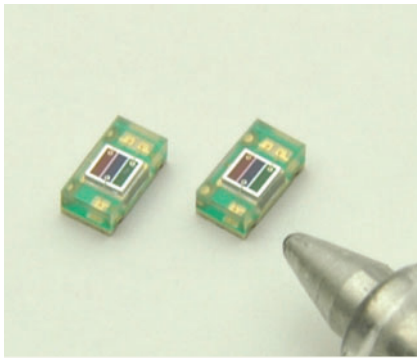


Si photodiode



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

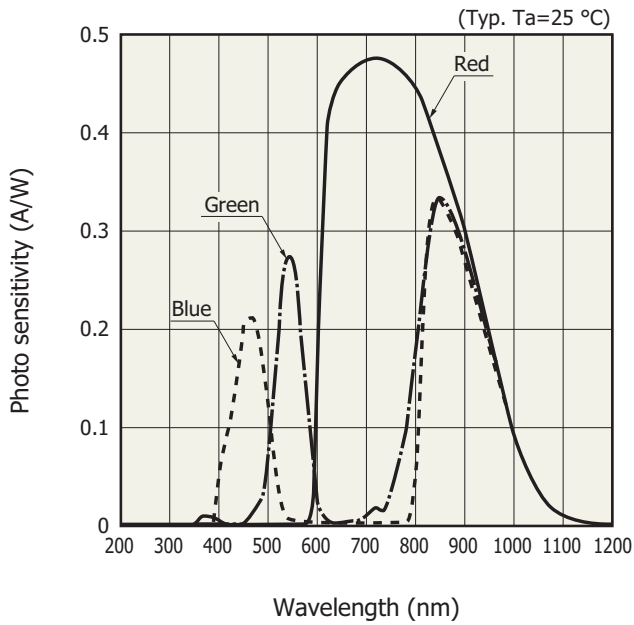
Absolute maximum ratings

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

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

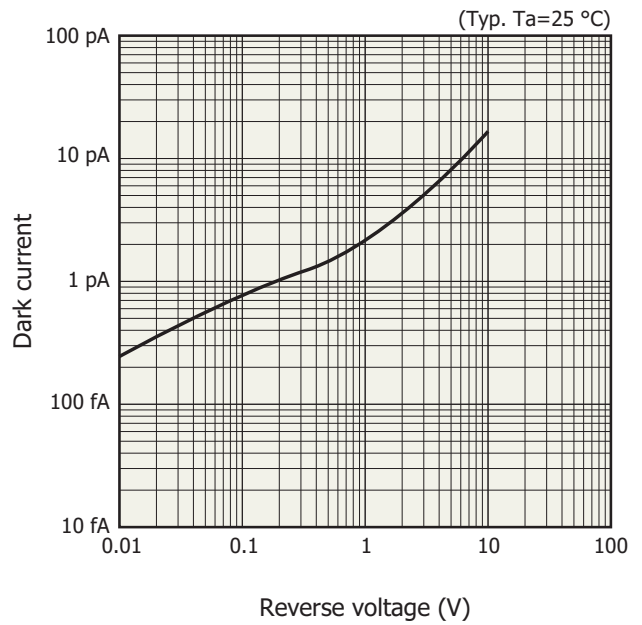
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Spectral response range	λ	Blue	-	400 to 540 800 to 1000	-	nm
		Green	-	480 to 600 760 to 1000	-	
		Red	-	590 to 1000	-	
Photo sensitivity	S	Blue ($\lambda=460$ nm)	0.16	0.21	0.26	A/W
		Green ($\lambda=540$ nm)	0.20	0.25	0.30	
		Red ($\lambda=640$ nm)	0.40	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

