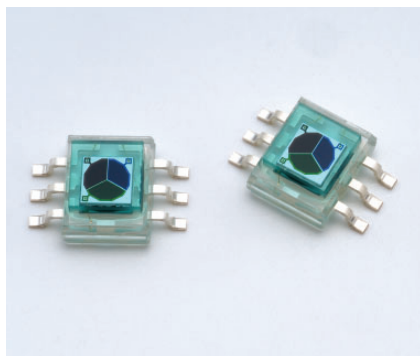


Si photodiode



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 ($\lambda_p=460$ 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

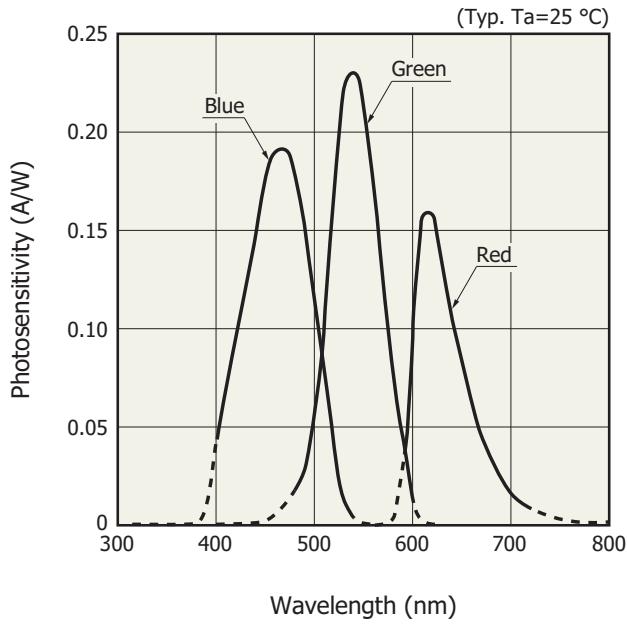
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

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

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	
Spectral response range	λ	Blue	-	400 to 540	-	nm	
		Green	-	480 to 600	-		
		Red	-	590 to 720	-		
Peak sensitivity wavelength	λ_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 Ω 10 to 90%	-	0.2	1.0	μ s	
Terminal capacitance	C_t	$V_R=0$ V $f=10$ kHz	-	40	80	pF	

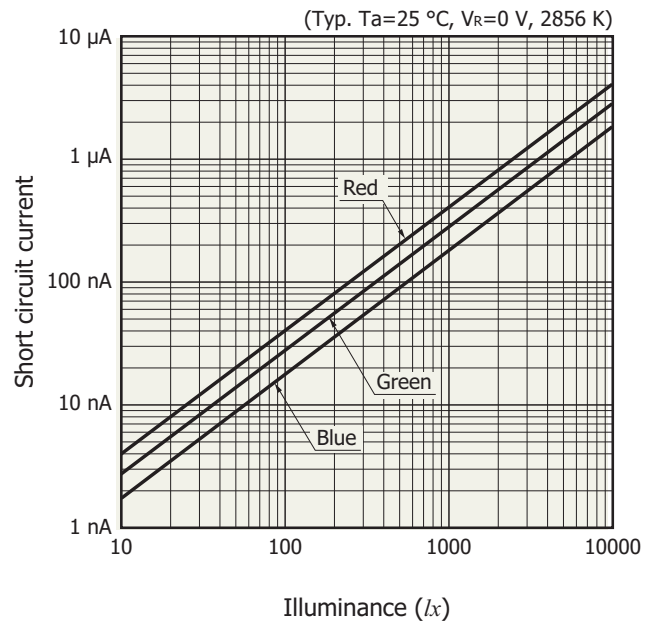
This product does not support lead-free soldering. For details on reflow soldering conditions, please contact our sales office.

