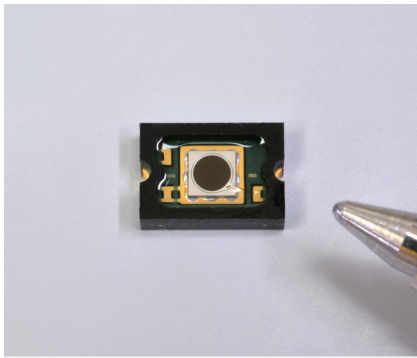


Si PIN photodiode



S13954-01CT

High-speed response and wide temperature range

The S13954-01CT is a photodiode that has an extremely wide operating and storage temperature range (-40 to +125 °C). A high-speed response (230 MHz typ.) is achieved.

Features

- High-speed response: 230 MHz
($V_R=3\text{ V}$, $R_L=50\ \Omega$, $\lambda=650\text{ nm}$, -3 dB)
- Operating/storage temperature: -40 to +125 °C
- Surface mount type, small and thin leadless package
- Photosensitive area: $\phi 1.5\text{ mm}$
- Suitable for lead-free solder reflow

Applications

- Laser power monitoring, etc.

Structure

Parameter	Value	Unit
Photosensitive area	$\phi 1.5$	mm
Package	Epoxy/Glass	-
Window material	Silicone resin	-

Absolute maximum ratings

Parameter	Symbol	Value	Unit
Reverse voltage	$V_R\text{ max.}$	10	V
Operating temperature	T_{opr}	-40 to +125	°C
Storage temperature	T_{stg}	-40 to +125	°C
Reflow soldering conditions*1	T_{sol}	Peak temperature: 260 °C, twice (see P.5)	-

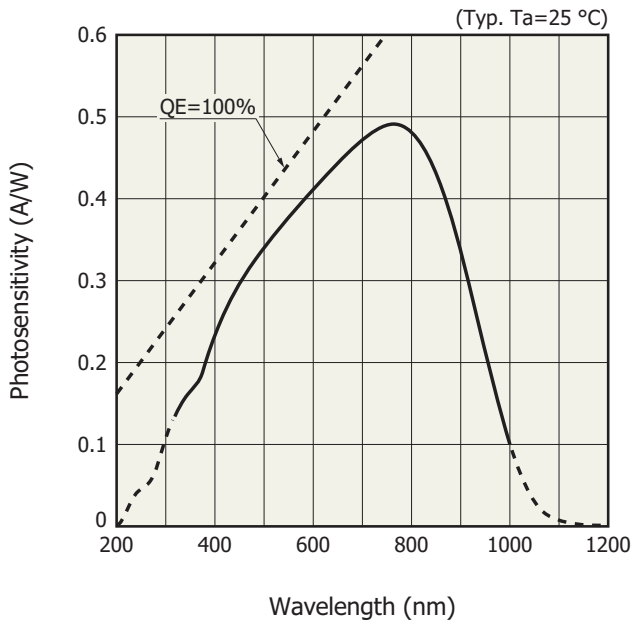
*1: JEDEC level 4

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.

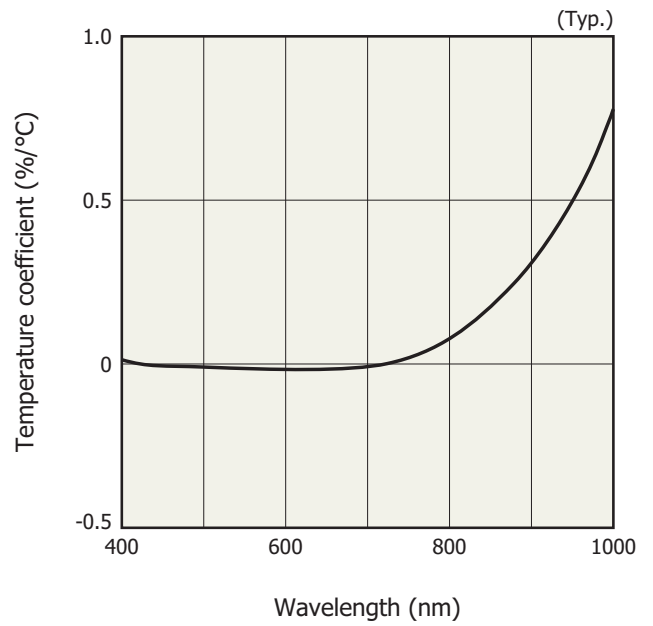
Electrical and optical characteristics (Ta=25 °C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Spectral response range	λ		-	320 to 1000	-	nm
Peak sensitivity wavelength	λ_p		-	780	-	nm
Photosensitivity	S	$\lambda=\lambda_p$	0.4	0.5	-	A/W
Dark current	I_D	$V_R=3\text{ V}$	-	0.01	1	nA
Temperature coefficient of I_D	T_{CID}	$V_R=3\text{ V}$	-	1.12	-	times/°C
Cutoff frequency	f_c	$V_R=3\text{ V}$, $R_L=50\ \Omega$ $\lambda=650\text{ nm}$, -3 dB	125	230	-	MHz
Terminal capacitance	C_t	$V_R=3\text{ V}$, $f=1\text{ MHz}$	-	13	25	pF

