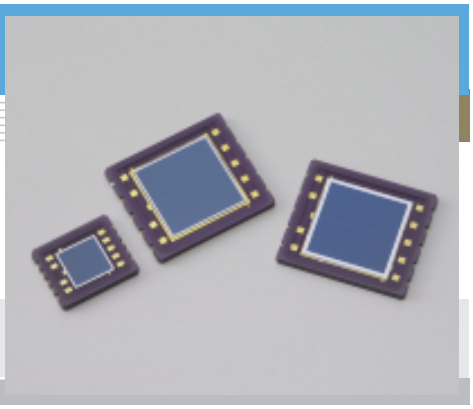
Si PIN photodiode
S5980, S5981, S5870

Multi-element photodiodes for surface mounting



Features

- Large active area
  S5980: 5 × 5 mm
  S5981: 10 × 10 mm
  S5870: 10 × 10 mm
- Chip carrier package suitable for surface mounting
  Facilitates automated surface mounting by solder reflow
- Thin package: 1.26 mmt
- Photo sensitivity: 0.72 A/W (λ=960 nm)

Applications

- Laser beam axis alignment
- Level meters
- Pointing devices, etc.

■ General ratings

Parameter	Symbol	S5980	S5981	S5870	Unit
Window material	-	Resin coating			-
Gap between elements	-	30			μm
Active area	A	φ5.0/4 elements	φ10.0/4 elements	φ10.0/2 elements	mm

■ Absolute maximum ratings

Parameter	Symbol	S5980	S5981	S5870	Unit
Reverse voltage	V_R Max.	30			V
Operating temperature	Topr	-40 to +100			°C
Storage temperature	Tstg	-40 to +125			°C

■ Electrical and optical characteristics (Ta=25 °C, per 1 element)

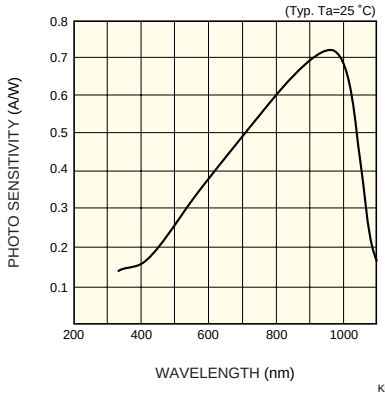
Parameter	Symbol	Condition	S5980		S5981		S5870		Unit
			Typ.	Max.	Typ.	Max.	Typ.	Max.	
Spectral response range	λ		320 to 1100	-	320 to 1100	-	320 to 1100	-	nm
Peak sensitivity wavelength	λp		960	-	960	-	960	-	nm
Photo sensitivity	S	λ=λp	0.72	-	0.72	-	0.72	-	A/W
Dark current	I_D	V_R=10 V	0.3	2	0.6	4	2	10	nA
Temperature coefficient of I_D	T_{CID}		1.15	-	1.15	-	1.15	-	times/°C
Cut-off frequency	fc	V_R=10 V, R_L=50 Ω, -3 dB	25	-	20	-	10	-	MHz
Terminal capacitance	Ct	V_R=10 V, f=1 MHz	10	-	35	-	50	-	pF
Noise equivalent power	NEP	V_R=10 V, λ=λp	1.4×10^{-14}	-	1.9×10^{-14}	-	3.5×10^{-14}	-	$W/Hz^{1/2}$

Note) S5980: For mass production, order unit is 100 pieces.
S5981, S5870: For mass production, order unit is 50 pieces.

Precautions for use

- The light input window of this product uses soft silicone resin. Avoid touching the window to keep it from grime and damage that can decrease sensitivity. External force applied to the resin surface may deform or cut off the wires, so do not touch the window to prevent such troubles.
- Use rosin flux when soldering, to prevent the terminal lead corrosion. Reflow oven temperature should be at 260 °C maximum for 5 seconds maximum time under the conditions that no moisture absorption occurs.
  Reflow soldering conditions differ depending on the type of PC board and reflow oven. Carefully check these conditions before use.
- Silicone resin swells when it absorbs organic solvent, so do not use any solvent other than alcohol.
- Avoid unpacking until you actually use this product to prevent the terminals from oxidation and dust deposits or the coated resin from absorbing moisture.
  When the product is stored for 3 months while not unpacked or 24 hours have elapsed after unpacking, perform baking in nitrogen atmosphere at 150 °C for 3 to 5 hours or at 120 °C for 12 to 15 hours before use.

