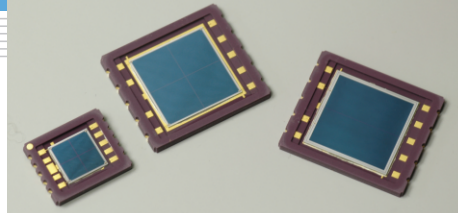


Si PIN photodiode

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			μm
Active area	A	5.0/4 elements	10.0/4 elements	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	λ		320 to 1100	-	320 to 1100	-	320 to 1100	-	nm
Peak sensitivity wavelength	λ_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, $R_L=50$ Ω , -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, $\lambda=\lambda_p$	1.4×10^{-14}	-	1.9×10^{-14}	-	3.5×10^{-14}	-	W/Hz ^{1/2}

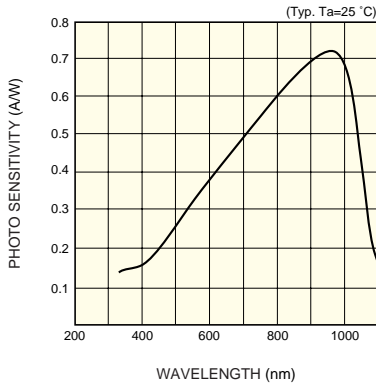
Note) S5980: For mass production, order unit is 100 pieces.

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

Precautions for use

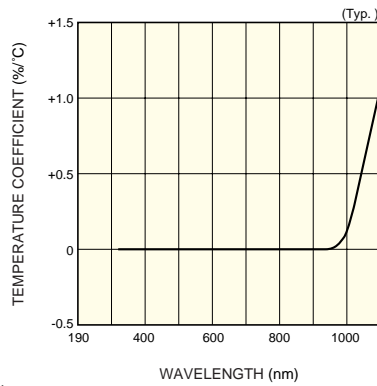
- The light input window of this product uses soft silicone resin. Avoid touching the window to keep it from grime and damage that can decrease sensitivity. External force applied to the resin surface may deform or cut off the wires, so do not touch the window to prevent such troubles.
- Use rosin flux when soldering, to prevent the terminal lead corrosion. Reflow oven temperature should be at 260 $^{\circ}\text{C}$ 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



