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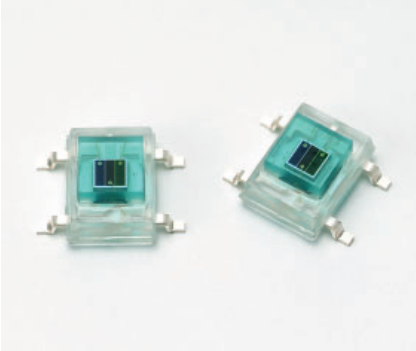
Si photodiode



S9702

RGB color sensor

The S9702 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 S9702 has a 3-segment (RGB) photosensitive area of □1 mm. When compared to the previous model (S9032-02), the S9702 is significantly miniaturized (package size 55% less in cubic volume, PC board mount space 43% less in area).

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) photosensitive area of □1 mm**

Applications

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

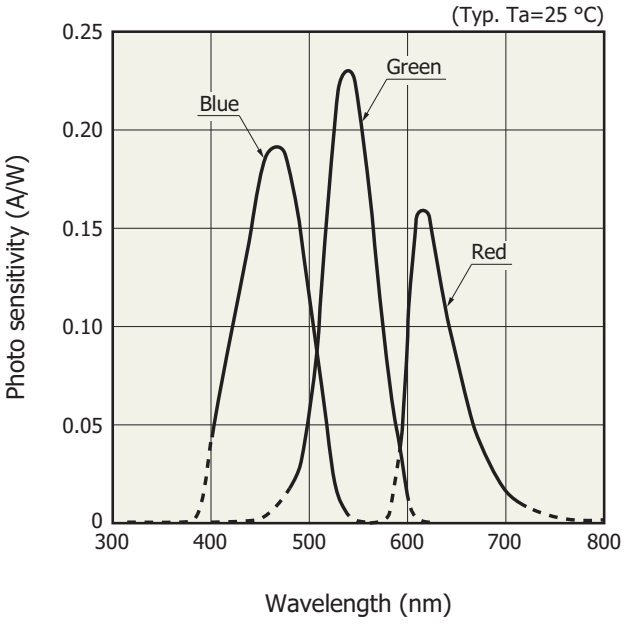
Absolute maximum ratings

Parameter	Symbol	Value	Unit
Reverse voltage	V_R Max.	10	V
Operating temperature	Topr	-25 to +85	°C
Storage temperature	Tstg	-40 to +85	°C

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

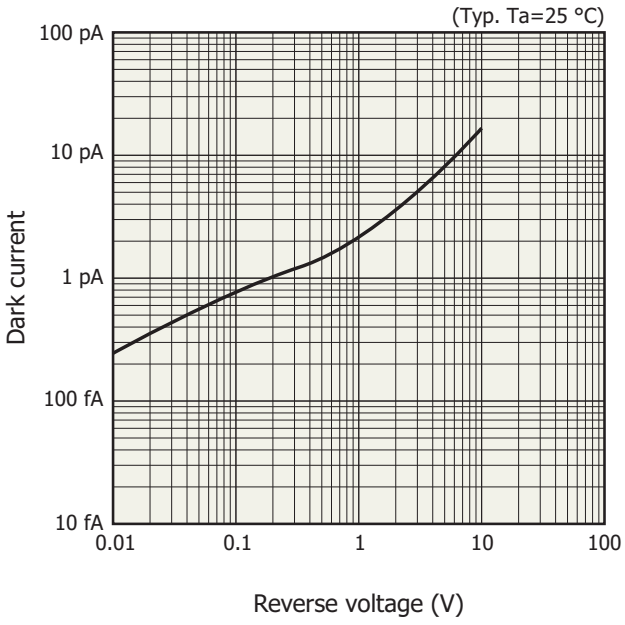
Parameter	Symbol	Condition		Min.	Typ.	Max.	Unit
Spectral response range	λ	Blue		-	400 to 540	-	nm
		Green		-	480 to 600	-	
		Red		-	590 to 720	-	
Peak sensitivity wavelength	λp	Blue		-	460	-	nm
		Green		-	540	-	
		Red		-	620	-	
Photo sensitivity	S	λ=λp	Blue	0.13	0.18	-	A/W
			Green	0.18	0.23	-	
			Red	0.11	0.16	-	
Dark current	I_D	V_R=1 V All elements		-	1	50	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%		-	0.1	1.0	μs
Terminal capacitance	Ct	V_R=0 V, f=10 kHz		-	12	25	pF

Spectral response



KSPDB0246EA

Dark current vs. reverse voltage



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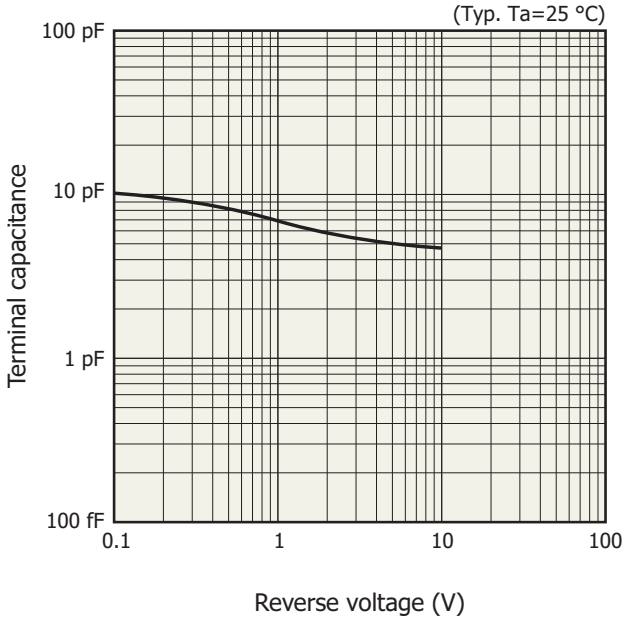
Terminal capacitance vs. reverse voltage



