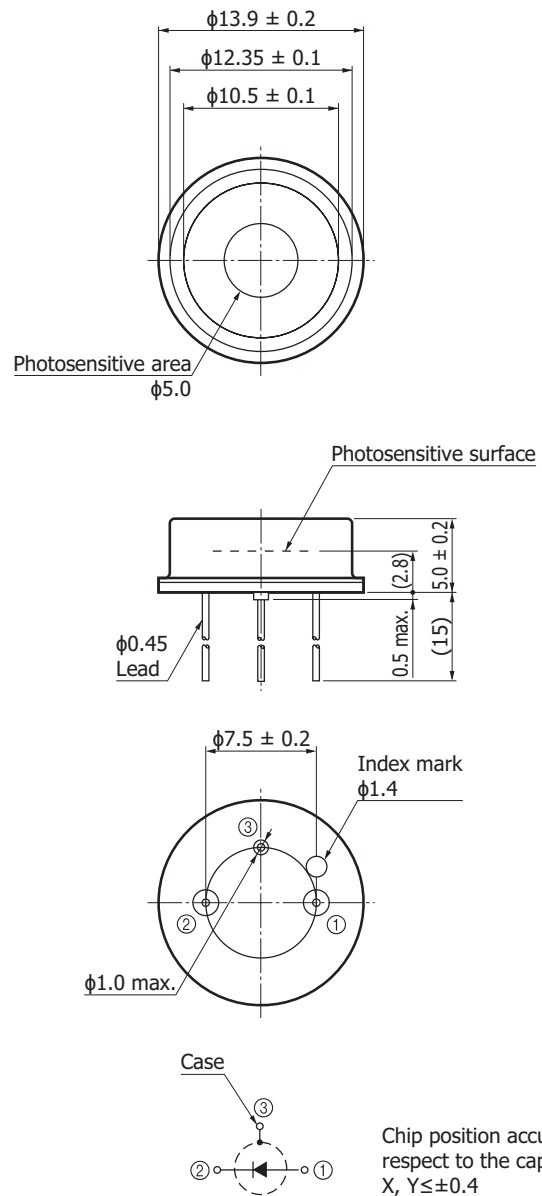


KPINB0282EA

Response waveform



Dimensional outline (unit: mm)



Recommended soldering condition

- Solder temperature: $260\text{ }^\circ\text{C}$ max. (10 s or less, once)

Note: When you set soldering conditions, check that problems do not occur in the product by testing out the conditions in advance.

Related information

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

■ Precautions

- Notice
- Metal, ceramic, plastic package products

■ Technical note

- Si photodiodes

Information described in this material is current as of February 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.

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