

# BS112/BS142 Wide Wavelength Band Type Photodiode

T-41-51

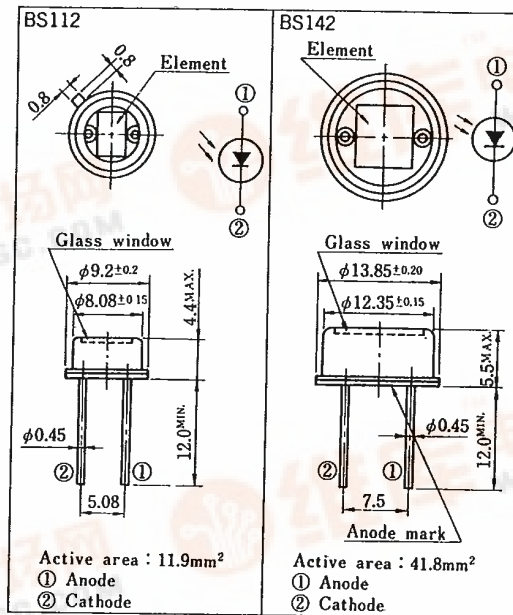
## ■ Features

1. A wide range of sensitivity wavelength ( $\lambda$ : 350~1,150nm)
2. High reliability (hermetic seal package)
3. High sensitivity (BS112  $I_{sc}$ : MIN. 5.5 $\mu$ A, BS142  $I_{sc}$ : MIN. 18 $\mu$ A at  $E_v=100lx$ )

## ■ Applications

1. Illuminance meters
2. Scientific color measuring instruments, such as colorimeters, flame color meters, analyzers and spectral photo meters
3. Precise optical instruments

## ■ Outline Dimensions (Unit : mm)



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

Parameter	Symbol	BS112	BS142	Unit
Reverse voltage	$V_R$	5	5	V
Operating temperature	$T_{opr}$	-10~+60	-10~+60	°C
Storage temperature	$T_{stg}$	-20~+80	-20~+80	°C
*1 Soldering temperature	$T_{sol}$	260	260	°C

\*1 For 5 seconds

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

Parameter	Symbol	Conditions	BS112			BS142			Unit
			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
*2 Open circuit voltage	$V_{oc}$	$E_v=100 lx$	0.25	0.32	—	0.25	0.32	—	V
*2 Short circuit current	$I_{sc}$	$E_v=100 lx$	5.5	7.0	—	18	22	—	$\mu$ A
Dark current	$I_d$	$V_R=1V$	—	$5 \times 10^{-9}$	$10^{-7}$	—	$5 \times 10^{-9}$	$10^{-7}$	A
Peak sensitivity wavelength	$\lambda_p$		—	850	—	—	850	—	nm
Sensitivity wavelength width	$\lambda$		350	—	1,150	350	—	1,150	nm
Response time	$t_r, t_f$	$R_L=1k\Omega$	—	20	—	—	27	—	$\mu$ s

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

SHARP



T-41-51

Fig. 1 Spectral Sensitivity

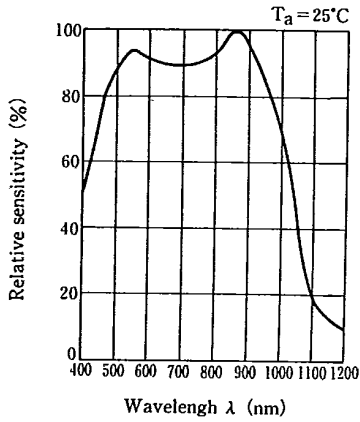


Fig. 2 Photocurrent vs. Illuminance (BS112)

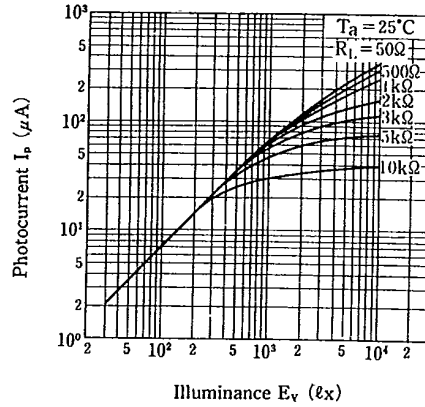


Fig. 3 Photocurrent vs. Illuminance (BS142)

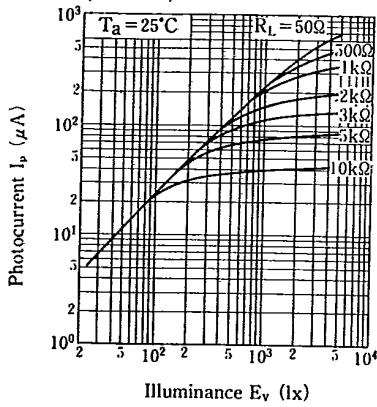


Fig. 4 Photocurrent vs. Forward Voltage (BS112)

