

# Si photodiode

## S9032-02

### RGB color sensor



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. S9032-02 has a 3-segment (RGB) circular active area of  $\phi 2$  mm.

#### Features

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

#### Applications

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

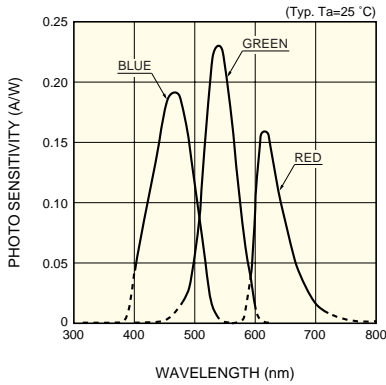
#### ■ Absolute maximum ratings

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 +100	°C

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

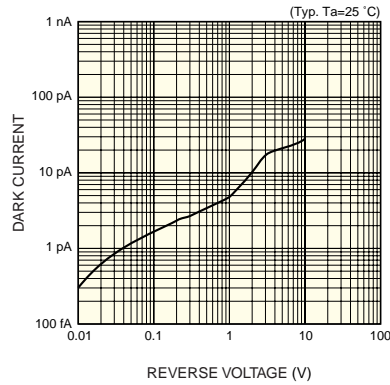
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	
Spectral response range	$\lambda$	Blue	-	400 to 540	-	nm	
		Green	-	480 to 600	-		
		Red	-	590 to 720	-		
Peak sensitivity wavelength	$\lambda_p$	Blue	-	460	-	nm	
		Green	-	540	-		
		Red	-	620	-		
Photo sensitivity	S	$\lambda=\lambda_p$	Blue	0.13	0.18	-	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	-	$\mu$ s	
Terminal capacitance	$C_t$	$V_R=0$ V $f=10$ kHz	-	40	80	pF	

■ Spectral response



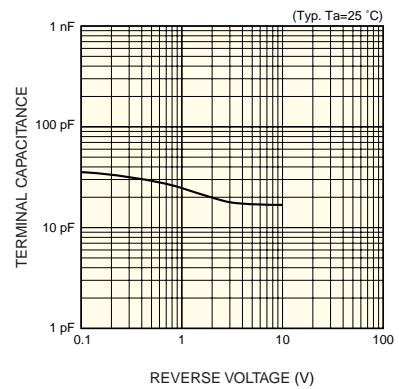
KSPDB0246EA

■ Dark current vs. reverse voltage



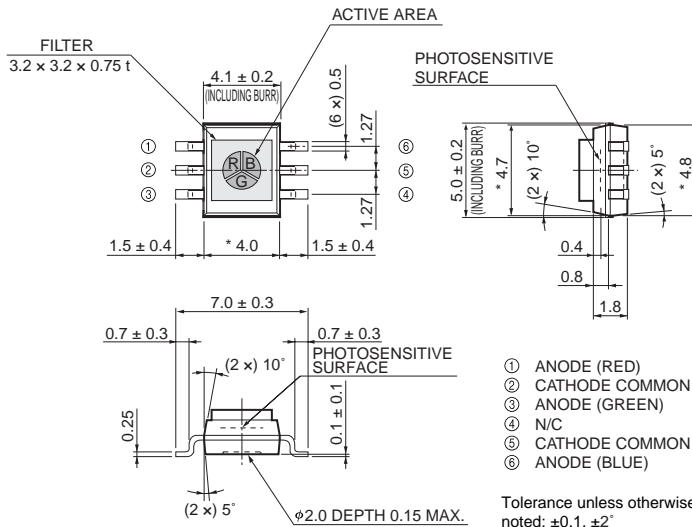
KSPDB0218EA

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

KSPDA0162EA