

S10341 series

**Low bias operation, for 800 nm band,  
small package**

**Features**

- Miniature and thin package: 1.8 × 3.1 × 1.0<sup>t</sup> mm
- Stable operation at low bias
- High-speed response
- High sensitivity
- Low noise

**Applications**

- Optical rangefinder
- Laser radar
- FSO (free space optics)

**General ratings**

| Parameter             | Symbol | S10341-02 | S10341-05 | Unit            |
|-----------------------|--------|-----------|-----------|-----------------|
| Active area size*1    | A      | φ0.2      | φ0.5      | mm              |
| Effective active area | -      | 0.03      | 0.19      | mm <sup>2</sup> |
| Package               | -      | Plastic   |           | -               |

\*1: Active area in which a typical gain can be obtained

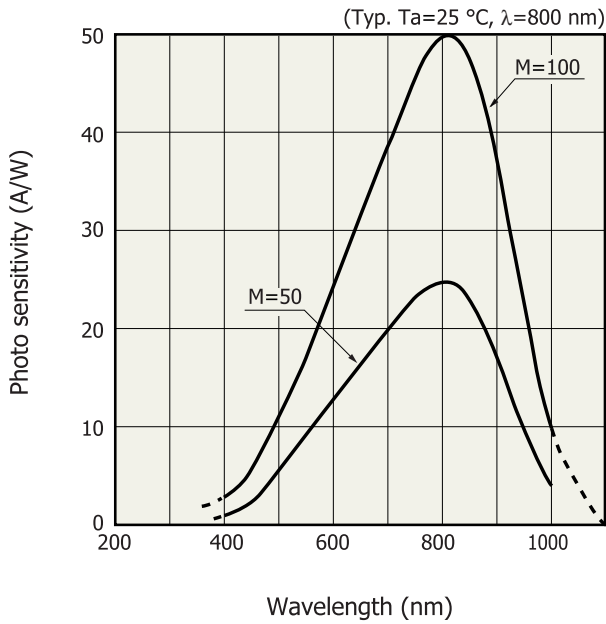
**Absolute maximum ratings**

| Parameter             | Symbol            | Value      | Unit |
|-----------------------|-------------------|------------|------|
| Operating temperature | Topr              | -20 to +60 | °C   |
| Storage temperature   | Tstg              | -40 to +80 | °C   |
| Reverse current       | I <sub>rmax</sub> | 200        | μA   |
| Forward current       | I <sub>fmax</sub> | 10         | mA   |

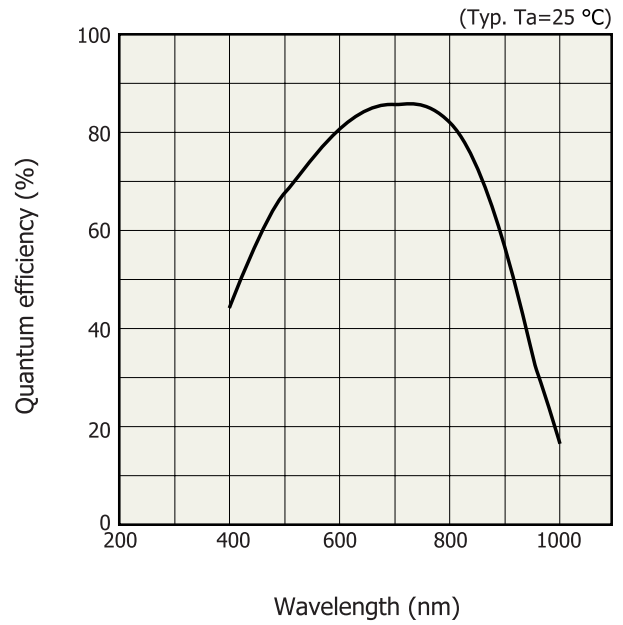
**Electrical and optical characteristics (Ta=25 °C)**

| Parameter                                  | Symbol          | Condition                                      | S10341-02   |      |      | S10341-05   |      |      | Unit |
|--|-----------------|--|-------------|------|------|-------------|------|------|------|
|  |                 |  | Min.        | Typ. | Max. | Min.        | Typ. | Max. |      |
| Spectral response range                    | λ               |  | 400 to 1000 |      |      | 400 to 1000 |      |      | nm   |
| Peak sensitivity wavelength                | λ <sub>p</sub>  | M=100  | -           | 800  | -    | -           | 800  | -    | nm   |
| Photo sensitivity                          | S               | λ=800 nm, M=1                                  | -           | 0.5  | -    | -           | 0.5  | -    | A/W  |
| Quantum efficiency                         | QE              | λ=800 nm, M=1                                  | -           | 75   | -    | -           | 75   | -    | %    |
| Breakdown voltage                          | V <sub>BR</sub> | I <sub>D</sub> =100 μA                         | -           | 150  | 200  | -           | 150  | 200  | V    |
| Temperature coefficient of V <sub>BR</sub> | -               |  | -           | 0.65 | -    | -           | 0.65 | -    | V/°C |
| Dark current                               | I <sub>D</sub>  | M=100  | -           | 50   | 500  | -           | 100  | 1000 | pA   |
| Cut-off frequency                          | f <sub>c</sub>  | M=100, R <sub>L</sub> =50 Ω<br>λ=800 nm, -3 dB | -           | 1000 | -    | -           | 900  | -    | MHz  |
| Terminal capacitance                       | C <sub>t</sub>  | M=100, f=1 MHz                                 | -           | 1    | -    | -           | 2    | -    | pF   |
| Excess noise figure                        | x               | M=100  | -           | 0.3  | -    | -           | 0.3  | -    | -    |
| Gain                                       | M               | λ=800 nm                                       | -           | 100  | -    | -           | 100  | -    | -    |