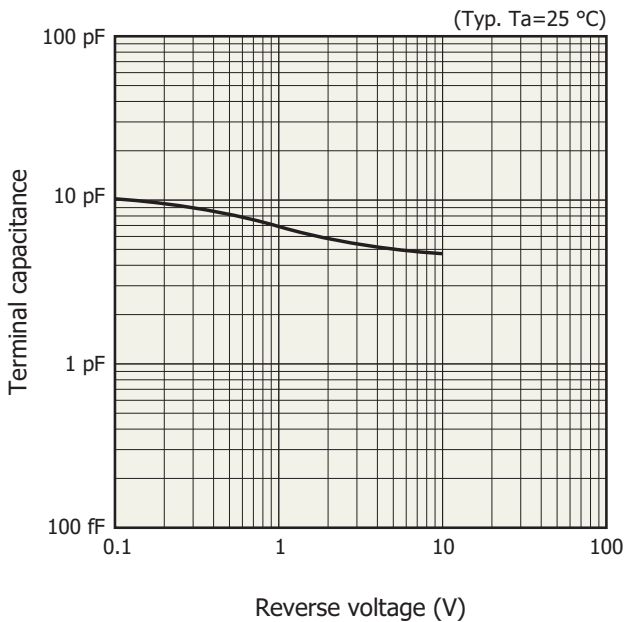
Dark current vs. reverse voltage



KSPDB0252EA

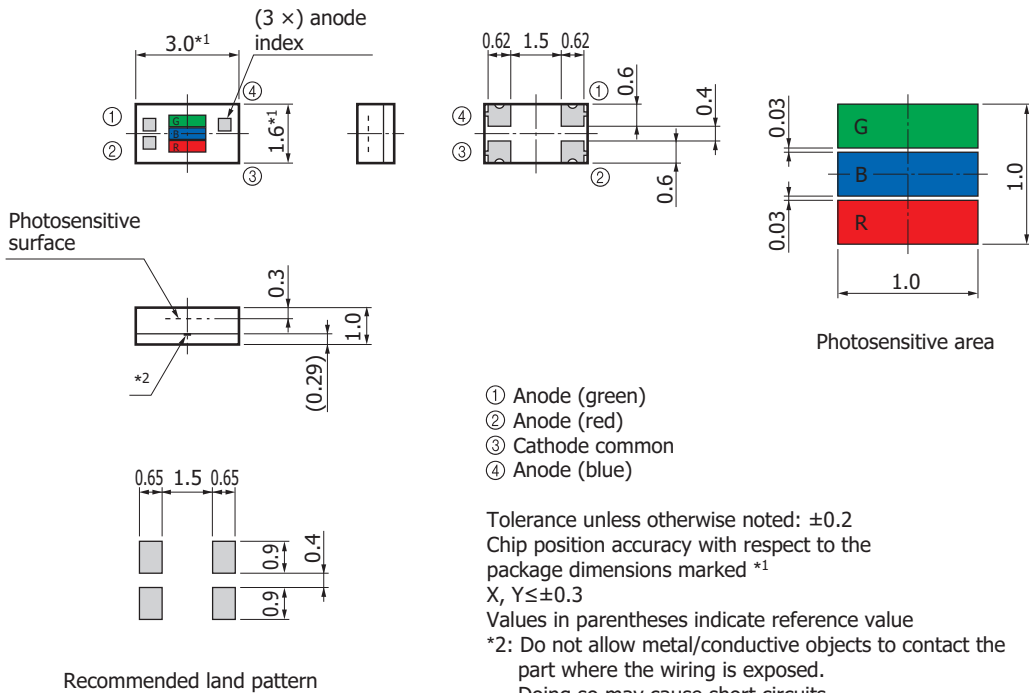
Since this photodiode has sensitivity in the infrared region, infrared light must be filtered out as needed.

Terminal capacitance vs. reverse voltage



KSPDB0253EA

Dimensional outline (unit: mm)



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

Tolerance unless otherwise noted: ± 0.2

Chip position accuracy with respect to the package dimensions marked *¹

X, Y $\leq \pm 0.3$

Values in parentheses indicate reference value

*2: Do not allow metal/conductive objects to contact the part where the wiring is exposed.
Doing so may cause short circuits.













Doing so may cause short circuits.

■ Electrode

Packing: reel (3000 pcs/reel)

KSPDA0186EB

Line-up of RGB color sensors

Type no.	Type	Photosensitive area size (mm)	Package (mm)	Peak sensitivity wavelength (nm)		Photo sensitivity				Photo		
				B	G	R	B	G	R		High	Low
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)	B	465	Low	B	0.3 (LSB/lx)	High	B	2.6 (LSB/lx)	
				G	540		G	0.6 (LSB/lx)		G	5.3 (LSB/lx)	
				R	615		R	1.4 (LSB/lx)		R	12.9 (LSB/lx)	

* Refer to "Spectral response" of "Si photodiode S10942-01CT" datasheet.

Information described in this material is current as of October, 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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