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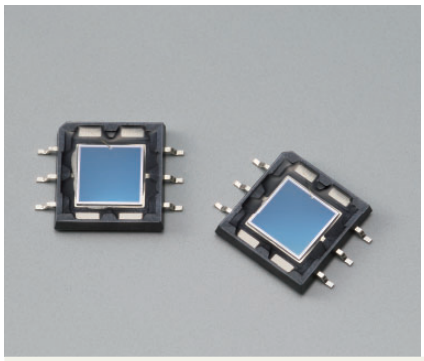
Si PIN photodiode



S7478

Large photosensitive area (5 × 5 mm) photo-sensor with high reliability

The S7478 is a PIN photodiode having a large photosensitive area (5 × 5 mm) and surface mount flat package with leads.

Features

- **Surface mount plastic package: 9 × 9.6 × 1.5^{t} mm**
- **Large photosensitive area: 5 × 5 mm**
- **Operating temperature range: -40 to +85 °C**
  Storage temperature range: -40 to +100 °C
- **High sensitivity: 0.72 A/W (λ=960 nm)**

Applications

- **Automobile sensor**
  (Vehicle and traffic information system, laser radar, front window frost sensor, rain sensor)
- **FSO (free space optics)**

Structure

Parameter	Specification	Unit
Photosensitive area	5 × 5	mm
Package	Plastic	-
Window material	Silicone resin	-

Absolute maximum ratings

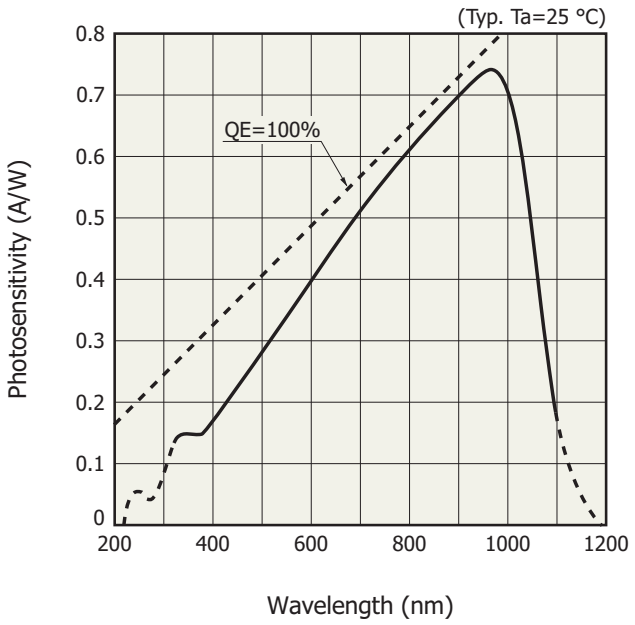
Parameter	Symbol	Condition	Specification	Unit
Reverse voltage	V_R max.	Ta=25 °C	20	V
Operating temperature	Topr		-25 to +85	°C
Storage temperature	Tstg		-40 to +100	°C
Reflow soldering conditions	Tsol*1		Peak temperature 240 °C max., two times (see page 4)	-

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.
*1: JEDEC level 5a

Electrical and optical characteristics (Ta=25 °C)

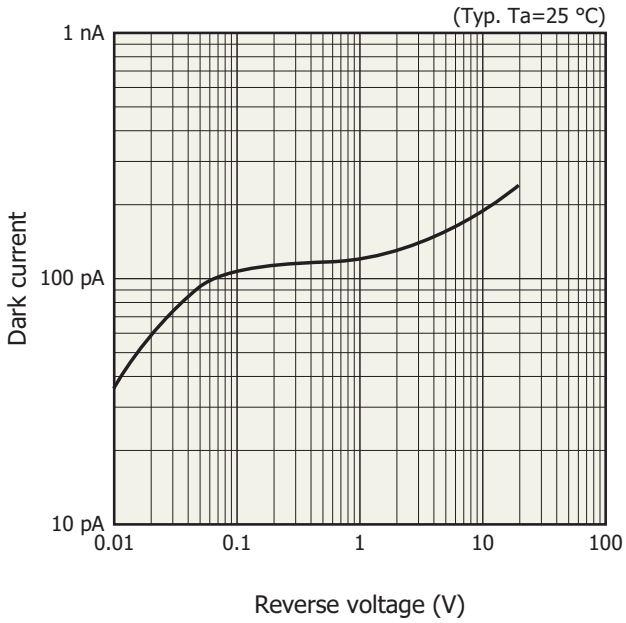
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Spectral response range	λ		-	320 to 1100	-	nm
Peak sensitivity wavelength	λp		-	960	-	nm
Photosensitivity	S	λ=λp	0.6	0.72	-	A/W
Short circuit current	Isc	100 *lx*, 2856 K	-	26	-	μA
Dark current	I_D	V_R=10 V	-	0.4	5	nA
Temperature coefficient of I_D	T_{CID}		-	1.14	-	times/°C
Cutoff frequency	fc	V_R=10 V, R_L=50 Ω -3 dB, λ=780 nm	10	20	-	MHz
Terminal capacitance	Ct	V_R=10 V, f=1 MHz	-	40	60	pF

