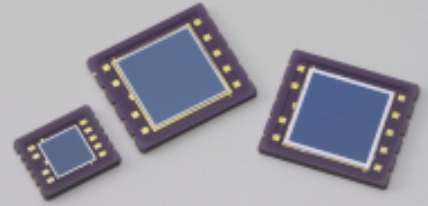


# Si PIN photodiode S5980, S5981, S5870

## 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 mm
- Photo sensitivity: 0.72 A/W ( $\lambda=960$  nm)

#### ■ General ratings

Parameter	Symbol	S5980	S5981	S5870	Unit
Window material	-	Resin coating			-
Gap between elements	-	30			$\mu\text{m}$
Active area	A	$\phi 5.0/4$ elements	$\phi 10.0/4$ elements	$\phi 10.0/2$ elements	mm

#### ■ Absolute maximum ratings

Parameter	Symbol	S5980	S5981	S5870	Unit
Reverse voltage	$V_R$ Max.	30			V
Operating temperature	$T_{opr}$	-40 to +100			$^{\circ}\text{C}$
Storage temperature	$T_{stg}$	-40 to +125			$^{\circ}\text{C}$

#### ■ Electrical and optical characteristics ( $T_a=25^{\circ}\text{C}$ , per 1 element)

Parameter	Symbol	Condition	S5980		S5981		S5870		Unit
			Typ.	Max.	Typ.	Max.	Typ.	Max.	
Spectral response range	$\lambda$		320 to 1100	-	320 to 1100	-	320 to 1100	-	nm
Peak sensitivity wavelength	$\lambda_p$		960	-	960	-	960	-	nm
Photo sensitivity	S	$\lambda=\lambda_p$	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/ $^{\circ}\text{C}$
Cut-off frequency	$f_c$	$V_R=10$ V, $R_L=50$ $\Omega$ , -3 dB	25	-	20	-	10	-	MHz
Terminal capacitance	$C_t$	$V_R=10$ V, $f=1$ MHz	10	-	35	-	50	-	pF
Noise equivalent power	NEP	$V_R=10$ V, $\lambda=\lambda_p$	$1.4 \times 10^{-14}$	-	$1.9 \times 10^{-14}$	-	$3.5 \times 10^{-14}$	-	W/Hz <sup>1/2</sup>

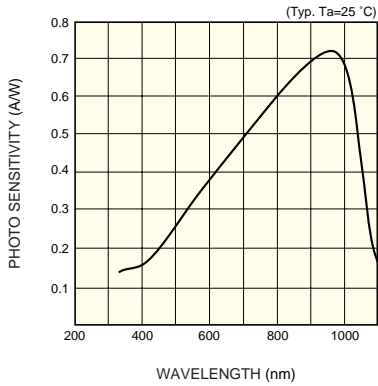
Note) S5980: For mass production, order unit is 100 pieces.

S5981, S5870: For mass production, order unit is 50 pieces.

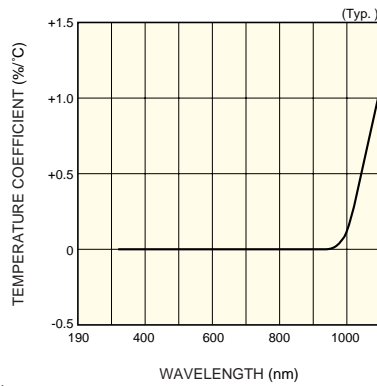
### Precautions for use

- 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  $^{\circ}\text{C}$  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  $^{\circ}\text{C}$  for 3 to 5 hours or at 120  $^{\circ}\text{C}$  for 12 to 15 hours before use.

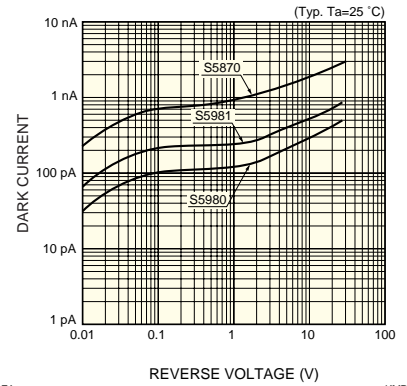
## ■ Spectral response



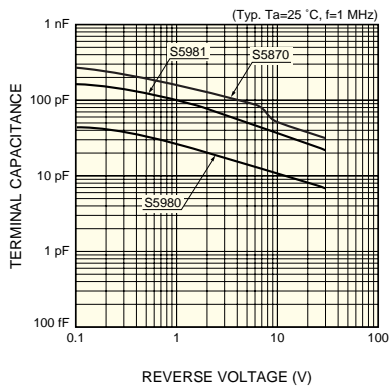
## ■ Photo sensitivity temperature characteristic



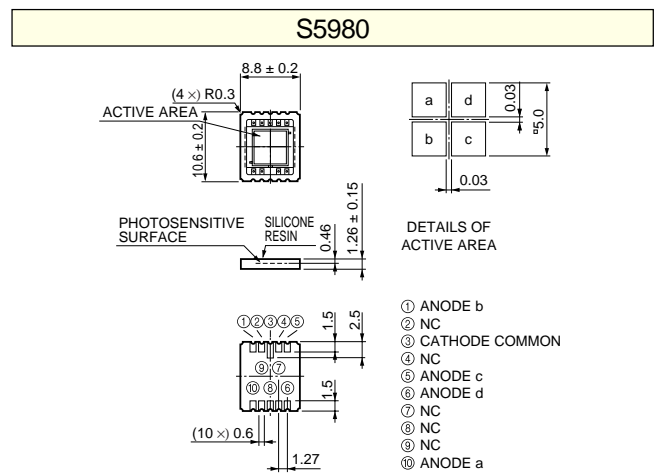
## ■ Dark current vs. reverse voltage



## ■ Terminal capacitance vs. reverse voltage



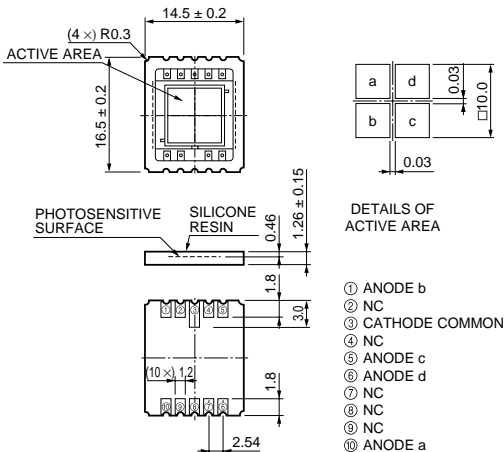
## ■ Dimensional outlines (unit: mm)



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

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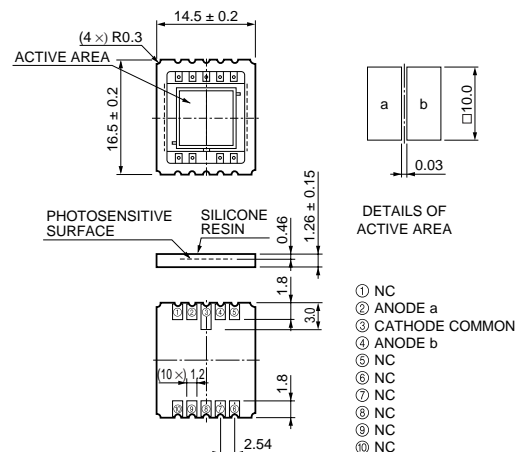
### S5981



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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