



S9032-02

## RGB color sensor

The S9032-02 is a color sensor molded into a plastic package having a 3-channel (RGB) photodiode sensitive to the blue ( $\lambda_p=460$  nm), green ( $\lambda_p=540$  nm) and red ( $\lambda_p=620$  nm) regions of the spectrum. The S9032-02 has a 3-segment (RGB) circular photosensitive area of  $\phi 2$  mm.

### Features

- 3-channel (RGB) Si photodiode
- Surface-mount small plastic package
- Spectral response range close to the human eye sensitivity
- No sensitivity in the near IR region
- Photosensitive area: 3-segment (RGB) circular photosensitive area of  $\phi 2$  mm

### Applications

- Color adjustment for LED back light system for LCD
- Color adjustment for LCD projector
- Color tester
- 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

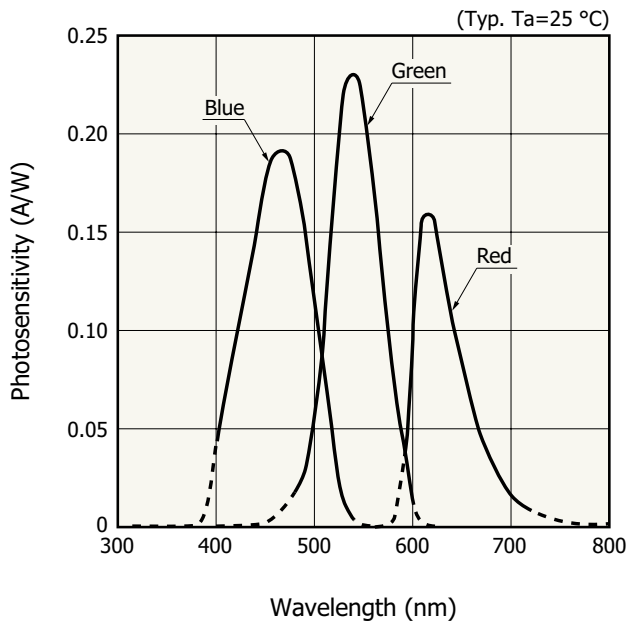
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

### Electrical and optical characteristics ( $T_a = 25$ °C, per element )

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	
Spectral response range	$\lambda$	Blue	-	400 to 540	-	nm	
		Green	-	480 to 600	-		
		Red	-	590 to 720	-		
Peak sensitivity wavelength	$\lambda_p$	Blue	-	460	-	nm	
		Green	-	540	-		
		Red	-	620	-		
Photosensitivity	S	$\lambda = \lambda_p$	Blue	0.13	0.18	-	A/W
			Green	0.18	0.23	-	
			Red	0.11	0.16	-	
Dark current	$I_D$	$V_R = 1$ V All elements	-	5	100	pA	
Temperature coefficient of $I_D$	$T_{CID}$		-	1.12	-	times/°C	
Rise time	$t_r$	$V_R = 0$ V, $R_L = 1$ k $\Omega$ 10 to 90%	-	0.2	1.0	$\mu$ s	
Terminal capacitance	$C_t$	$V_R = 0$ V $f = 10$ kHz	-	40	80	pF	

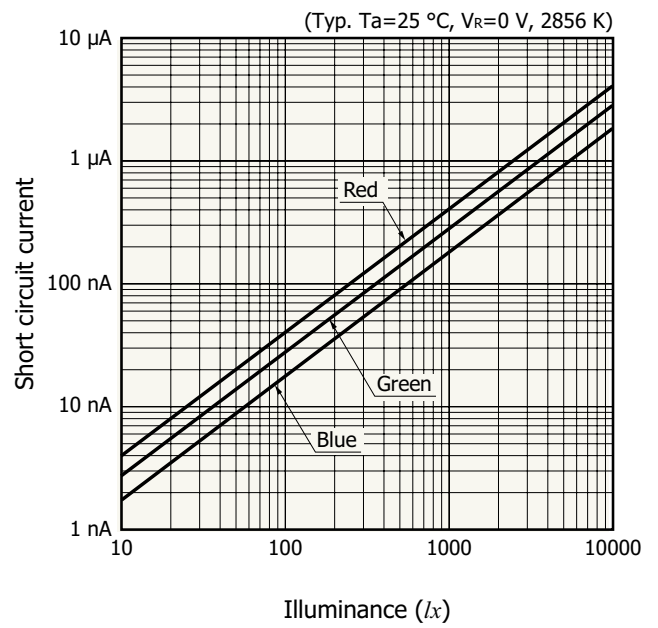
This product does not support lead-free soldering. For details on reflow soldering conditions, please contact our sales office.

