

# BS520/BS521 Photodiode for Visible Light

## ■ Features

1. Spectral sensitivity characteristic akin to that of human eye
2. Compact flat package
3. High sensitivity  
(BS521  $I_{sc}$  : MIN.  $0.65\mu A$  at  $E_v=100\ell x$ )
4. Low dark current
5. Infrared light cut-off type : BS520

## ■ Applications

1. AE (automatic exposure) system and ES (electronic shutter) system for cameras
2. Stroboscopes
3. Precise optical instruments

## ■ Absolute Maximum Ratings (Ta=25°C)

| Parameter                | Symbol    | Rating    | Unit |
|--------------------------|-----------|-----------|------|
| Reverse voltage          | $V_R$     | 10        | V    |
| Operating temperature    | $T_{opr}$ | -20 ~ +60 | °C   |
| Storage temperature      | $T_{stg}$ | -30 ~ +80 | °C   |
| *1 Soldering temperature | $T_{sol}$ | 260       | °C   |

\*1 For 5 seconds

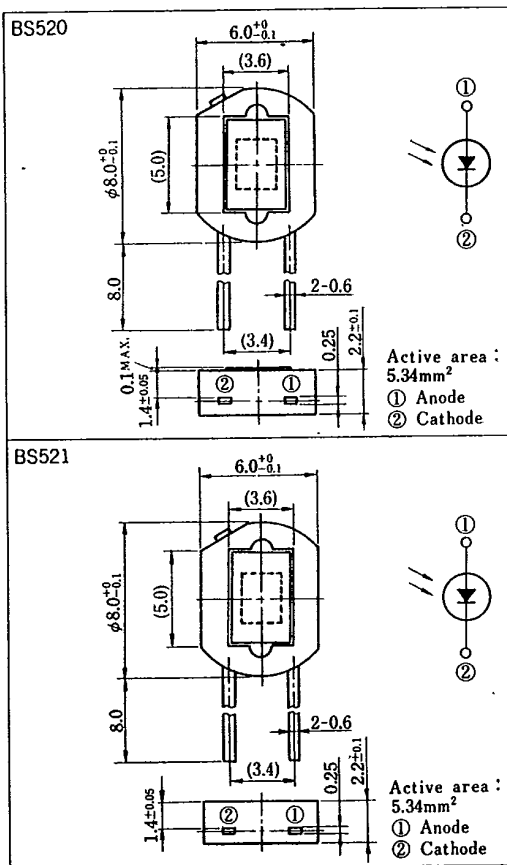
## ■ Electro-optical Characteristics (Ta=25°C)

