

S12028

Enhanced near IR sensitivity, using a MEMS technology

The S12028 is Si PIN photodiode that offers enhanced near infrared sensitivity due to a MEMS structure formed on the backside of the photodiode. The S12028 offers significantly higher sensitivity than our previous product (S5821).

Features

- High sensitivity in near infrared range: 0.5 A/W ($\lambda=1060$ nm)
- Photosensitive area: $\phi 1.2$ mm
- High reliability package : 2-pin TO-18

Applications

- Analytical instruments
- NOx detection
- YAG laser monitor

Structure

| Parameter | Specification | Unit |
|---------------------|--------------------|------|
| Photosensitive area | $\phi 1.2$ | mm |
| Package | TO-18 | - |
| Window material | Borosilicate glass | - |

Absolute maximum ratings

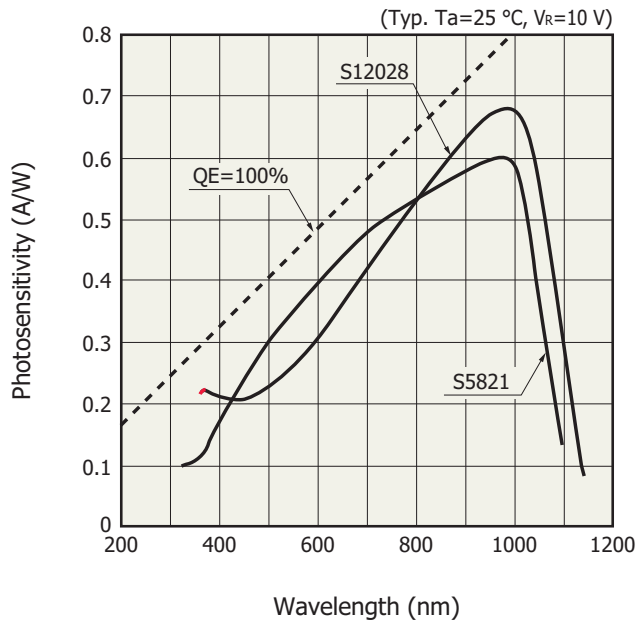
| Parameter | Symbol | Condition | Specification | Unit |
|-----------------------|-----------|-------------|---------------|------|
| Reverse voltage | V_R max | $T_a=25$ °C | 20 | V |
| Operating temperature | T_{opr} | | -40 to +100 | °C |
| Storage temperature | T_{stg} | | -55 to +125 | °C |

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 ($T_a=25$ °C)

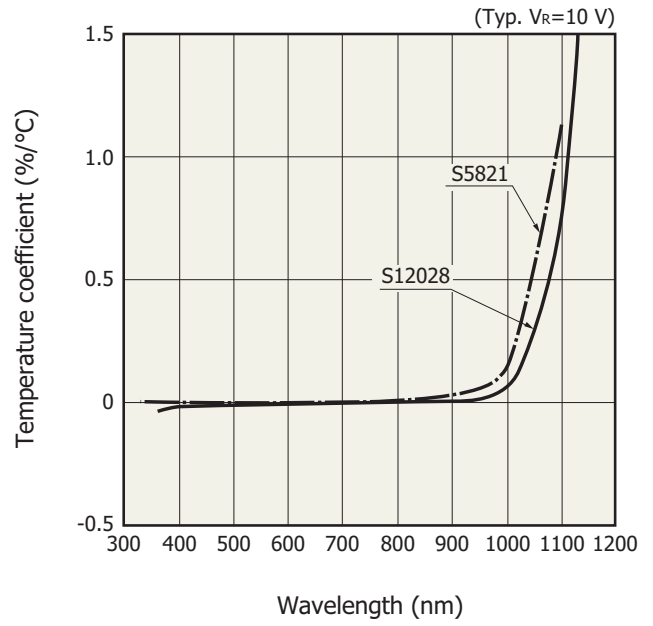
| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|-----------------------------|-------------|---|------|-------------|------|---------|
| Spectral response range | λ | | - | 360 to 1140 | - | nm |
| Peak sensitivity wavelength | λ_p | | - | 980 | - | nm |
| Photosensitivity | S | $\lambda=\lambda_p, V_R=10$ V | 0.55 | 0.68 | - | A/W |
| | | $\lambda=1060$ nm, $V_R=10$ V | 0.4 | 0.5 | - | |
| Short circuit current | I_{sc} | 100 lx, 2856 K | - | 1.2 | - | μ A |
| Dark current | I_D | $V_R=10$ V | - | 0.05 | 2 | nA |
| Rise time | t_r | $V_R=10$ V, $R_L=1$ k Ω $\lambda=1060$ nm 10% to 90% | - | 10 | - | μ s |
| Terminal Capacitance | C_t | $V_R=10$ V, $f=1$ MHz | - | 4 | 6 | pF |