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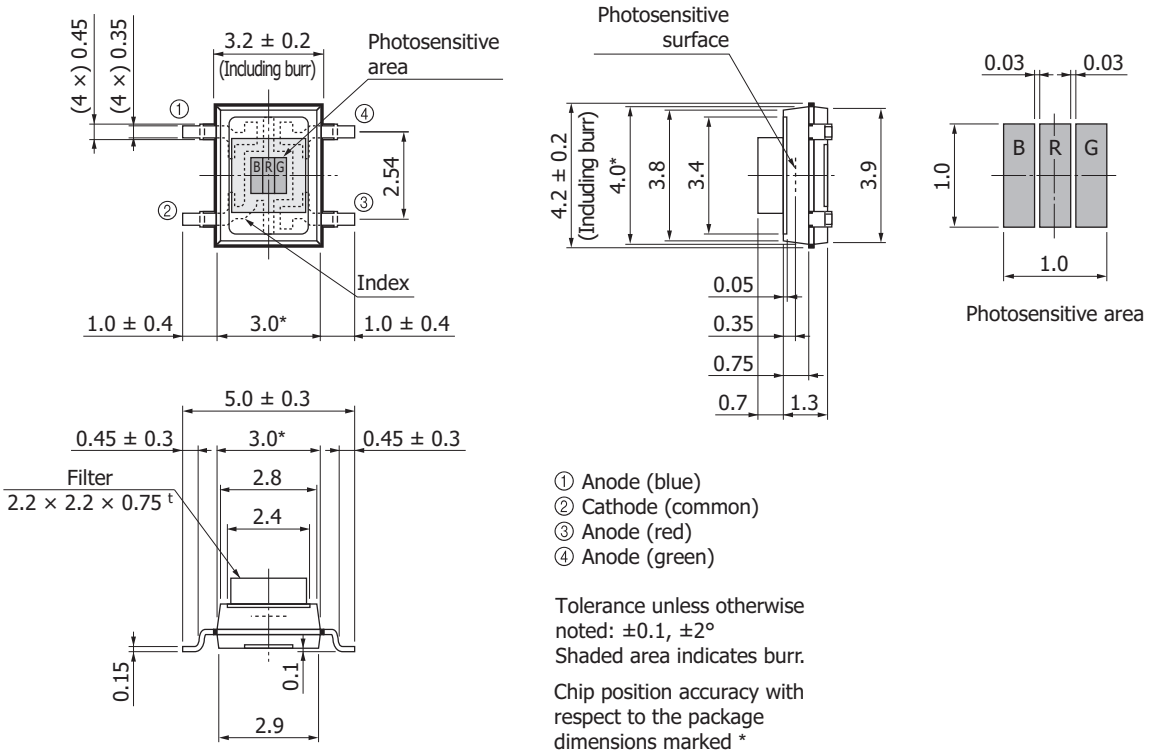
Dimensional outline (uint: mm)



① Anode (blue)
② Cathode (common)
③ Anode (red)
④ Anode (green)

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 (100 pcs/stick)

KSPDA0170EC

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.

Line-up of RGB color sensors

Type no.	Type	Photosensitive area size (mm)	Package (mm)	Peak sensitivity wavelength (nm)		Photo sensitivity						Photo
S9032-02	Photodiode	ϕ2.0	4 × 4.8 × 1.8t 6-pin (filter 0.75t)	B	460	B	0.18 (A/W) [λ=460 nm]					
				G	540	G	0.23 (A/W) [λ=540 nm]					
				R	620	R	0.16 (A/W) [λ=620 nm]					
S9702	Photodiode	1.0 × 1.0	3 × 4 × 1.3t 4-pin (filter 0.75t)	B	460	B	0.18 (A/W) [λ=460 nm]					
				G	540	G	0.23 (A/W) [λ=540 nm]					
				R	620	R	0.16 (A/W) [λ=620 nm]					
S10917-35GT	Photodiode	1.0 × 1.0	3 × 1.6 × 1.0t COB (on-chip filter)	B	460	B	0.2 (A/W) [λ=460 nm]					
				G	540	G	0.23 (A/W) [λ=540 nm]					
				R	620	R	0.17 (A/W) [λ=620 nm]					
S10942-01CT	Photodiode	1.0 × 1.0	3 × 1.6 × 1.0t COB (on-chip filter)	*		B	0.21 (A/W) [λ=460 nm]					
						G	0.25 (A/W) [λ=540 nm]					
						R	0.45 (A/W) [λ=640 nm]					
S9706	Digital photo IC	1.2 × 1.2	4 × 4.8 × 1.8t 6-pin (filter 0.75t)	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 × 1.6t 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)	

* Refer to "Spectral response" of each datasheet.

Information described in this material is current as of November, 2011.

Product specifications are subject to change without prior notice due to improvements or other reasons. Before assembly into final products, please contact us for the delivery specification sheet to check the latest information.

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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