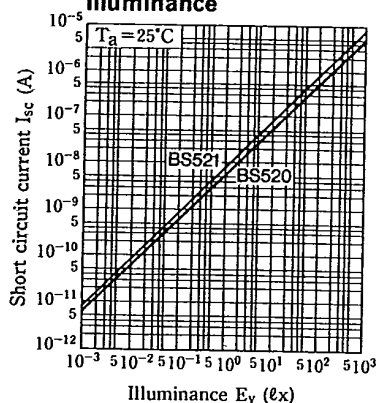
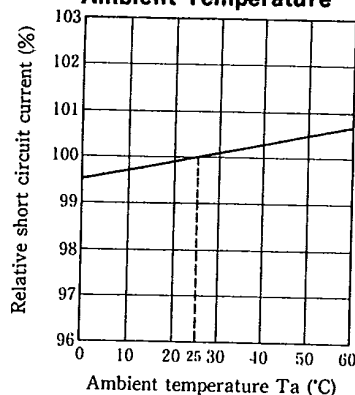
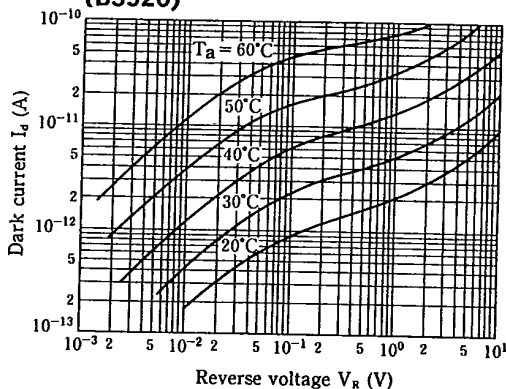
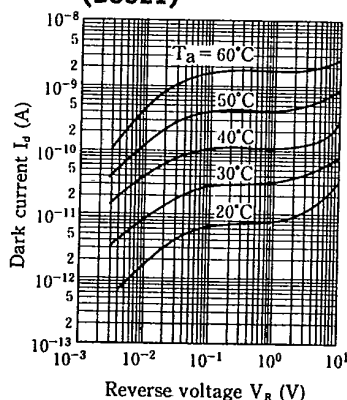
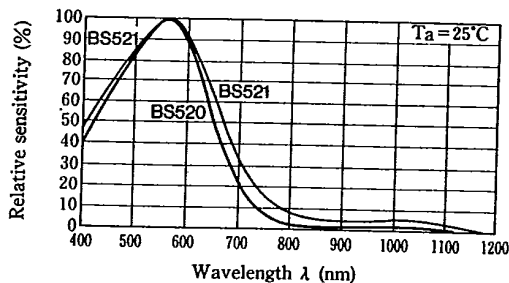
| Parameter                                        | Symbol       | Conditions        |            | BS520 |                     |            | BS521 |                       |                     | Unit       |
|--------------------------------------------------|--------------|-------------------|------------|-------|---------------------|------------|-------|-----------------------|---------------------|------------|
|                                                  |              | BS520             | BS521      | MIN.  | TYP.                | MAX.       | MIN.  | TYP.                  | MAX.                |            |
| *2 Short circuit current                         | $I_{sc}$     | $E_v=100\ell x$   |            | 0.40  | 0.55                | 0.65       | 0.65  | 0.73                  | 0.82                | $\mu A$    |
| *2 Short circuit current temperature coefficient | $\beta_T$    | $E_v=100\ell x$   |            | —     | 0.02                | 0.06       | —     | 0.02                  | 0.06                | %/°C       |
| Dark current                                     | $I_d$        | $V_R=1V$          | $V_R=10mV$ | —     | $3 \times 10^{-12}$ | $10^{-11}$ | —     | $1.3 \times 10^{-12}$ | $3 \times 10^{-12}$ | A          |
| Dark current temperature coefficient             | $\alpha_T$   | $V_R=1V$          |            | —     | 4.0                 | 5.0        | —     | 4.0                   | 5.0                 | times/10°C |
| Terminal capacitance                             | $C_t$        | $V_R=0, f=100kHz$ |            | —     | 600                 | 1,000      | —     | 200                   | 300                 | pF         |
| Peak sensitivity wavelength                      | $\lambda_p$  |                   |            | 500   | 560                 | 600        | 500   | 560                   | 600                 | nm         |
| *3 Spectral sensitivity infrared radiation ratio | $\Delta I_R$ |                   |            | —     | 5                   | 10         | —     | —                     | 25                  | %          |

\*2  $E_v$  : Illuminance by CIE standard light source A (tungsten lamp)

\*3 BS520 :  $\Delta I_R = \frac{I_{sc}(\lambda \geq 700nm)}{I_{sc}(\text{entire wavelength})} \times 100\%$       BS521 :  $\Delta I_R = \frac{I_{sc}(\text{with R-70 filter})}{I_{sc}(E_v=100\ell x)} \times 100\%$

## ■ Outline Dimensions (Unit : mm)



**Fig. 1 Short Circuit Current vs. Illuminance****Fig. 2 Relative Short Circuit Current vs. Ambient Temperature****Fig. 3 Dark Current vs. Reverse Voltage (BS520)****Fig. 4 Dark Current vs. Reverse Voltage (BS521)****Fig. 5 Spectral Sensitivity****Fig. 6 Response Time vs. Load Resistance**