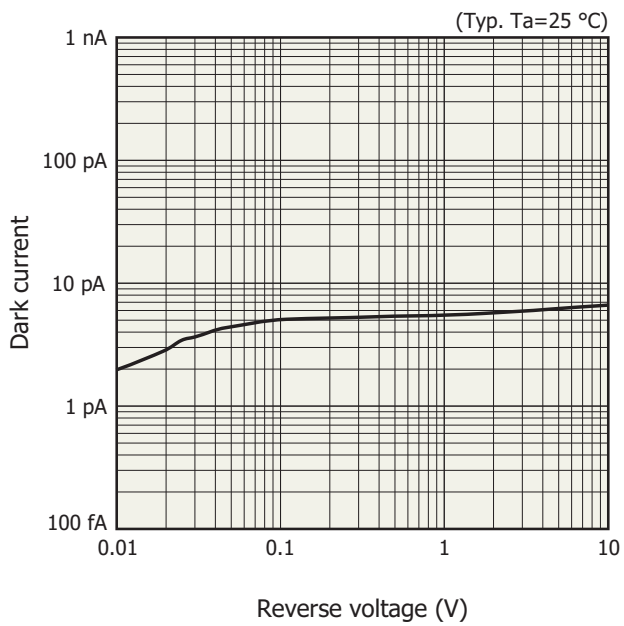
Spectral response



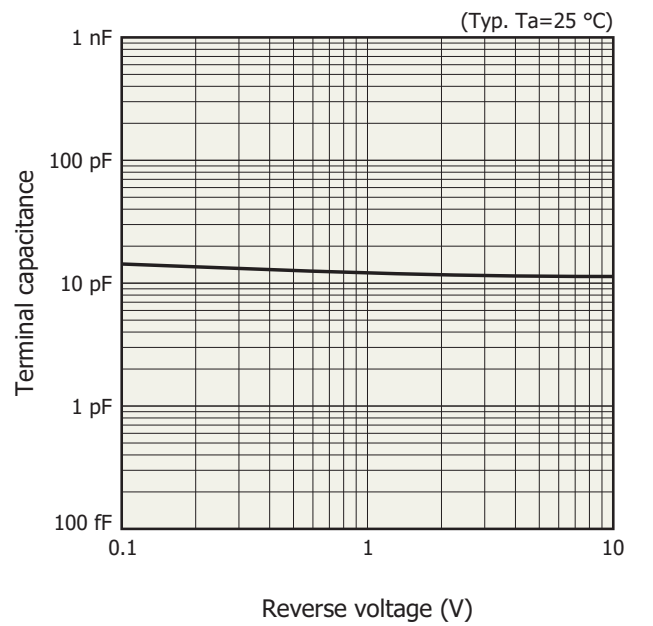
Photosensitivity temperature characteristics



