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Si photodiode

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 (λp=460 nm), green (λp=540 nm) and red (λp=620 nm) regions of the spectrum. The S9032-02 has a 3-segment (RGB) circular photosensitive area of ϕ2 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 ϕ2 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	Topr	-25 to +85	°C
Storage temperature	Tstg	-40 to +85	°C

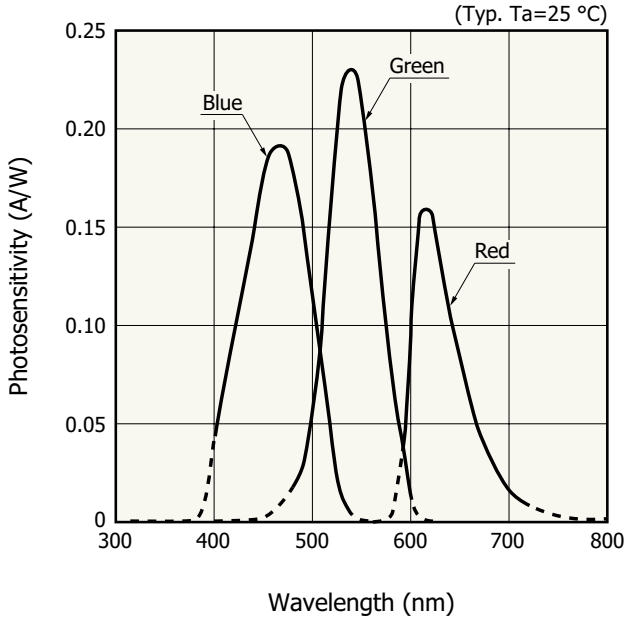
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

Electrical and optical characteristics (Ta= 25 °C, per element)

Parameter	Symbol	Condition		Min.	Typ.	Max.	Unit
Spectral response range	λ	Blue		-	400 to 540	-	nm
		Green		-	480 to 600	-	
		Red		-	590 to 720	-	
Peak sensitivity wavelength	λp	Blue		-	460	-	nm
		Green		-	540	-	
		Red		-	620	-	
Photosensitivity	S	λ=λp	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	tr	V_R=0 V, R_L=1 kΩ 10 to 90%		-	0.2	1.0	μs
Terminal capacitance	Ct	V_R=0 V f=10 kHz		-	40	80	pF

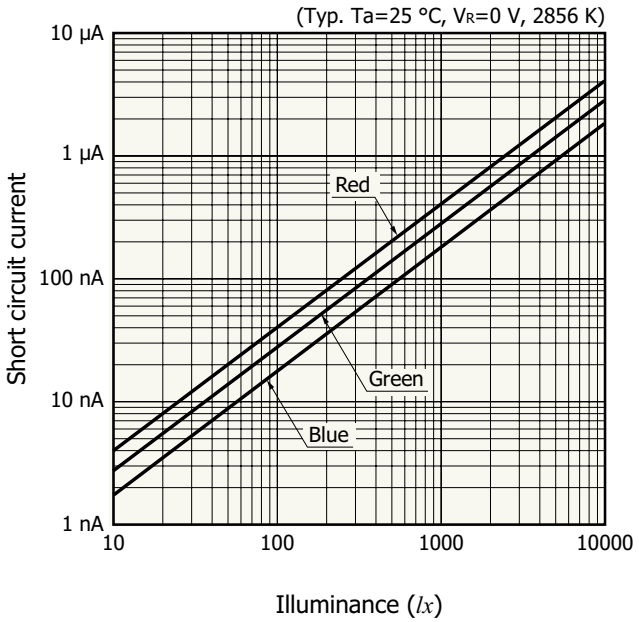
This product does not support lead-free soldering. For details on reflow soldering conditions, please contact our sales office.

