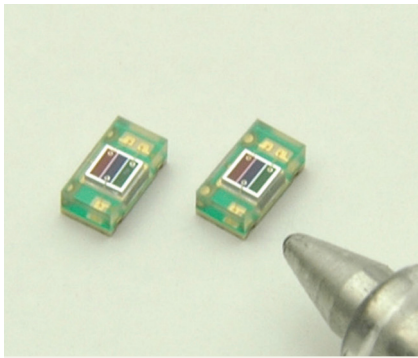


Si photodiode

S10942-01CT



RGB color sensor integrated in small and thin package

The S10942-01CT is a color sensor molded into a plastic package having a 3-channel (RGB) photodiode sensitive to the Red ($\lambda=590$ nm Min.), Green ($\lambda=480$ to 600 nm) and Blue ($\lambda=400$ to 540 nm) regions of the spectrum. When compared to the previous model (S9702), the S10942-01CT is significantly miniaturized the package size by 80% in cubic volume and PC board mount space by 77% in area. The S10942-01CT is ideal for RGB-LCD backlight monitors installed in such as mobile phones.

Features

- Small, thin package: $3.0 \times 1.6 \times 1.0$ mm
- 3-channel (RGB) Si photodiode
- Photosensitive area: 1×1 mm/3-segment (RGB)
- RoHS compliant
- Surface mount type

Applications

- Portable or mobile equipment
- RGB-LCD backlight monitors
- Detectors for various light sources
- Color detection

Absolute maximum ratings

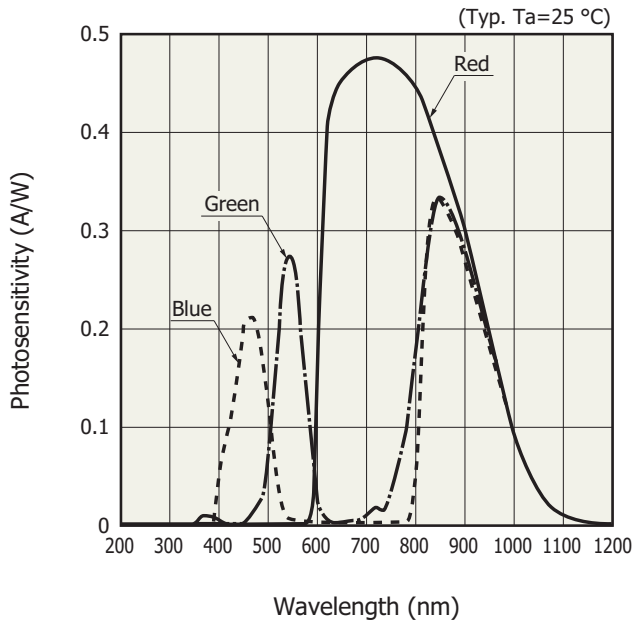
Parameter	Symbol	Value	Unit
Reverse voltage	V_R max	10	V
Operating temperature	T_{opr}	-25 to +85	°C
Storage temperature	T_{stg}	-40 to +85	°C

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 ($T_a = 25$ °C, per element)

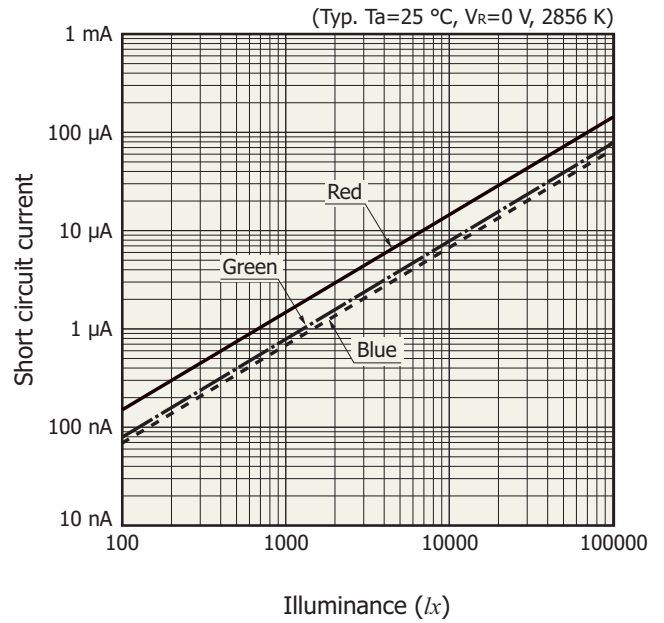
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Spectral response range	λ	Blue	-	400 to 540 800 to 1000	-	nm
		Green	-	480 to 600 760 to 1000	-	
		Red	-	590 to 1000	-	
Photosensitivity	S	Blue ($\lambda=460$ nm)	0.16	0.21	0.26	A/W
		Green ($\lambda=540$ nm)	0.20	0.25	0.30	
		Red ($\lambda=640$ nm)	0.40	0.45	0.50	
Dark current	I_D	$V_R=1$ V, All elements	-	1	50	pA
Temperature coefficient of I_D	T_{CID}		-	1.12	-	times/°C
Rise time	t_r	$V_R=0$ V, $R_L=1$ k Ω , 10 to 90%	-	0.1	1.0	μ s
Terminal capacitance	C_t	$V_R=0$ V, $f=10$ kHz	5	12	25	pF

