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Si PIN photodiode

S14016-01DT

Compact photosensor in a plastic package

The S14016-01DT is a Si PIN photodiode for visible to near infrared range. It is provided in a compact surface mount type plastic package.

Features

- **Surface mount type, compact**
- **Package size: 4 × 3 mm**
- **Photosensitive area: 1.8 × 2.1 mm**
- **High sensitivity: 0.7 A/W (λ=960 nm)**

Applications

- **Optical switches**

Structure

Parameter	Specification	Unit
Photosensitive area	2.1 × 1.8	mm
Package	Epoxy	-

Absolute maximum ratings

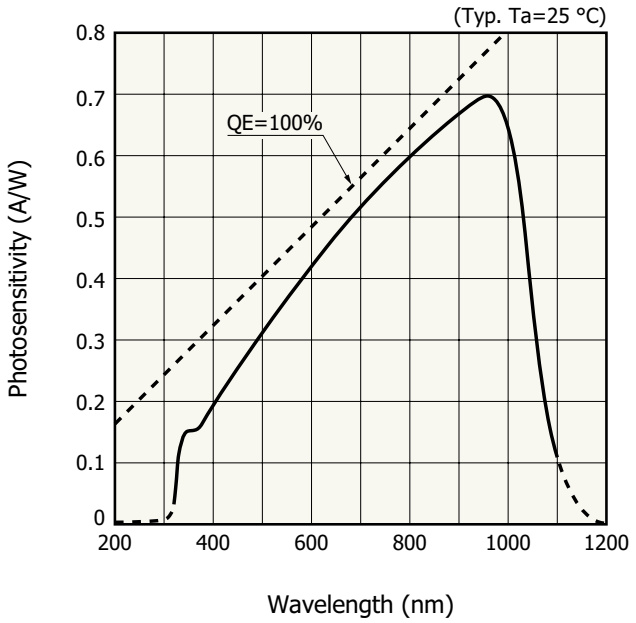
Parameter	Symbol	Condition	Value	Unit
Reverse voltage	V_R max	Ta=25 °C	10	V
Operating temperature	Topr	No dew condensation*1	-40 to +85	°C
Storage temperature	Tstg	No dew condensation*1	-40 to +100	°C
Soldering temperature*2	Tsol		240 (twice)	°C

*1: When there is a temperature difference between a product and the surrounding area in high humidity environment, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.
*2: Reflow soldering, JEDEC J-STD-020 MSL 4, see P.5
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 (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	0.7	-	A/W
Dark current	I_D	V_R=5 V	-	0.1	10	nA
Temperature coefficient of dark current	T_{CID}	V_R=5 V	-	1.15	-	times/°C
Cutoff frequency	fc	V_R=5 V, R_L=50 Ω -3 dB	5	10	-	MHz
Terminal capacitance	Ct	V_R=5 V, f=1 MHz	-	12	24	pF

Spectral response



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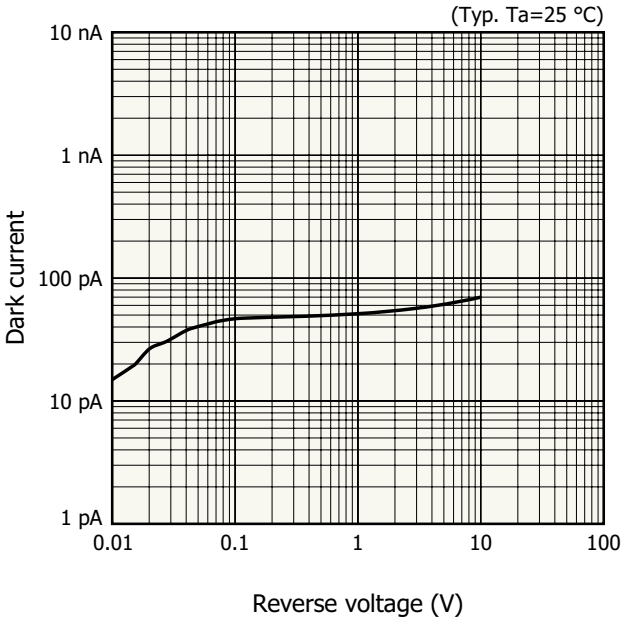
Dark current vs. reverse voltage