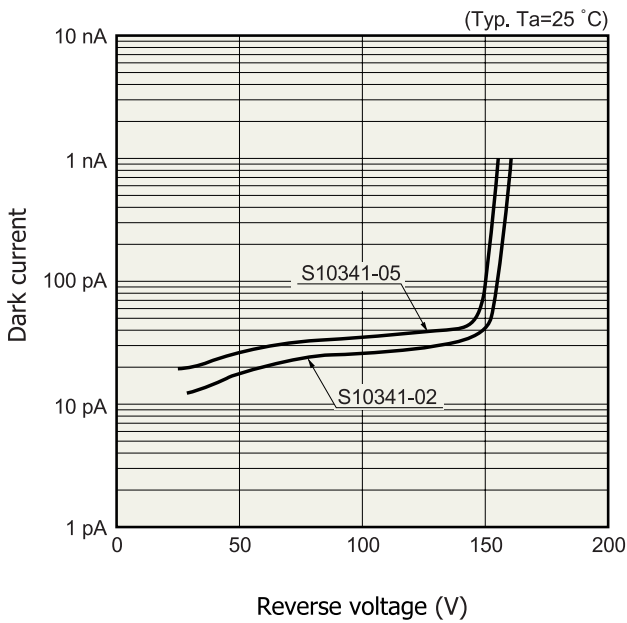
**Spectral response**



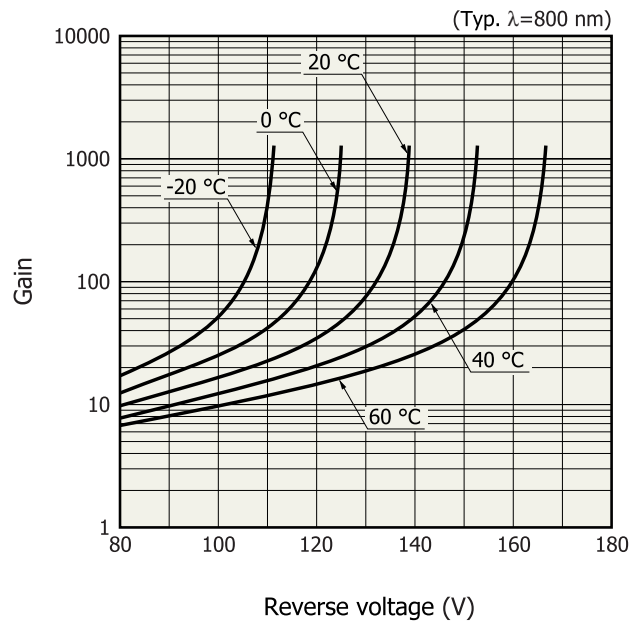
**Quantum efficiency vs. wavelength**



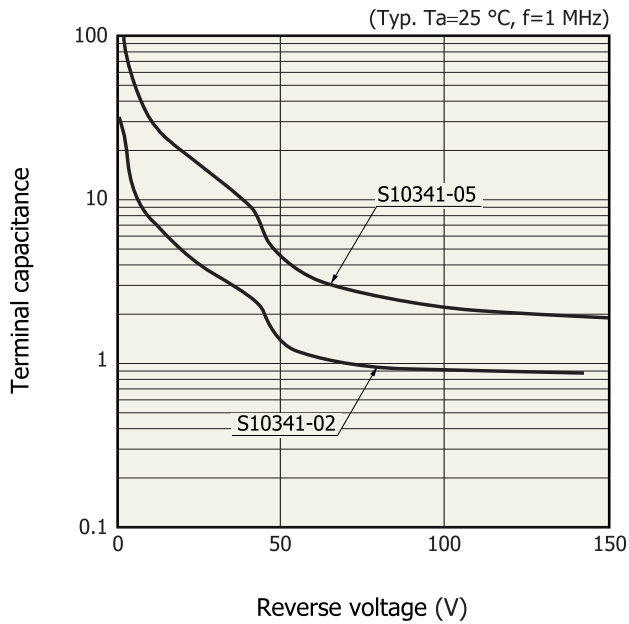
**Dark current vs. reverse voltage**



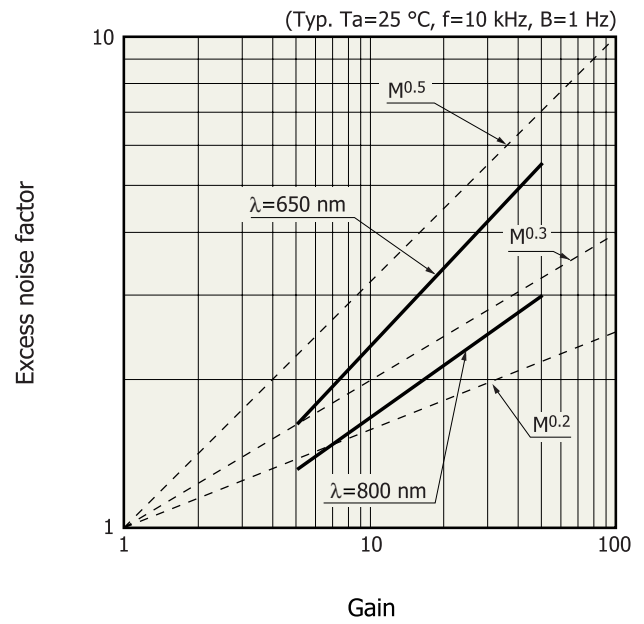
**Gain vs. reverse voltage**



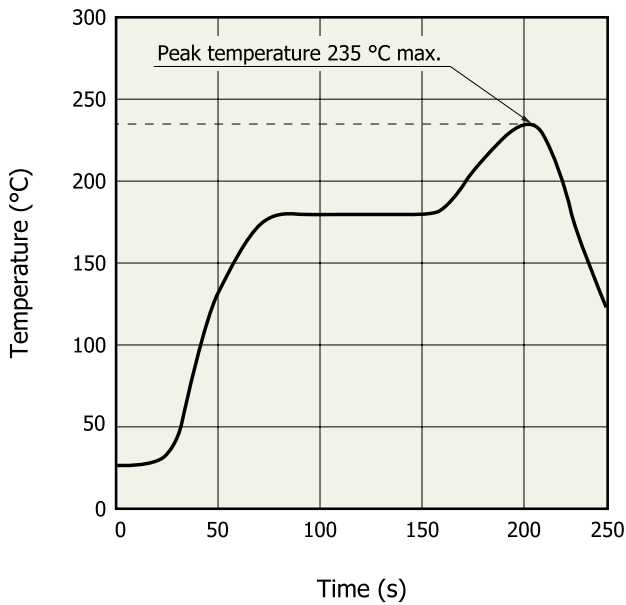
### Terminal capacitance vs. reverse voltage



### Excess noise factor vs. gain

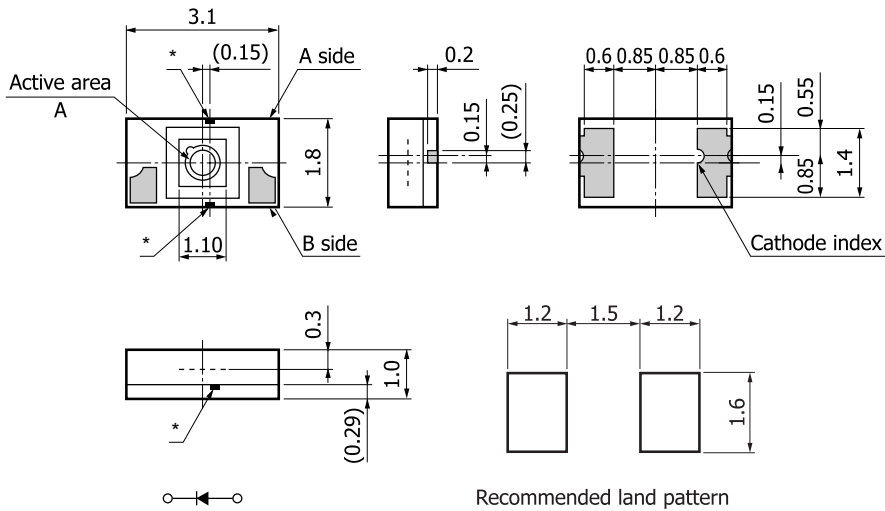


### Recommended solder reflow condition



- After unpacking, store this device in an environment at a temperature of 30  $^\circ\text{C}$  and a humidity below 60%, and perform reflow soldering on this device within 24 hours.
- Thermal stress applied to the device during reflow soldering differs depending on the PC boards and reflow oven being used.
- When setting the reflow conditions, make sure that the reflow soldering process does not degrade device reliability.

**Dimensional outline (unit: mm, tolerance unless otherwise noted:  $\pm 0.2$  mm)**



Active area position accuracy:  $X, Y \leq \pm 0.3$   
 Values in parentheses indicate reference value.

\* Package side

Wiring is exposed on A and B sides.

Do not allow any conductor to make contact with the package sides to avoid shorting.

■ Electrodes

| Type no.  | A          |
|-----------|------------|
| S10341-02 | $\phi 0.2$ |
| S10341-05 | $\phi 0.5$ |

KAPDA0130EA

Information described in this material is current as of May, 2011. 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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