Spectral response



KSPDB0287EA

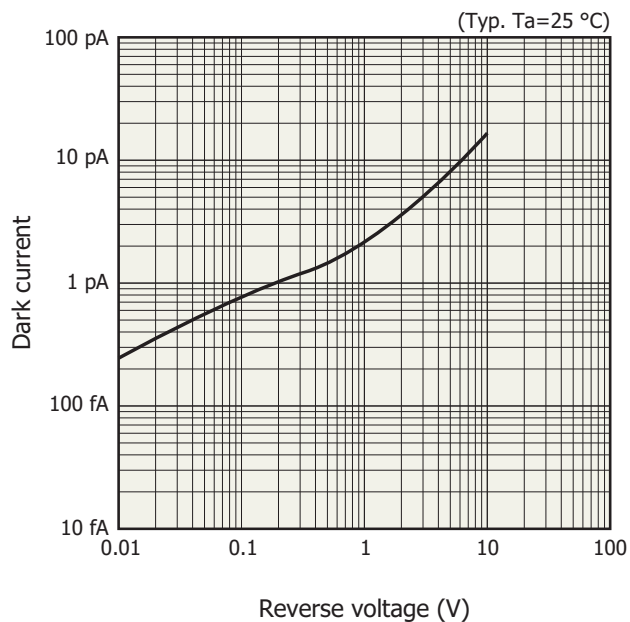
Linearity



KSPDB0329EA

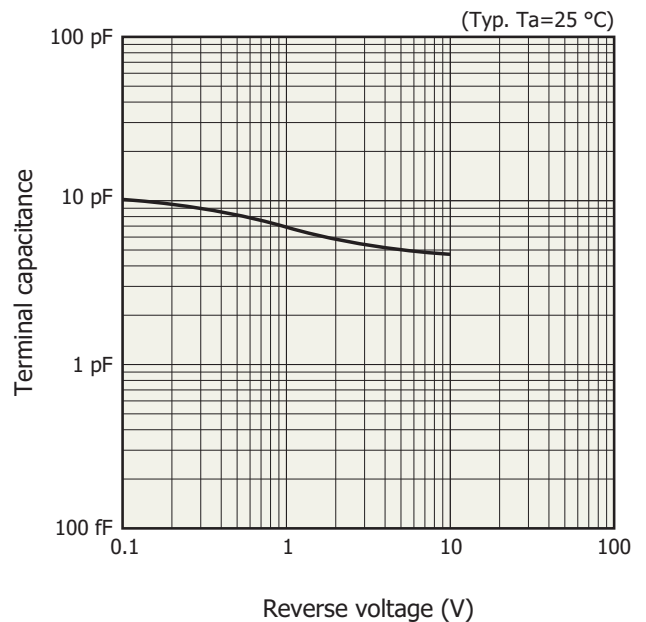
Since this photodiode has sensitivity in the infrared region, infrared light must be filtered out as needed.