Spectral response



KSPDB0246EA

Linearity



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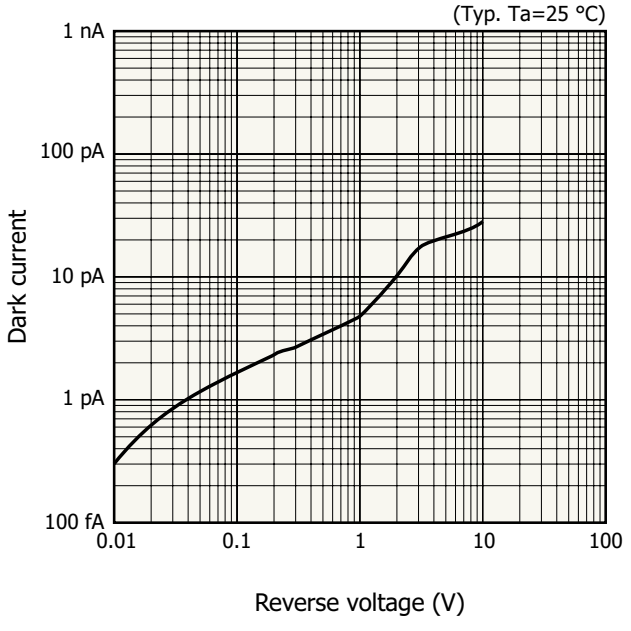
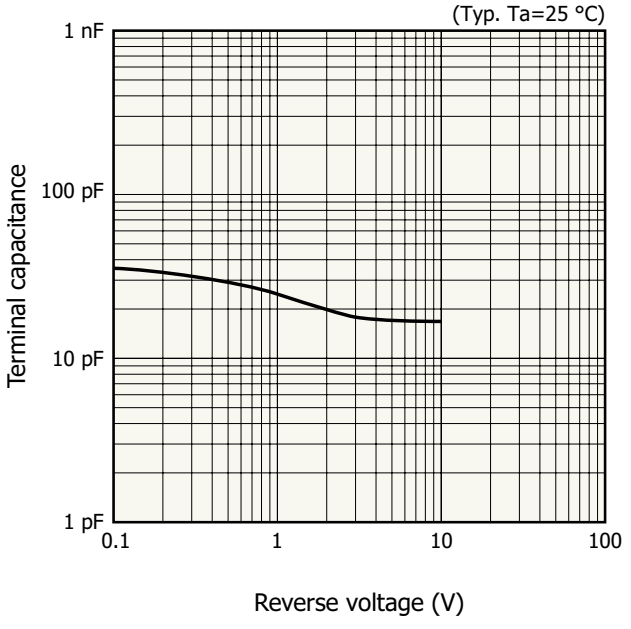
Dark current vs. reverse voltage



