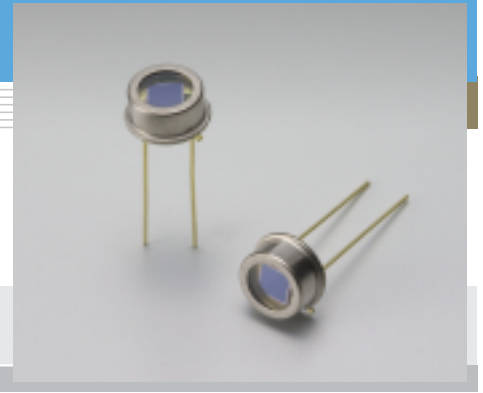


# Si PIN photodiode S1223 series

For visible to IR, precision photometry



## Features

- High sensitivity
- High reliability
- High-speed response  
S1223:  $f_c=30$  MHz  
S1223-01:  $f_c=20$  MHz
- Low capacitance

## Applications

- Optical measurement equipment
- Analytical equipment, etc.

## General ratings

| Parameter             | Symbol | S1223              | S1223-01  | Unit            |
|-----------------------|--------|--------------------|-----------|-----------------|
| Window material       | -      | borosilicate glass |           | -               |
| Package               | -      | TO-5               |           | -               |
| Active area size      | A      | 2.4 × 2.8          | 3.6 × 3.6 | mm              |
| Effective active area | -      | 6.6                | 13        | mm <sup>2</sup> |

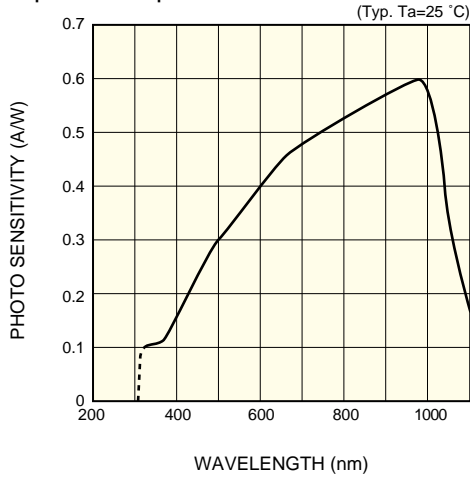
## Absolute maximum ratings

| Parameter             | Symbol     | S1223       | S1223-01 | Unit |
|-----------------------|------------|-------------|----------|------|
| Reverse voltage       | $V_R$ Max. | 30          |          | V    |
| Power dissipation     | P          | 100         |          | mW   |
| Operating temperature | $T_{opr}$  | -40 to +100 |          | °C   |
| Storage temperature   | $T_{stg}$  | -55 to +125 |          | °C   |