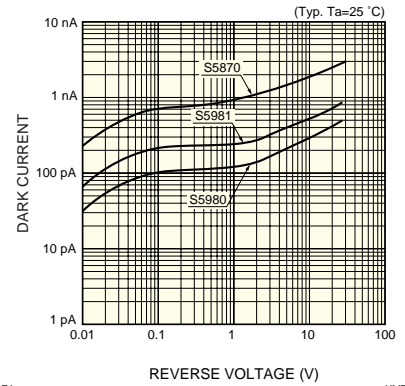
KMPDB0122EA

Photo sensitivity temperature characteristic



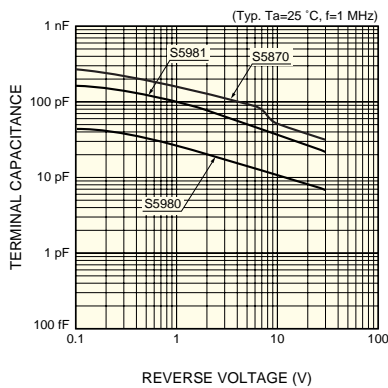
KMPDB0123EA

Dark current vs. reverse voltage



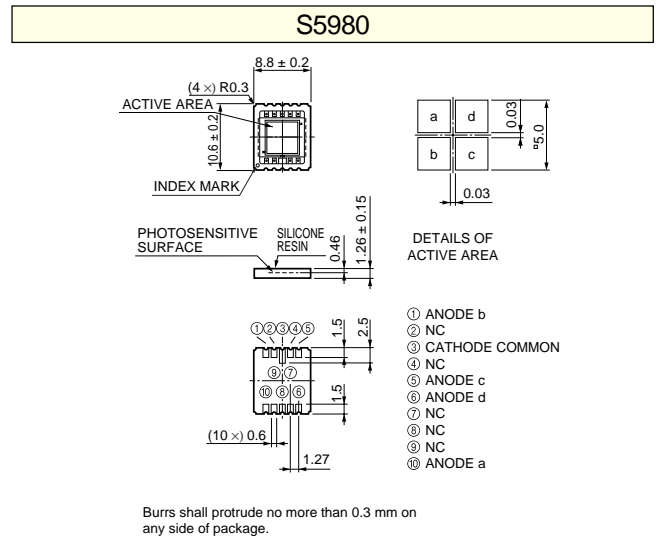
KMPDB0124EA

Terminal capacitance vs. reverse voltage

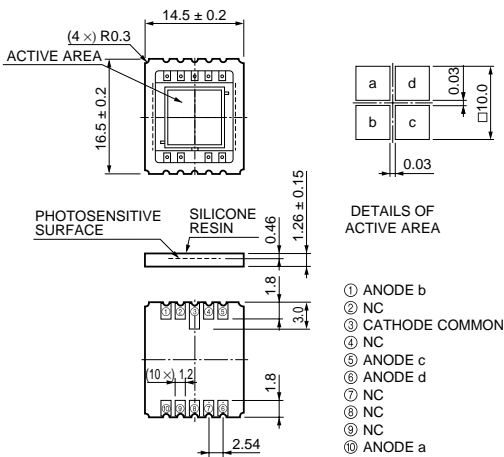


KMPDB0125EA

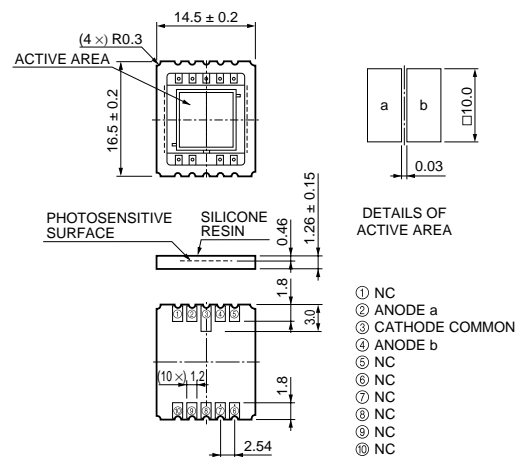
Dimensional outlines (unit: mm)



S5981



S5870



HAMAMATSU

Information furnished by HAMAMATSU is believed to be reliable. However, no responsibility is assumed for possible inaccuracies or omissions. Specifications are subject to change without notice. No patent rights are granted to any of the circuits described herein. Type numbers of products listed in the specification sheets or supplied as samples may have a suffix "(X)" which means tentative specifications or a suffix "(Z)" which means developmental specifications. ©2010 Hamamatsu Photonics K.K.

HAMAMATSU PHOTONICS K.K., Solid State Division

1126-1 Ichino-cho, Higashi-ku, Hamamatsu City, 435-8558 Japan, Telephone: (81) 53-434-3311, Fax: (81) 53-434-5184, www.hamamatsu.com

U.S.A.: Hamamatsu Corporation: 360 Foothill Road, P.O.Box 6910, Bridgewater, N.J. 08807-0910, U.S.A., Telephone: (1) 908-231-0960, Fax: (1) 908-231-1218

Germany: Hamamatsu Photonics Deutschland GmbH: Arzbergerstr. 10, D-82211 Herrsching am Ammersee, Germany, Telephone: (49) 8152-375-0, Fax: (49) 8152-265-8

France: Hamamatsu Photonics France S.A.R.L.: 19, Rue du Saule Trappu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: 33-(1) 69 53 71 00, Fax: 33-(1) 69 53 71 00

United Kingdom: Hamamatsu Photonics UK Limited: 2 Howard Court, 10 Tewin Road, Welwyn Garden City, Hertfordshire AL7 1BW, United Kingdom, Telephone: (44) 1707-294888, Fax: (44) 1707-325777

North Europe: Hamamatsu Photonics Norden AB: Smidsvägen 12, SE-171 41 Solna, Sweden, Telephone: (46) 8-509-031-00, Fax: (46) 8-509-031-01

Italy: Hamamatsu Photonics Italia S.R.L.: Strada della Moia, 1 int. 6, 20020 Arese, (Milano), Italy, Telephone: (39) 02-935-81-733, Fax: (39) 02-935-81-741