



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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# BS500B Photodiode for Visible Light

T-41-51

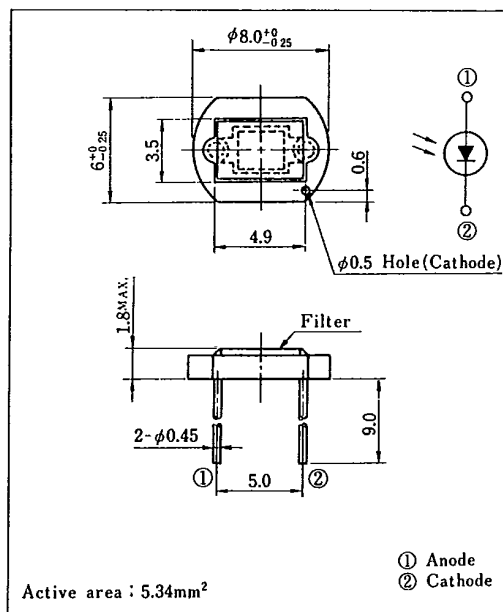
## Features

1. Wide dynamic range (Capable of measuring  $10^{-3}$  to  $10^4$  lx of  $E_v$ )
2. Low dark current ( $I_d$ : MAX.  $10^{-11}$ A at  $V_R=1$ V)
3. Most suitable for visible light measurement ( $\lambda_p=560$ nm)
4. Infrared light cut-off type

## Applications

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

## Outline Dimensions (Unit : mm)



## Absolute Maximum Ratings

( $T_a=25^\circ\text{C}$ )

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

\*1 For 5 seconds

## Electro-optical Characteristics

( $T_a=25^\circ\text{C}$ )

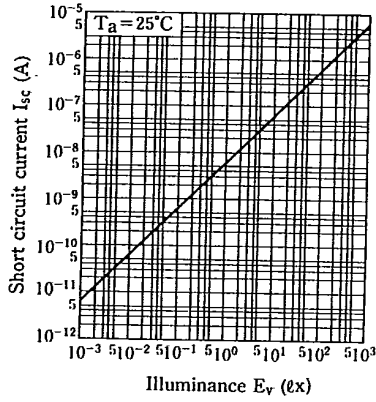
| Parameter  | Symbol       | Conditions       | MIN. | TYP.                | MAX.       | Unit                      |
|--|--------------|------------------|------|---------------------|------------|---------------------------|
| *2 Short circuit current                         | $I_{sc}$     | $E_v=100$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

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

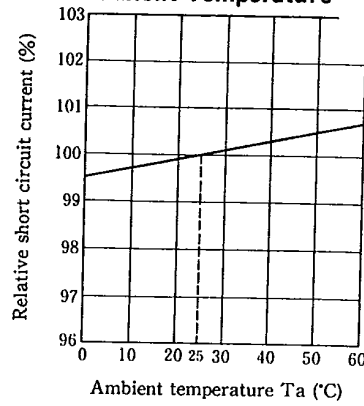
\*3  $\Delta I_R = \frac{I_{sc}(\lambda \geq 700\text{nm})}{I_{sc}(\text{full wavelength})} \times 100\%$

SHARP

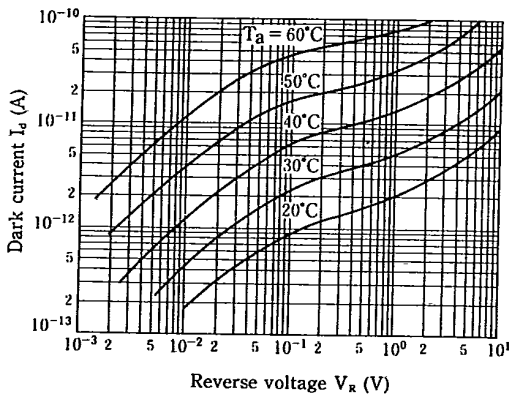
**Fig. 1 Short Circuit Current vs. Illuminance**



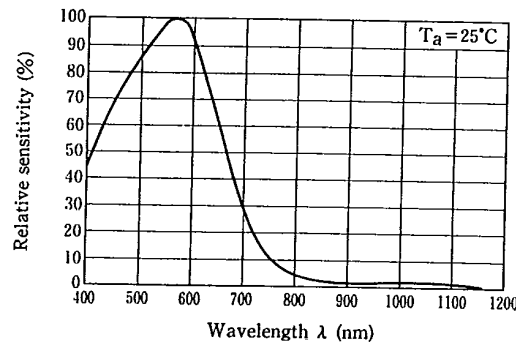
**Fig. 2 Relative Short Circuit Current vs. Ambient Temperature**



**Fig. 3 Dark Current vs. Reverse Voltage**

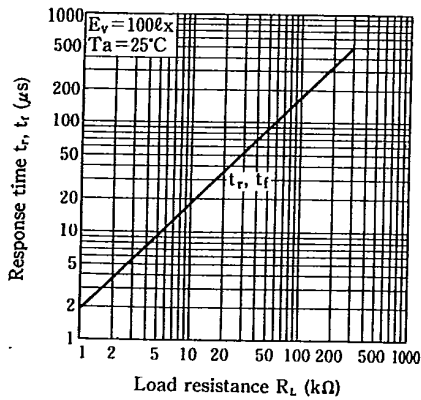


**Fig. 4 Spectral Sensitivity**



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**Fig. 5 Response Time vs. Load Resistance**



**Test Circuit for Response Time**