Spectral response



KPINB0190EB

Dark current vs. reverse voltage



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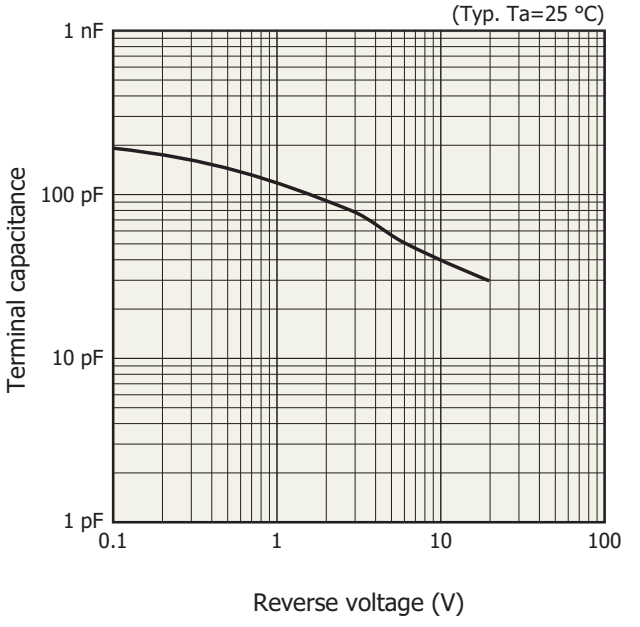
Terminal capacitance vs. reverse voltage



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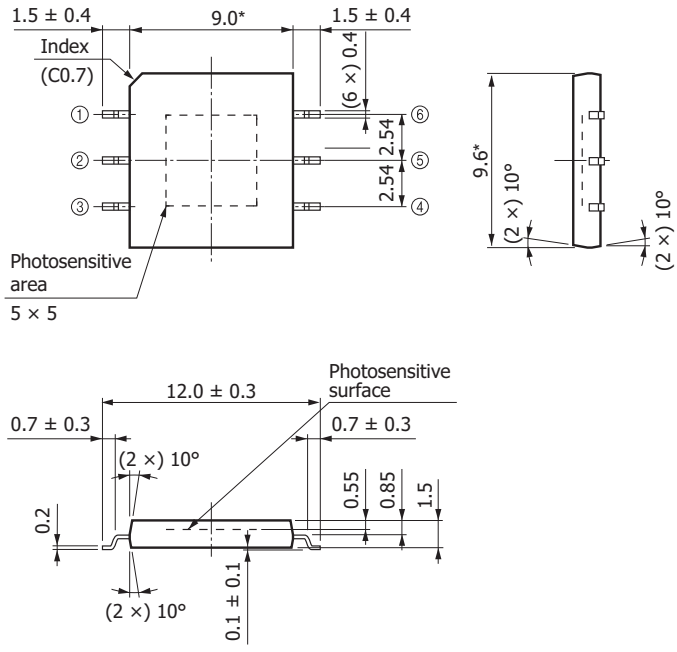
Dimensional outline (unit: mm)



① Anode
② Cathode
③ NC
④ NC
⑤ Cathode
⑥ NC

Tolerance unless otherwise noted: ±0.1
Chip position accuracy with respect to the package dimensions marked *:
X, Y≤±0.2, θ ≤ ±2°

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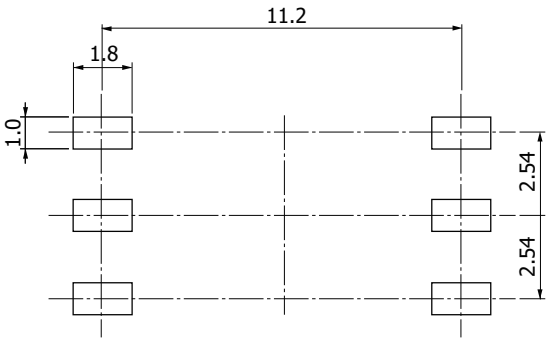
Recommended land pattern (unit: mm)