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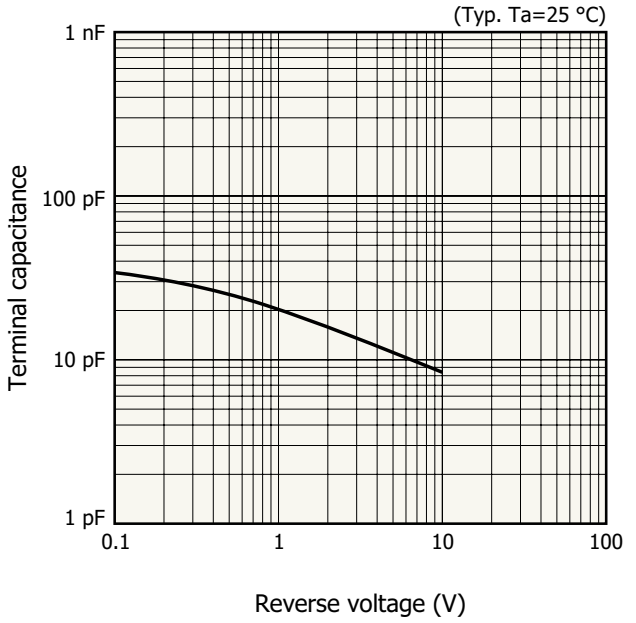
Terminal capacitance vs. reverse voltage



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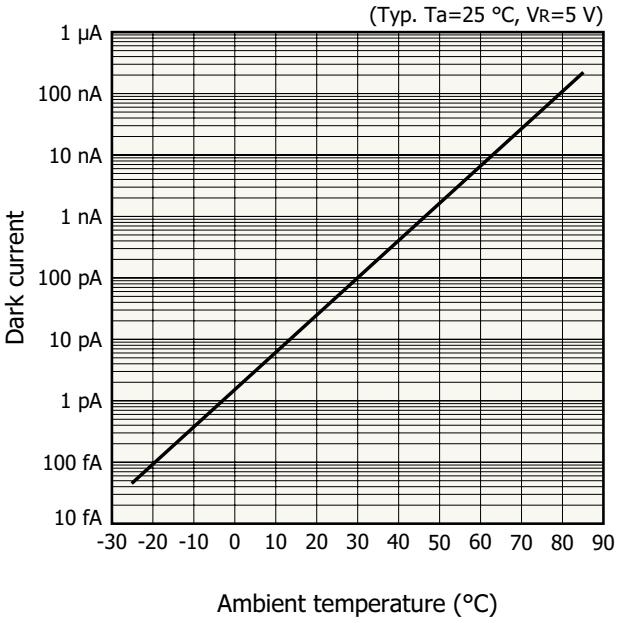
Dark current vs. ambient temperature



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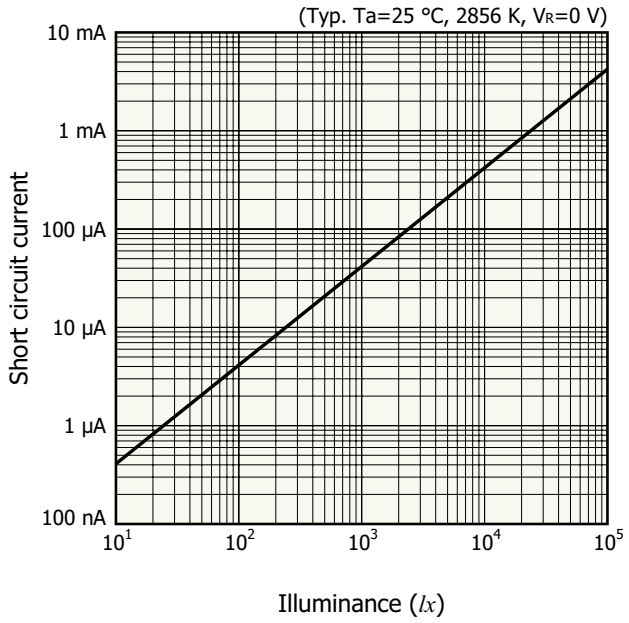
Short circuit current vs. illuminance