Spectral response



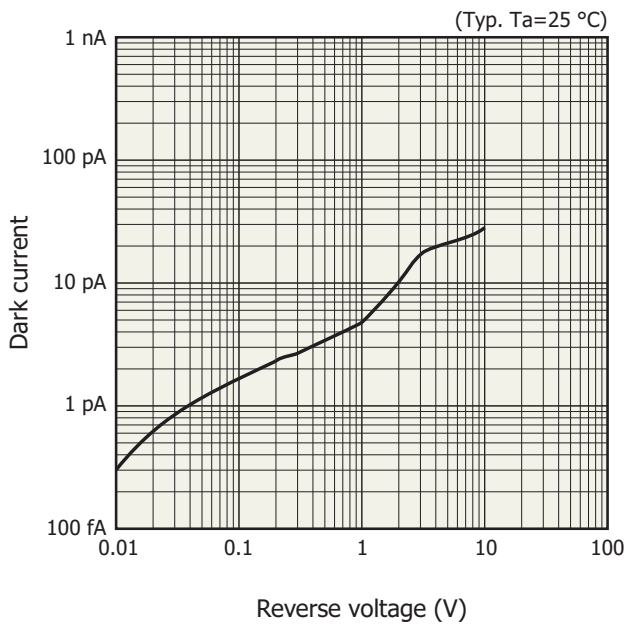
KSPD80246EA

Linearity



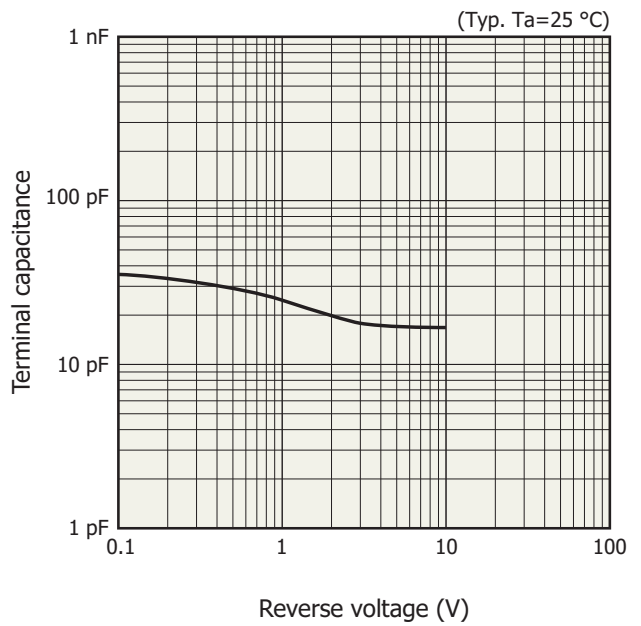
KSPD80326EA

Dark current vs. reverse voltage



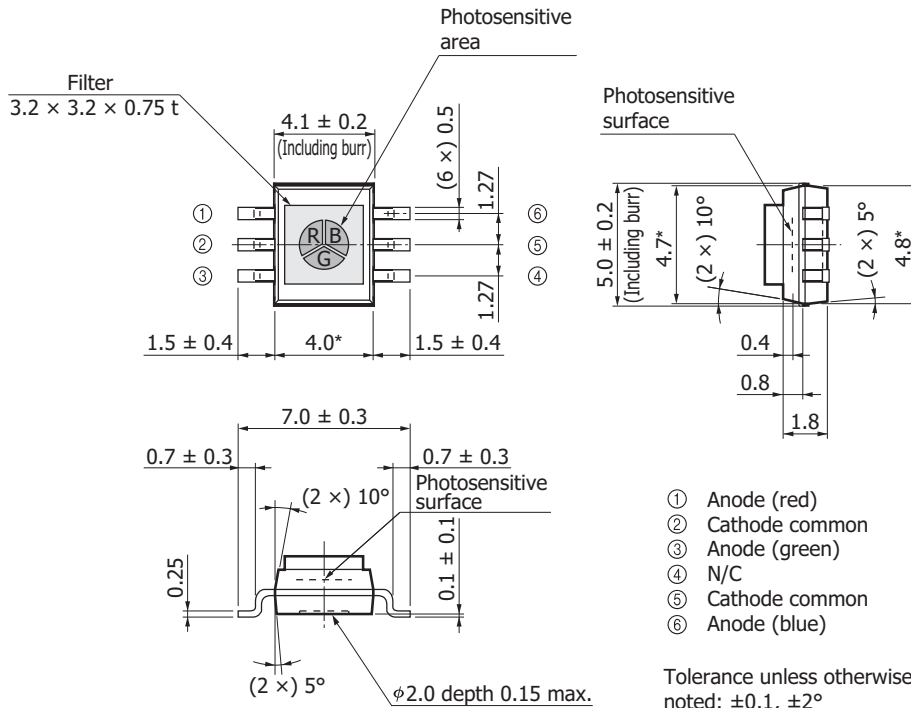
KSPD80218EA

Terminal capacitance vs. reverse voltage



KSPD80219EA

Dimensional outline (unit: mm)

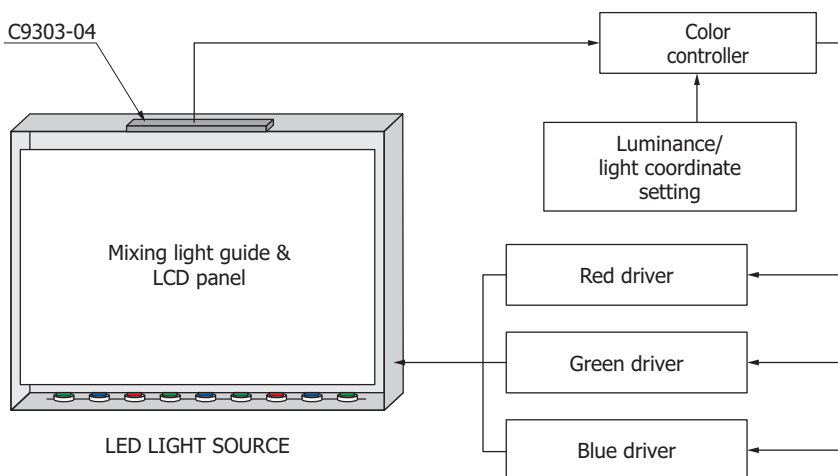


KSPDA0162EB

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.