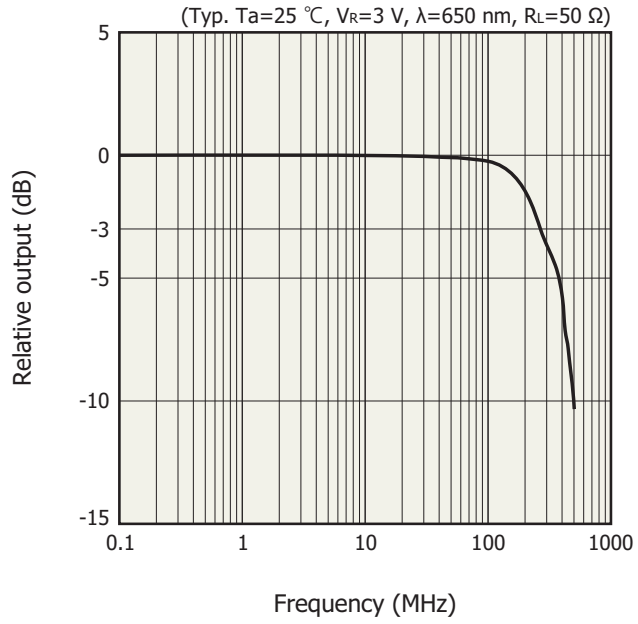
Dark current vs. reverse voltage



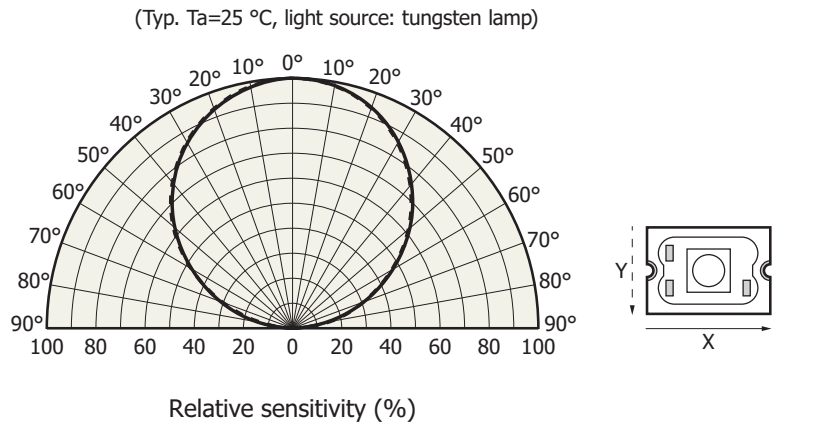
Terminal capacitance vs. reverse voltage



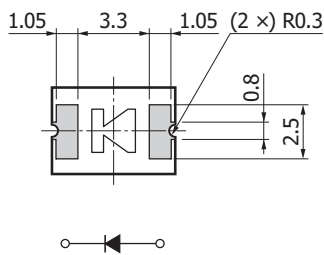
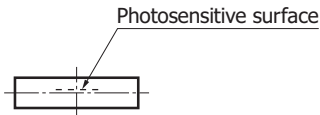
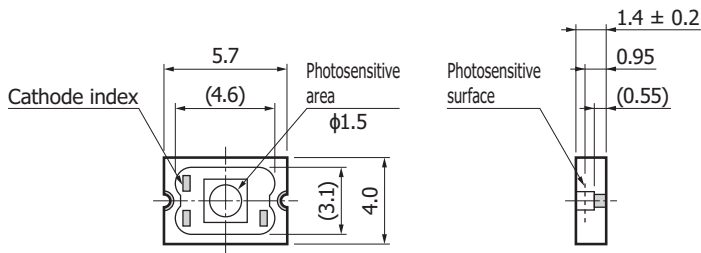
Frequency characteristics



Directivity



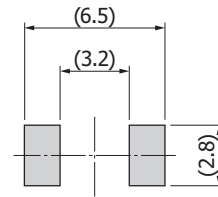
Dimensional outline (unit: mm)



Tolerance unless otherwise noted:
 ± 0.15 , $\pm 2^\circ$
 Chip position accuracy with respect to package center
 $X, Y \leq 0.2$, $\theta \leq \pm 2^\circ$