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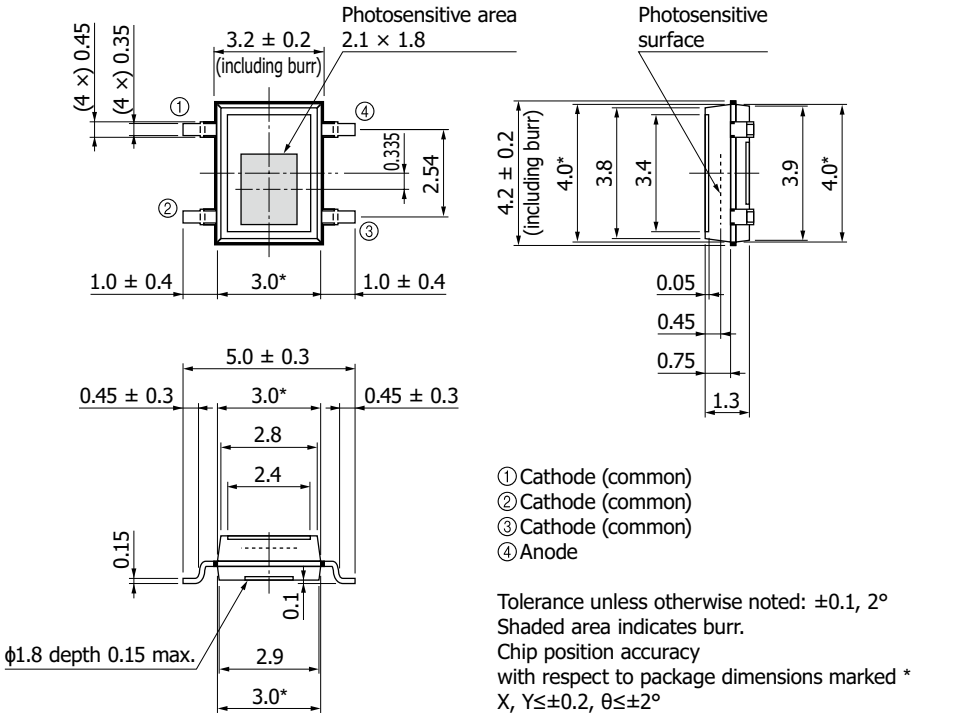
Dimensional outline (unit: mm)



①Cathode (common)
②Cathode (common)
③Cathode (common)
④Anode

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

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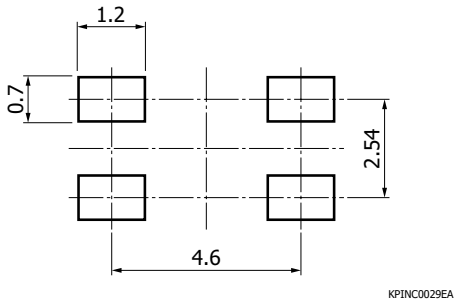
Recommended land pattern (unit: mm)