Spectral response



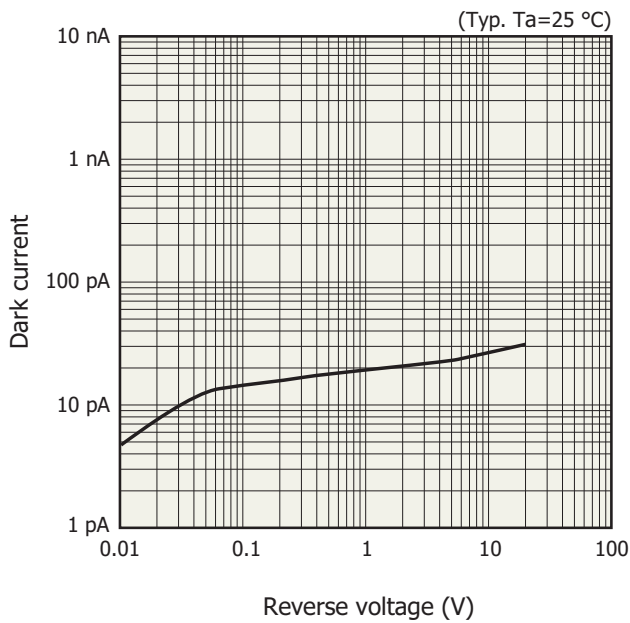
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Photosensitivity temperature characteristics



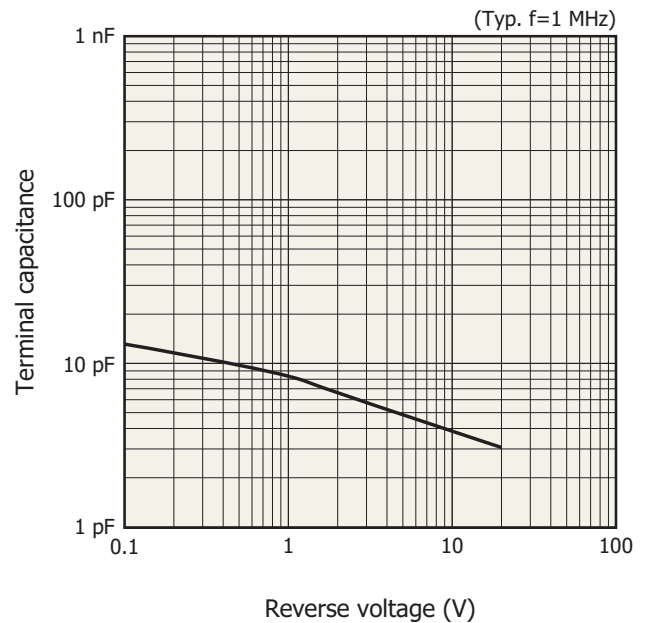
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Dark current vs. reverse voltage



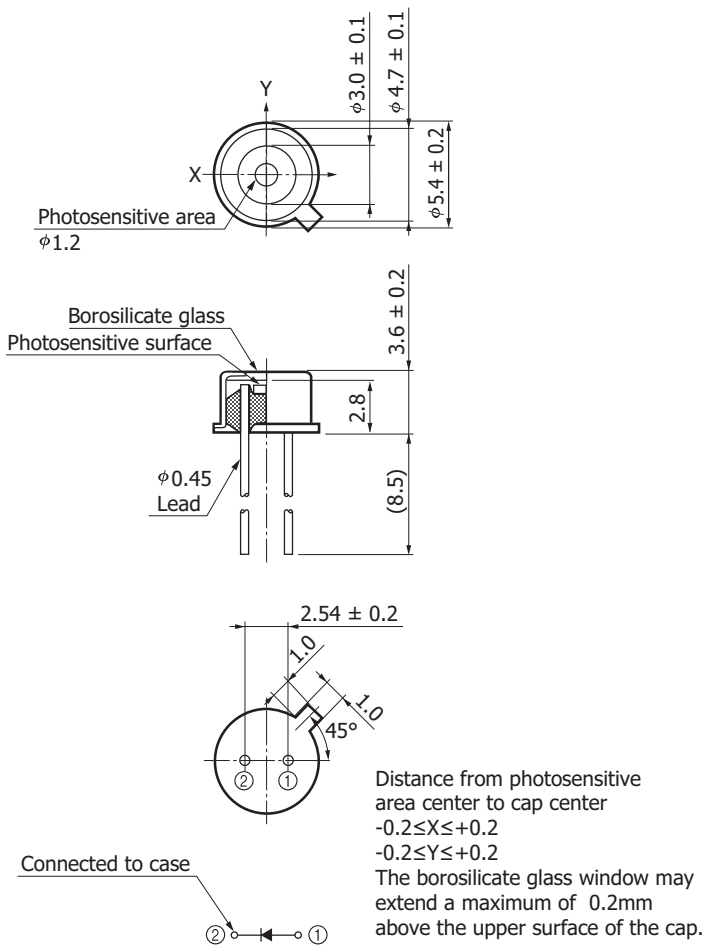
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Terminal capacitance vs. reverse voltage



KPINB0379EA

Dimensional outline (unit: mm)



KPINA0112EA

Information described in this material is current as of October, 2012.

Product specifications are subject to change without prior notice due to improvements or other reasons. Before assembly into final products, please contact us for the delivery specification sheet to check the latest information.

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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