

# Si photodiode

## S9702

### RGB color sensor



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

#### 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) active area of  $\square 1$  mm

#### Applications

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

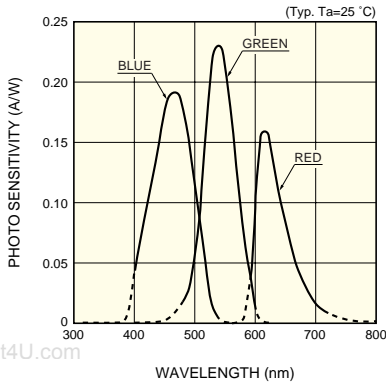
#### ■ Absolute maximum ratings

Parameter	Symbol	Value	Unit
Reverse voltage	$V_R$ Max	10	V
Operating temperature	$T_{opr}$	-25 to +85	$^{\circ}\text{C}$
Storage temperature	$T_{stg}$	-40 to +100	$^{\circ}\text{C}$

#### ■ Electrical and optical characteristics ( $T_a=25^{\circ}\text{C}$ , per element)

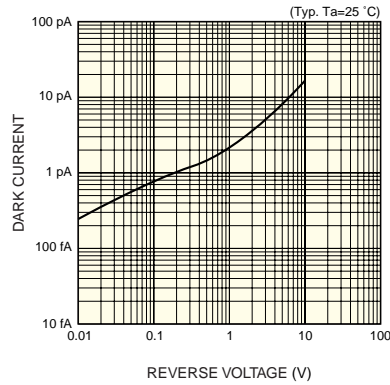
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	
Spectral response range	$\lambda$	Blue	-	400 to 540	-	nm	
		Green	-	480 to 600	-		
		Red	-	590 to 720	-		
Peak sensitivity wavelength	$\lambda_p$	Blue	-	460	-	nm	
		Green	-	540	-		
		Red	-	620	-		
Photo sensitivity	S	$\lambda=\lambda_p$	Blue	0.13	0.18	-	A/W
		Green	0.18	0.23	-		
		Red	0.11	0.16	-		
Dark current	$I_D$	$V_R=1$ V All elements	-	1	50	pA	
Temperature coefficient of $I_D$	$T_{CID}$		-	1.12	-	times/ $^{\circ}\text{C}$	
Rise time	$t_r$	$V_R=0$ V, $R_L=1$ k $\Omega$ 10 to 90 %	-	0.1	-	$\mu\text{s}$	
Terminal capacitance	$C_t$	$V_R=0$ V, $f=10$ kHz	-	12	25	pF	

■ Spectral response



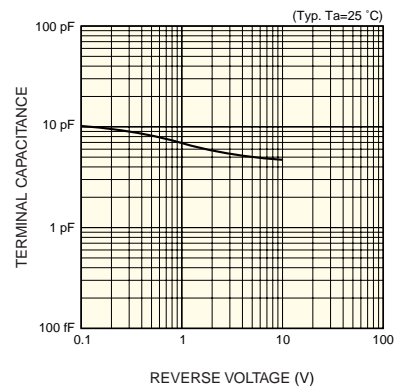
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■ Dark current vs. reverse voltage



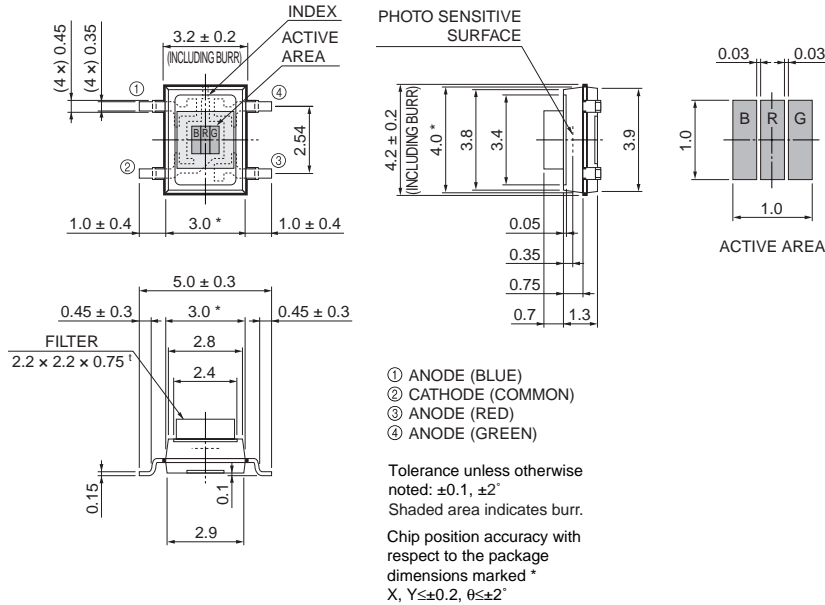
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■ Terminal capacitance vs. reverse voltage



KSPDB0253EA

■ Dimensional outline (unit: mm)



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