

NEW

PHOTODIODE

Si photodiode

S9032

RGB color sensor



S9032 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 ($\lambda_p=660$ nm) regions of the spectrum. S9032 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
- High sensitivity
- Active area: 3-segment (RGB) circular active area of $\phi 2$ mm

Applications

- White balance adjustment
- Color identification
- Brightness level detection for projectors, TVs, etc.
- Color management
- Color temperature detection of light sources

■ 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)

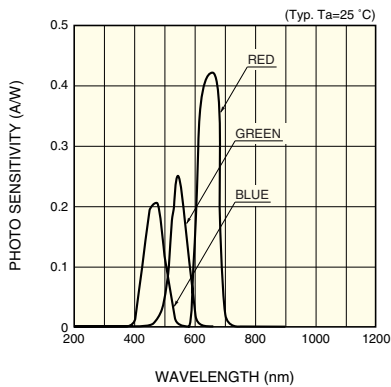
| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit | |
|----------------------------------|-------------|---|------|------------|------|----------|-----|
| Spectral response range | λ | Blue | - | 400 to 540 | - | nm | |
| | | Green | - | 480 to 600 | - | | |
| | | Red | - | 590 to 720 | - | | |
| Peak sensitivity wavelength | λ_p | Blue | - | 460 | - | nm | |
| | | Green | - | 540 | - | | |
| | | Red | - | 660 | - | | |
| Photo sensitivity | S | $\lambda=\lambda_p$ | Blue | 0.16 | 0.21 | - | A/W |
| | | Green | 0.20 | 0.25 | - | | |
| | | Red | 0.37 | 0.42 | - | | |
| 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 | - | μ s | |
| Terminal capacitance | C_t | $V_R=0$ V $f=10$ kHz | - | 40 | 80 | pF | |

PRELIMINARY DATA
Aug. 2002

SOLID STATE DIVISION

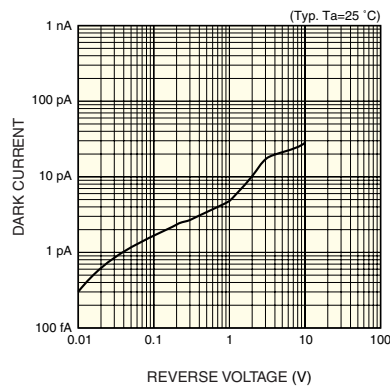
HAMAMATSU

■ Spectral response



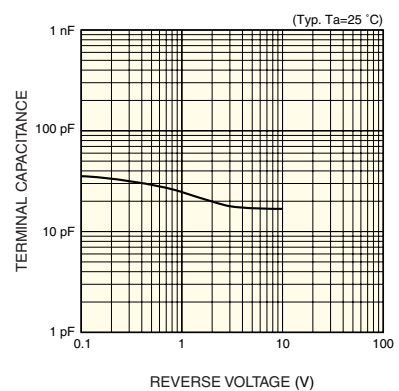
KSPDB0217EA

■ Dark current vs. reverse voltage



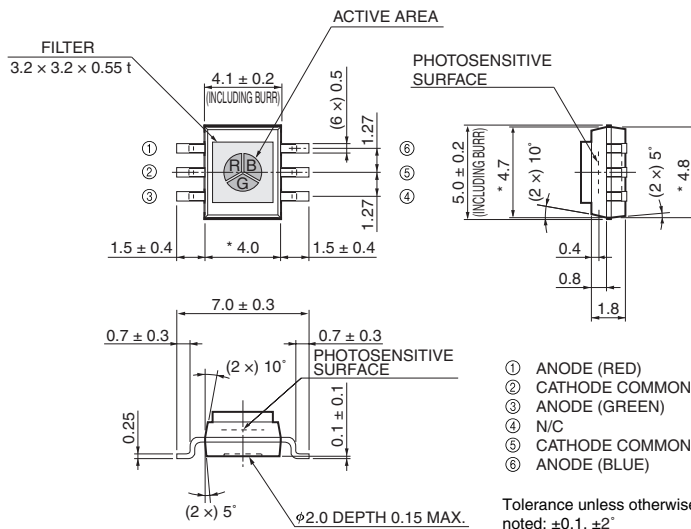
KSPDB0218EA

■ 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: ± 0.1 , $\pm 2^\circ$
Shaded area indicates burr.

Chip position accuracy with respect to the package dimensions marked *
X, $Y \leq \pm 0.2$, $\theta \leq \pm 2^\circ$

KSPDA0154EA