Dark current vs. reverse voltage



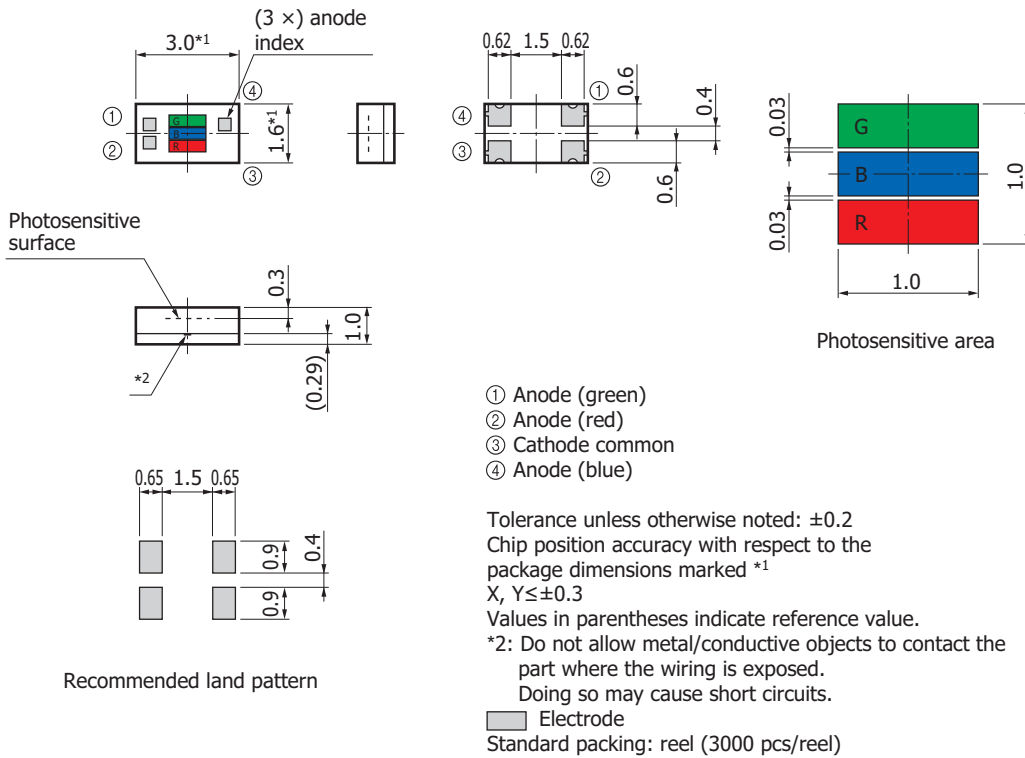
KSPDB0252EA

Terminal capacitance vs. reverse voltage



KSPDB0253EA

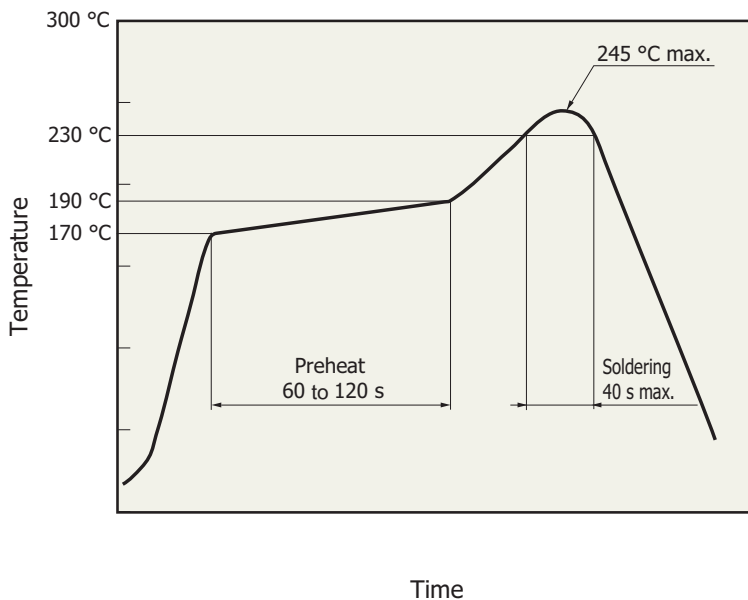
Dimensional outline (unit: mm)



KSPDA0186EB

Measured example of temperature profile with our hot-air reflow oven for product testing

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 24 hours.



KSPDB0139EA

Related information

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

■ Precautions

- Disclaimer
- Metal, ceramic, plastic package products
- Surface mount type products

Information described in this material is current as of December 2019.

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.

The product warranty is valid for one year after delivery and is limited to product repair or replacement for defects discovered and reported to us within that one year period. However, even if within the warranty period we accept absolutely no liability for any loss caused by natural disasters or improper product use. Copying or reprinting the contents described in this material in whole or in part is prohibited without our prior permission.

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