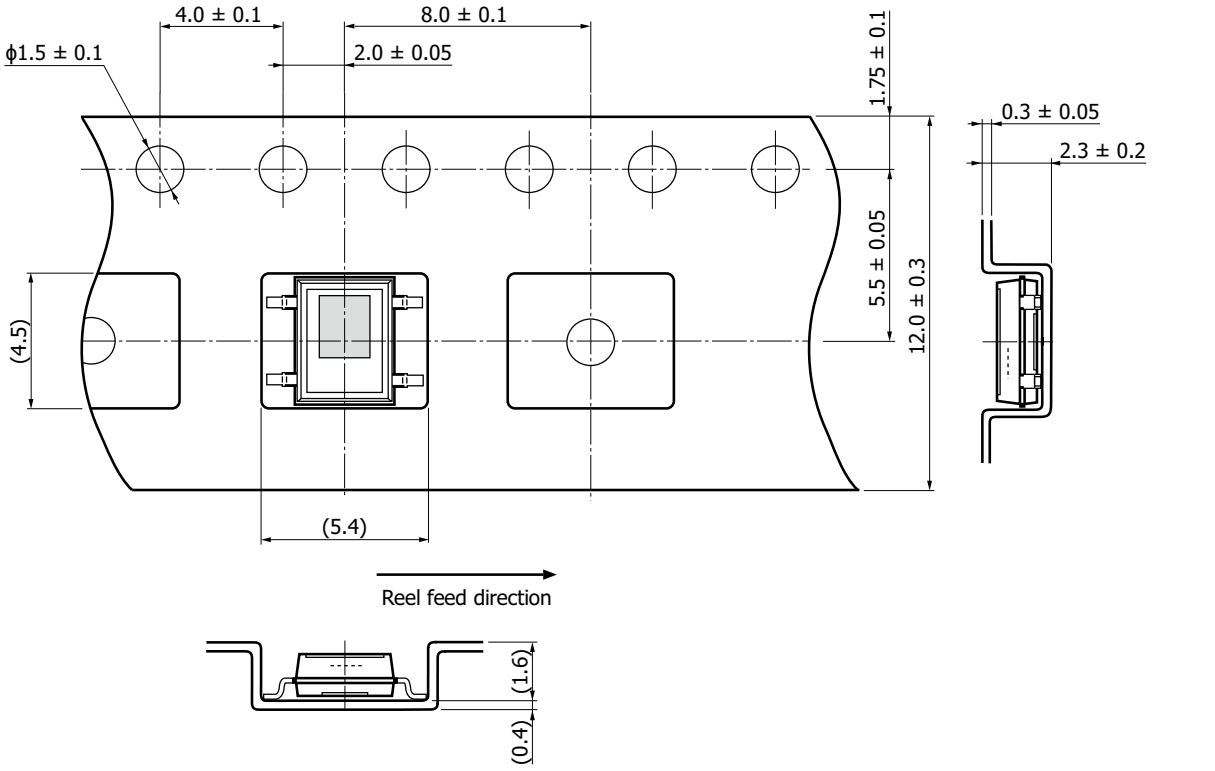


Standard packing specifications

■ Reel (conforms to JEITA ET-7200)

Reel outer diameter	Hub diameter	Tape width	Material	Electrostatic characteristics
254 mm	80 mm	12 mm	PS	Conductive

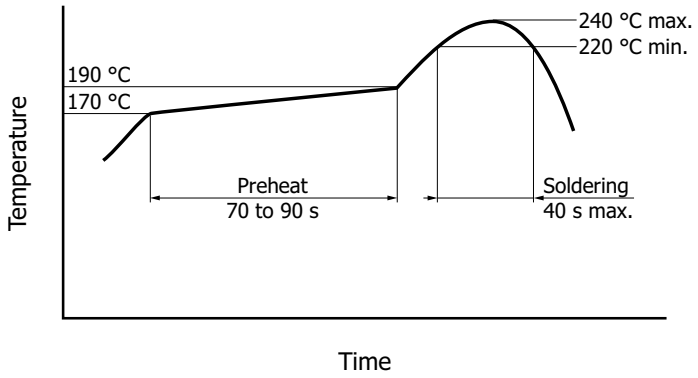
■ Embossed tape (unit: mm)



■ Packing quantity
2000 pcs/reel

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

Recommended reflow soldering conditions (typical example)



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· After unpacking, keep it in an environment at 5 to 30 °C and a humidity of 60% or less. Perform reflow soldering within 72 hours.
· The effect that the product receives during reflow soldering varies depending on the circuit board and reflow oven that are used. When you set reflow soldering conditions, check that problems do not occur in the product by testing out the conditions in advance. Drastic changes in temperature can cause problems. Set the temperature change to less than 4 °C/second.

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