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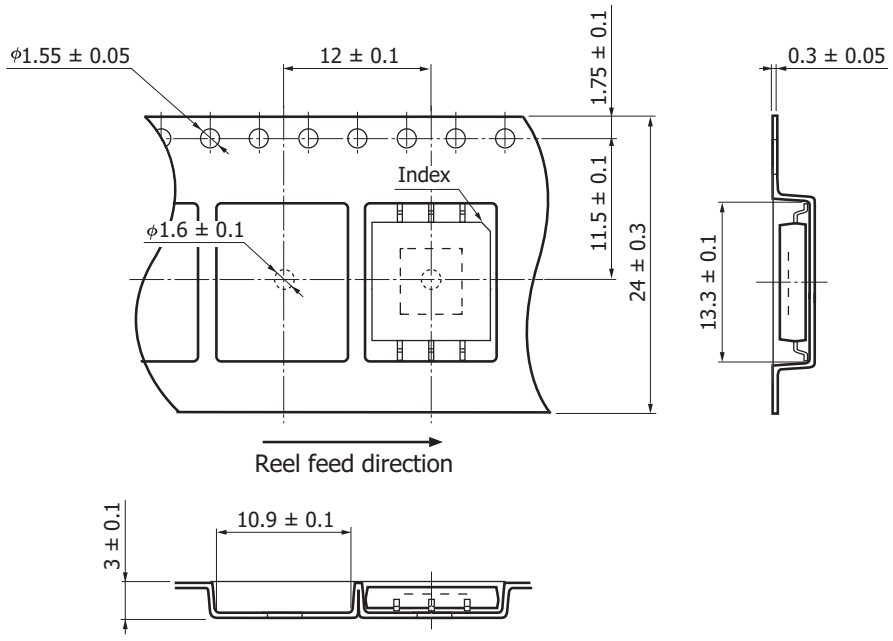
Standard packing specifications

■ Reel (conforms to JEITA ET-7200)

Dimensions	Tape width	Material	Electrostatic characteristics
254 mm	24 mm	PS	Conductive

■ Enbossed tape (unit: mm, material: PS, conductive)



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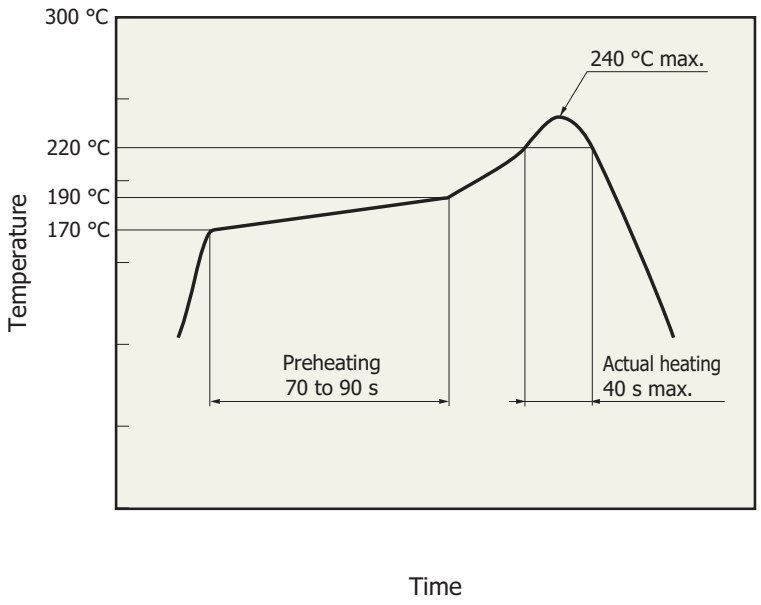
■ Packing quantity
1000 pcs/reel

■ Packing type
Reel and desiccant in moisture-proof packaging (vacuum-sealed)

Measured example of temperature profile with hot-air reflow oven for product testing



- This product supports lead-free soldering. After unpacking, store it in an environment at a temperature of 30 °C or less and a humidity of 60% or less, and perform soldering within 24 hours.
- The effect that the product receives during reflow soldering varies depending on the circuit board and reflow oven that are used. Before actual reflow soldering, check for any problems by testing out the reflow soldering methods in advance.

Related information

■ Precautions

- Disclaimer
- Metal, ceramic, Plastic Package products
- Surface mount type products

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