## Electrical and optical characteristics ( $T_a=25$ °C)

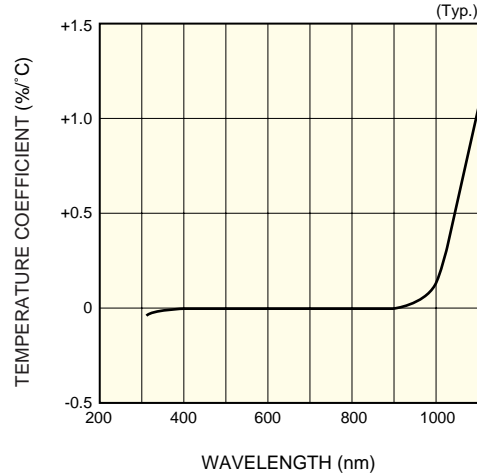
| Parameter                   | Symbol      | Condition                       | S1223 |                       |      | S1223-01 |                       |      | Unit                |
|-----------------------------|-------------|---------------------------------|-------|-----------------------|------|----------|-----------------------|------|---------------------|
|                             |             |                                 | Min.  | Typ.                  | Max. | Min.     | Typ.                  | Max. |                     |
| Spectral response range     | $\lambda$   |                                 | -     | 320 to 1100           | -    | -        | 320 to 1100           | -    | nm                  |
| Peak sensitivity wavelength | $\lambda_p$ |                                 | -     | 960                   | -    | -        | 960                   | -    | nm                  |
| Photo sensitivity           | S           | $\lambda=\lambda_p$             | -     | 0.6                   | -    | -        | 0.6                   | -    | A/W                 |
|                             |             | $\lambda=660$ nm                | -     | 0.45                  | -    | -        | 0.45                  | -    |                     |
|                             |             | $\lambda=780$ nm                | -     | 0.52                  | -    | -        | 0.52                  | -    |                     |
|                             |             | $\lambda=830$ nm                | -     | 0.54                  | -    | -        | 0.54                  | -    |                     |
| Short circuit current       | $I_{sc}$    | 100 $I_x$                       | 5     | 6.3                   | -    | 10       | 13                    | -    | $\mu$ A             |
| Dark current                | $I_D$       | $V_R=20$ V                      | -     | 0.1                   | 10   | -        | 0.2                   | 10   | nA                  |
| Temp. coefficient of $I_D$  | $T_{CID}$   |                                 | -     | 1.15                  | -    | -        | 1.15                  | -    | times/°C            |
| Cut-off frequency           | $f_c$       | $V_R=20$ V, -3 dB               | -     | 30                    | -    | -        | 20                    | -    | MHz                 |
| Terminal capacitance        | $C_t$       | $V_R=20$ V, $f=1$ MHz           | -     | 10                    | -    | -        | 20                    | -    | pF                  |
| Noise equivalent power      | NEP         | $V_R=20$ V, $\lambda=\lambda_p$ | -     | $9.4 \times 10^{-15}$ | -    | -        | $1.3 \times 10^{-14}$ | -    | W/Hz <sup>1/2</sup> |

## Spectral response



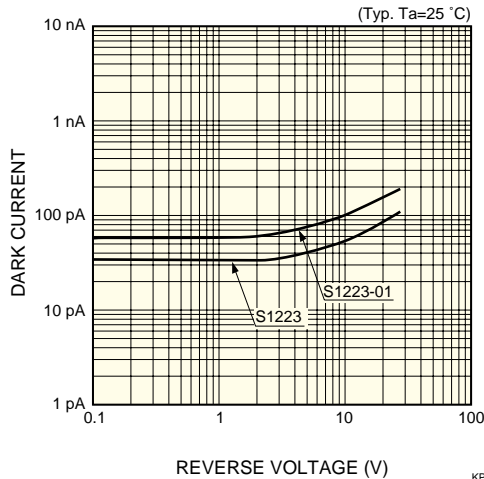
KPINB0143EA

## Photo sensitivity temperature characteristic



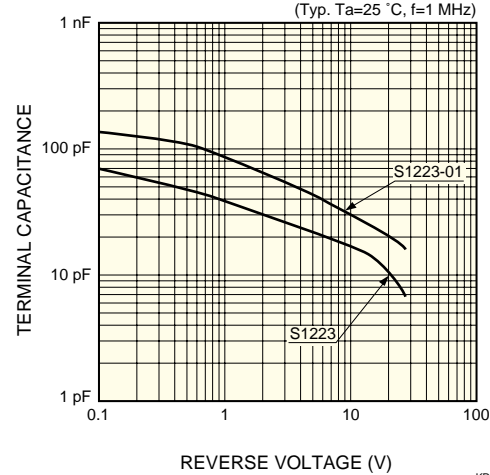
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## Dark current vs. reverse voltage



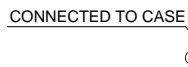
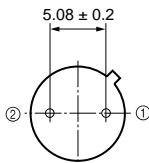
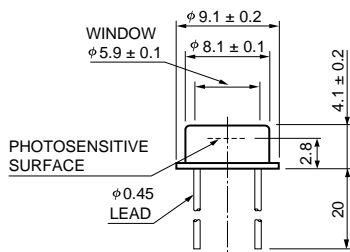
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## Terminal capacitance vs. reverse voltage



KPINB0146EA

## Dimensional outline (unit: mm)



The glass window may extend a maximum of 0.2 mm above the upper surface of the cap.

KPINA0073EA

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