**Spectral response**



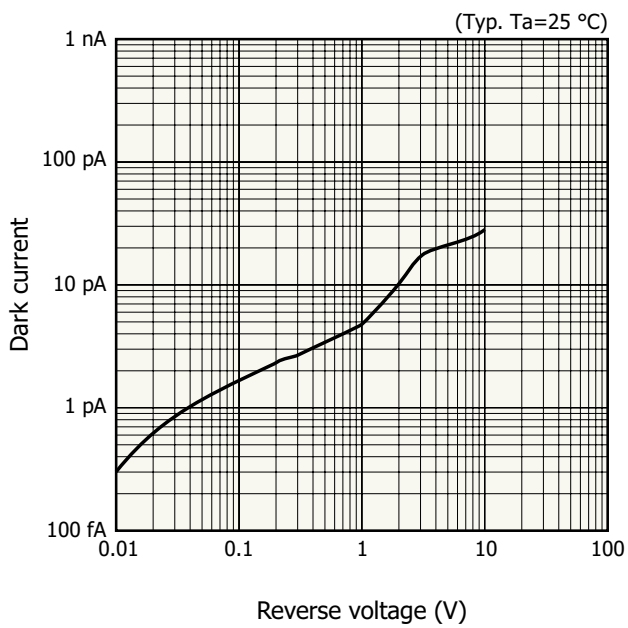
KSPDB0246EA

**Linearity**



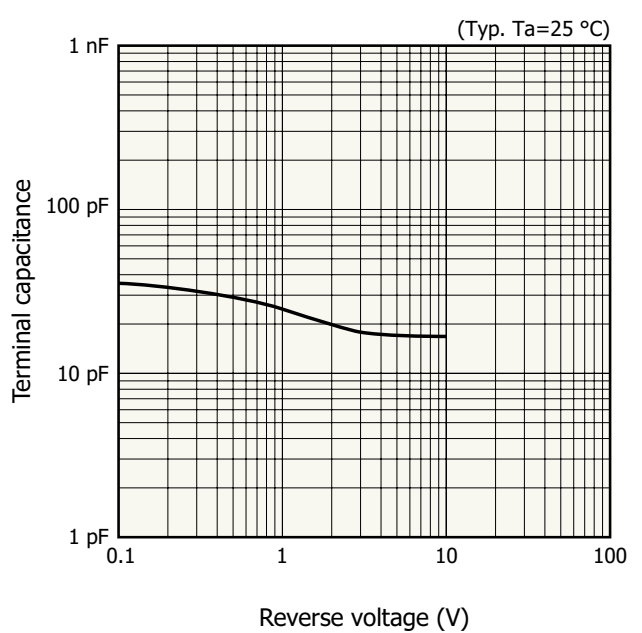
KSPDB0326EA

**Dark current vs. reverse voltage**



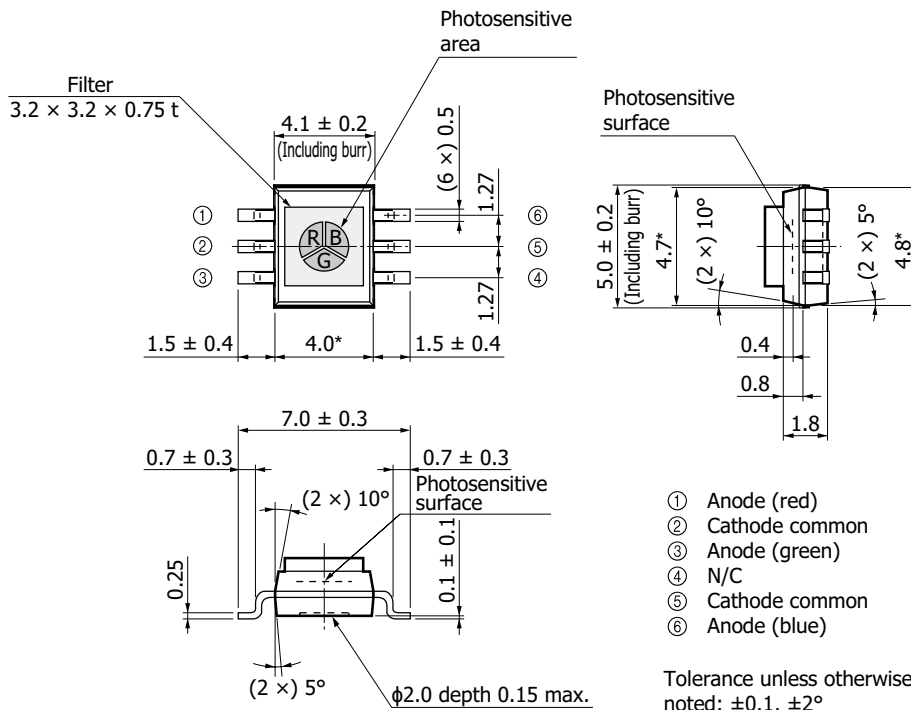
KSPDB0218EA

**Terminal capacitance vs. reverse voltage**



KSPDB0219EA

### Dimensional outline (unit: mm)



- ① Anode (red)
- ② Cathode common
- ③ Anode (green)
- ④ N/C
- ⑤ Cathode common
- ⑥ Anode (blue)

Tolerance unless otherwise noted:  $\pm 0.1$ ,  $\pm 2^\circ$   
Shaded area indicates burr.

Chip position accuracy with respect to the package dimensions marked \*

X, Y  $\leq \pm 0.2$ ,  $\theta \leq \pm 2^\circ$

Lead surface finish: silver plating

Packing: stick (50 pcs/stick)

KSPDA0162EB

Note: If excessive vibration is continuously applied to the glass filter, there is a risk that the filter may come off, so secure the glass filter with a holder.

### Related information

[www.hamamatsu.com/sp/ssd/doc\\_en.html](http://www.hamamatsu.com/sp/ssd/doc_en.html)

#### Precautions

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

#### Technical note

- Si photodiodes

## Color sensor evaluation circuit C9331

The evaluation circuit board (sold separately) specifically designed for Si photodiode S9032-02 is available. A 3-channel current-to-voltage conversion amplifier is mounted that converts each of RGB photocurrent into voltage signals for output.



Information described in this material is current as of May 2022.

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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