Application example












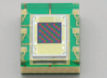

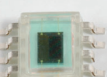


Optical feedback of backlight for TFT-LCD using a color sensor module C9303-04 (integrated with the S9032-02)



LED: Made by Lumileds (LUXEON), <http://www.lumileds.com/>

KACCC0289EA

Line-up of RGB color sensors

Type no.	Type	Photosensitive area size (mm)	Package (mm)	Peak sensitivity wavelength (nm)	Photosensitivity				Photo		
S9032-02	Photodiode	 $\phi 2.0$	4 × 4.8 × 1.8 ^t 6-pin (filter 0.75 ^t)	B 460	B	0.18 (A/W) [$\lambda=460$ nm]					
				G 540	G	0.23 (A/W) [$\lambda=540$ nm]					
				R 620	R	0.16 (A/W) [$\lambda=620$ nm]					
S9702	Photodiode	 1.0 × 1.0	3 × 4 × 1.3 ^t 4-pin (filter 0.75 ^t)	B 460	B	0.18 (A/W) [$\lambda=460$ nm]					
				G 540	G	0.23 (A/W) [$\lambda=540$ nm]					
				R 620	R	0.16 (A/W) [$\lambda=620$ nm]					
S10917-35GT	Photodiode	 1.0 × 1.0	3 × 1.6 × 1.0 ^t COB (on-chip filter)	B 460	B	0.2 (A/W) [$\lambda=460$ nm]					
				G 540	G	0.23 (A/W) [$\lambda=540$ nm]					
				R 620	R	0.17 (A/W) [$\lambda=620$ nm]					
S10942-01CT	Photodiode	 1.0 × 1.0	3 × 1.6 × 1.0 ^t COB (on-chip filter)	*	B	0.21 (A/W) [$\lambda=460$ nm]					
					G	0.25 (A/W) [$\lambda=540$ nm]					
					R	0.45 (A/W) [$\lambda=640$ nm]					
S9706	Digital photo IC	 1.2 × 1.2	4 × 4.8 × 1.8 ^t 6-pin (filter 0.75 ^t)	B 465	Low	B	0.21 (LSB/lx)	High	B	1.9 (LSB/lx)	
				G 540		G	0.45 (LSB/lx)		G	4.1 (LSB/lx)	
				R 615		R	0.64 (LSB/lx)		R	5.8 (LSB/lx)	
S11012-01CR	Digital photo IC	 1.2 × 1.2	3.43 × 3.8 × 1.6 ^t COB (on-chip filter)	*	Low	B	0.3 (LSB/lx)	High	B	2.6 (LSB/lx)	
						G	0.6 (LSB/lx)		G	5.3 (LSB/lx)	
						R	1.4 (LSB/lx)		R	12.9 (LSB/lx)	
S11059-02DT	I ² C compatible color sensor	 0.54 × 1.1	3 × 4.2 × 1.3 ^t 10-pin (on-chip filter)	B 460	Low	B	4.4 (count/lx)	High	B	44.8 (count/lx)	
				G 530		G	8.3 (count/lx)		G	85.0 (count/lx)	
				R 615		R	11.2 (count/lx)		R	117.0 (count/lx)	
				IR 855		IR	3.0 (count/lx)		IR	30.0 (count/lx)	
S11059-01WT	I ² C interface-compatible color sensor	 1.22 × 0.56	1.68 × 1.18 × 0.58 ^t WL-CSP (on-chip filter)	B 460	Low	B	3.35 (count/lx)	High	B	31.7 (count/lx)	
				G 530		G	7.61 (count/lx)		G	76.2 (count/lx)	
				R 615		R	9.48 (count/lx)		R	94.5 (count/lx)	
				IR 855		IR	1.66 (count/lx)		IR	15.3 (count/lx)	

* Refer to "Spectral response" of each datasheet.

Information described in this material is current as of April, 2013.

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Type numbers of products listed in the delivery specification sheets or supplied as samples may have a suffix "(X)" which means preliminary specifications or a suffix "(Z)" which means developmental 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.

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