KSPDB0218EA

Terminal capacitance vs. reverse voltage



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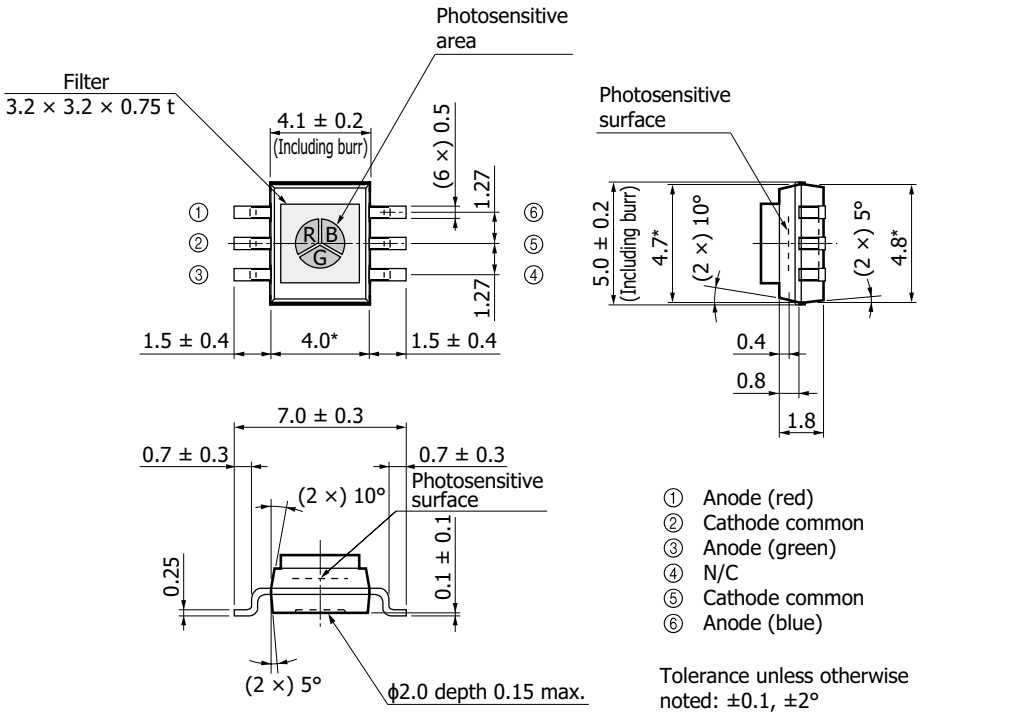
Dimensional outline (uint: mm)



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

Tolerance unless otherwise noted: ±0.1, ±2°
Shaded area indicates burr.

Chip position accuracy with respect to the package dimensions marked *
X, Y≤±0.2, θ≤±2°
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

■ 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.

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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
U.S.A.: HAMAMATSU CORPORATION: 360 Foothill Road, Bridgewater, NJ 08807, U.S.A., Telephone: (1)908-231-0960, Fax: (1)908-231-1218 E-mail: usa@hamamatsu.com
Germany: HAMAMATSU PHOTONICS DEUTSCHLAND GMBH.: Arzbergerstr. 10, 82211 Herrsching am Ammersee, Germany, Telephone: (49)8152-375-0, Fax: (49)8152-265-8 E-mail: info@hamamatsu.de
France: HAMAMATSU PHOTONICS FRANCE S.A.R.L.: 19, Rue du Saule Trapu, Parc du Moulin de Massy, 91882 Massy Cedex, France, Telephone: (33)1 69 53 71 00, Fax: (33)1 69 53 71 10 E-mail: infos@hamamatsu.fr
United Kingdom: HAMAMATSU PHOTONICS UK LIMITED: 2 Howard Court,10 Tewin Road, Welwyn Garden City, Hertfordshire AL7 1BW, UK, Telephone: (44)1707-294888, Fax: (44)1707-325777 E-mail: info@hamamatsu.co.uk
North Europe: HAMAMATSU PHOTONICS NORDEN AB: Torshamnsgatan 35 16440 Kista, Sweden, Telephone: (46)8-509 031 00, Fax: (46)8-509 031 01 E-mail: info@hamamatsu.se
Italy: HAMAMATSU PHOTONICS ITALIA S.R.L.: Strada della Moia, 1 int. 6, 20044 Arese (Milano), Italy, Telephone: (39)02-93 58 17 33, Fax: (39)02-93 58 17 41 E-mail: info@hamamatsu.it
China: HAMAMATSU PHOTONICS (CHINA) CO., LTD.: 1201 Tower B, Jiaming Center, 27 Dongsanhuan Beilu, Chaoyang District, 100020 Beijing, P.R. China, Telephone: (86)10-6586-6006, Fax: (86)10-6586-2866 E-mail: hpc@hamamatsu.com.cn
Taiwan: HAMAMATSU PHOTONICS TAIWAN CO., LTD.: 8F-3, No.158, Section 2, Gongdao 5th Road, East District, Hsinchu, 300, Taiwan R.O.C. Telephone: (886)3-659-0080, Fax: (886)3-659-0081 E-mail: info@hamamatsu.com.tw

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