KPINA0123EA

Recommended land pattern



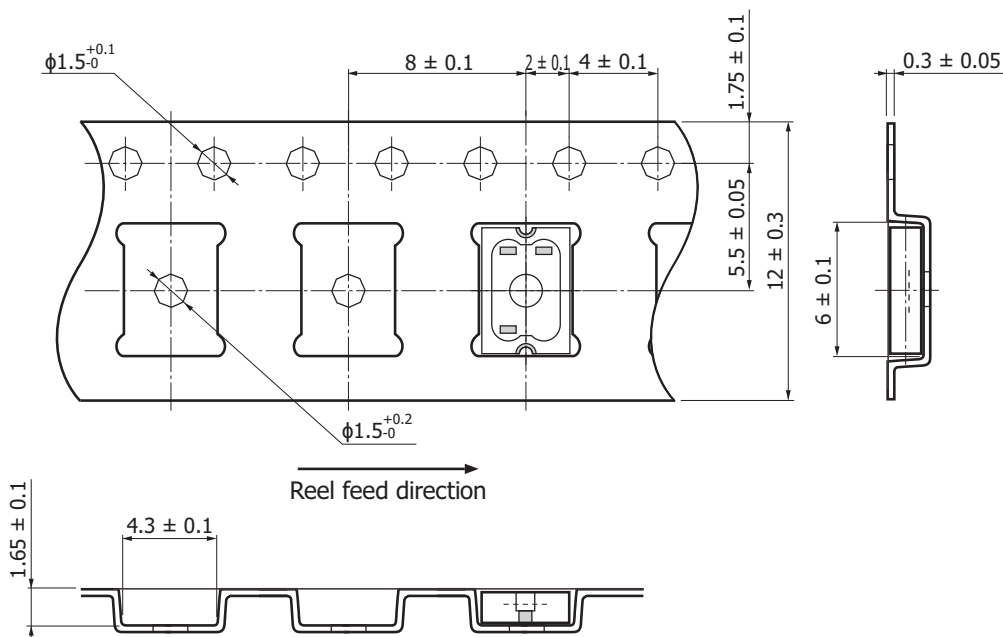
KPINC0034EA

Standard packing specifications

- Reel (conforms to JEITA ET-7200)

Dimensions	Hub diameter	Tape width	Material	Electrostatic characteristics
254 mm	100 mm	12 mm	Polystyrene	Conductive

- Embossed tape (unit: mm, material: polystyrene, conductive)

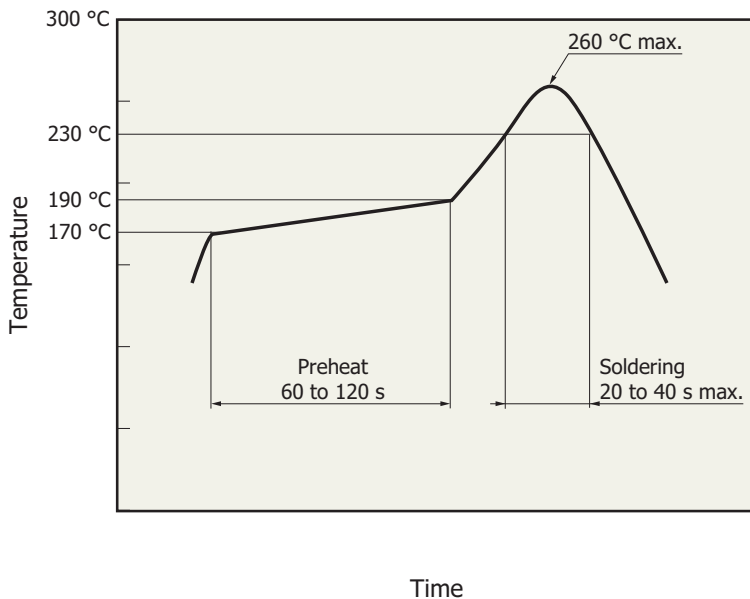


KPINC0035EA

- Packing quantity
2000 pcs/reel

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

Recommended reflow soldering conditions



KPINB0385EB

- 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 72 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

www.hamamatsu.com/sp/ssd/doc_en.html

■ Precautions

- Disclaimer
- Surface mount type products

■ Technical information

- Si photodiode / Application circuit examples

Information described in this material is current as of February 2020.

Product specifications are subject to change without prior notice due to improvements or other reasons. This document has been carefully prepared and the information contained is believed to be accurate. In rare cases, however, there may be inaccuracies such as text errors. Before using these products, always contact us for the delivery specification sheet to check the latest specifications.

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