

# BS500B Photodiode for Visible Light

T-41-51

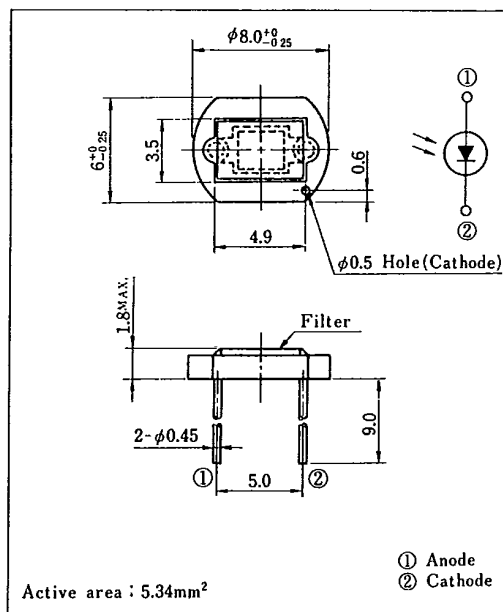
## ■ Features

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

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

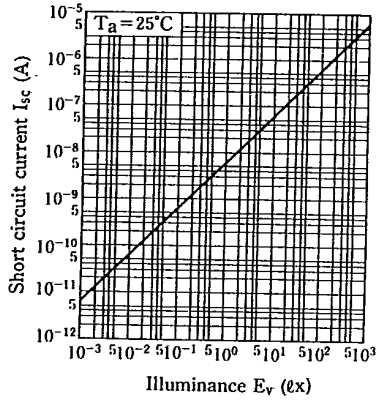
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
*2 Short circuit current	$I_{sc}$	$E_v=100 \text{ lx}$	0.40	0.55	0.65	$\mu\text{A}$
*2 Short circuit current temperature coefficient	$\beta_T$	$E_v=100 \text{ lx}$	—	0.02	0.06	$\%/^\circ\text{C}$
Dark current	$I_d$	$V_R=1\text{V}$	—	$3 \times 10^{-12}$	$10^{-11}$	A
Dark current temperature coefficient	$\alpha_T$	$V_R=1\text{V}$	—	4.0	5.0	times/ $10^\circ\text{C}$
Terminal capacitance	$C_t$	$V_R=0, f=1\text{MHz}$	—	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)

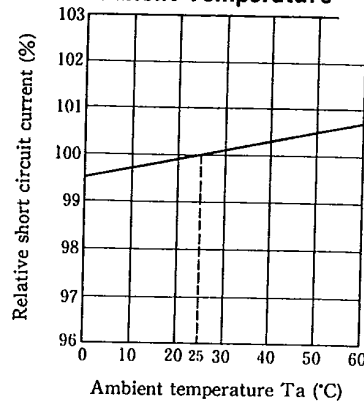
\*3  $\Delta I_R = \frac{I_{sc}(\lambda \geq 700 \text{ nm})}{I_{sc}(\text{full wavelength})} \times 100\%$

SHARP

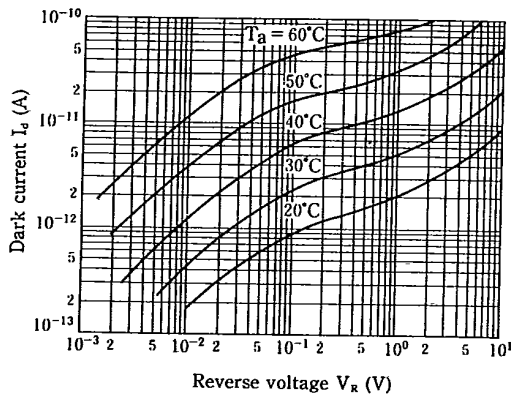
**Fig. 1 Short Circuit Current vs. Illuminance**



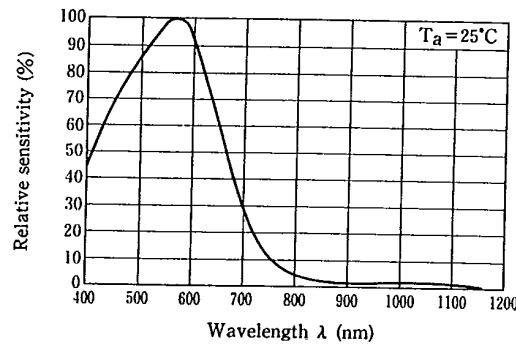
**Fig. 2 Relative Short Circuit Current vs. Ambient Temperature**  
T-41-51



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

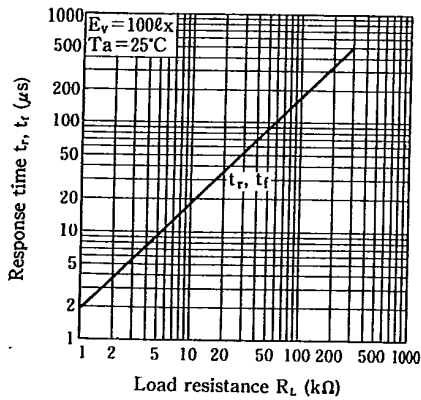


**Fig. 4 Spectral Sensitivity**



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



**Test Circuit for Response Time**