■ Spectral response



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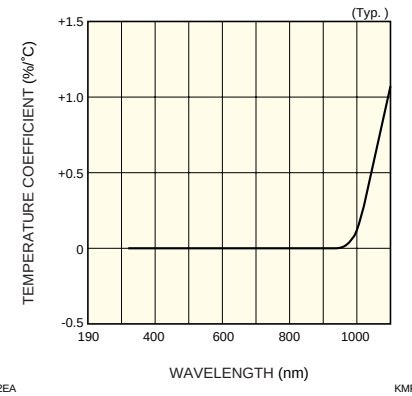
■ Photo sensitivity temperature characteristic



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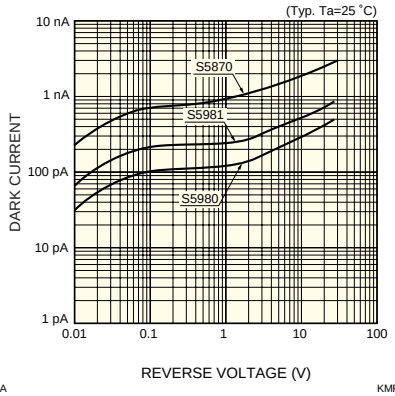
■ Dark current vs. reverse voltage



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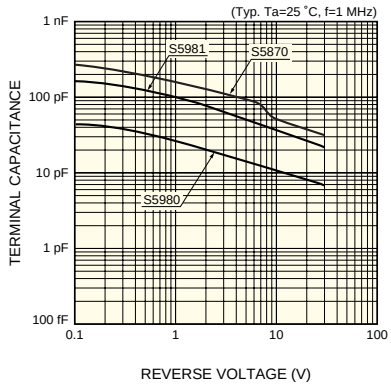
■ Terminal capacitance vs. reverse voltage



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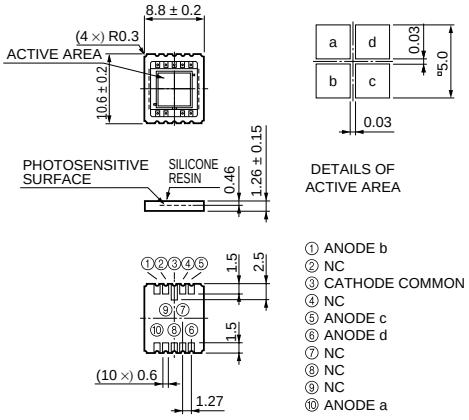
■ Dimensional outlines (unit: mm)

S5980



Burrs shall protrude no more than 0.3 mm on any side of package.

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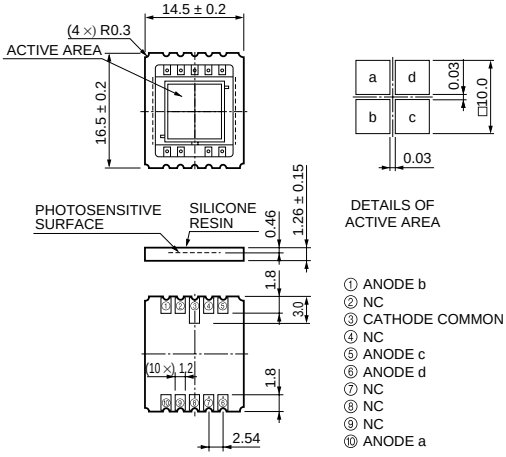
S5981



Burrs shall protrude no more than 0.3 mm on any side of package.

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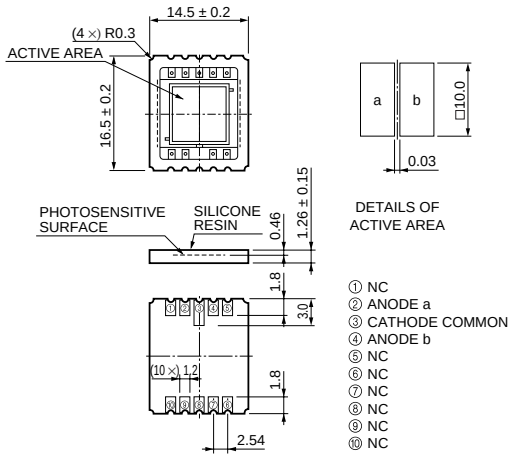
S5870



Burrs shall protrude no more than 0.3 mm on any side of package.

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