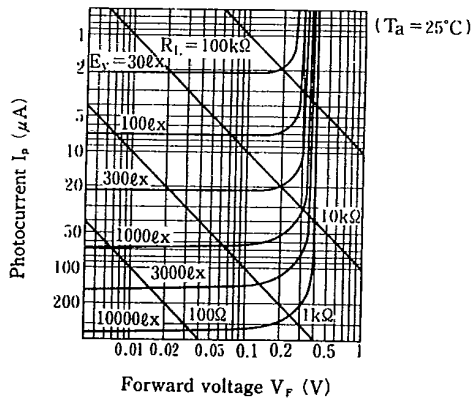


Fig. 5 Photocurrent vs. Forward Voltage (BS142)

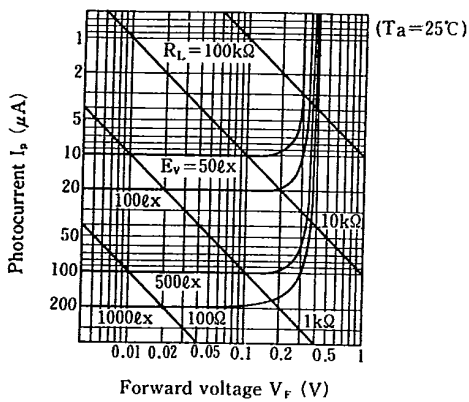


Fig. 6 Short Circuit Current, Open Circuit Voltage vs. Ambient Temperature

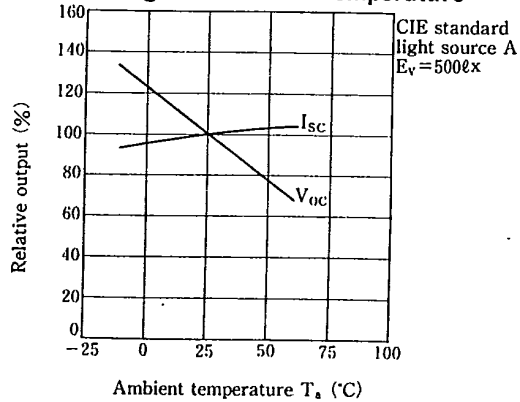


Fig. 7 Dark Current vs. Reverse Voltage (BS112)

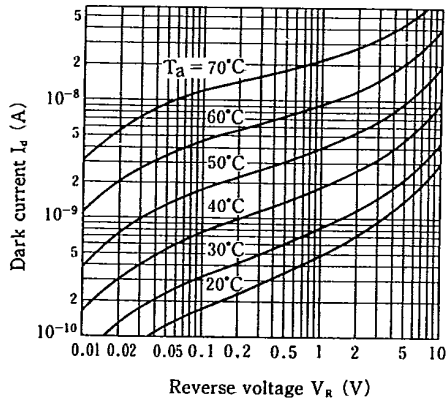


Fig. 8 Dark Current vs. Reverse Voltage (BS142) T-41-51

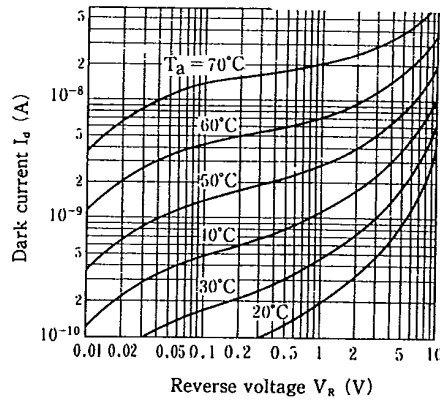


Fig. 9 Response Time vs. Load Resistance (BS112)

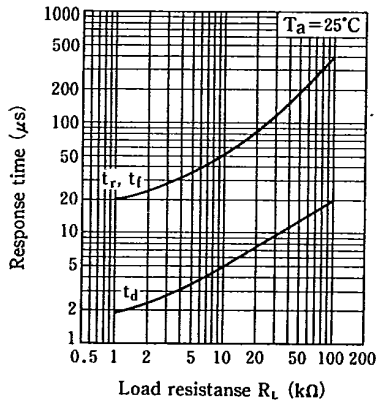
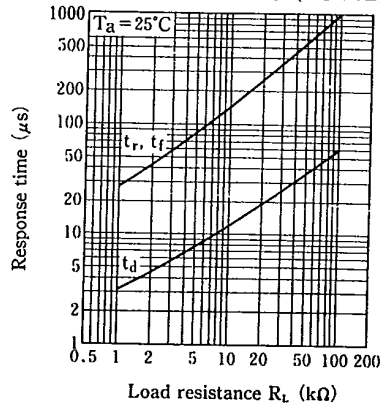


Fig. 10 Response Time vs. Load Resistance (BS142)



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Test Circuit for Response Time

