

TOSHIBA PHOTODIODE SILICON PN

TPS721A

LIGHT-RECEIVING DEVICE FOR PLASTIC FIBER/POLYMER-CLAD FIBER

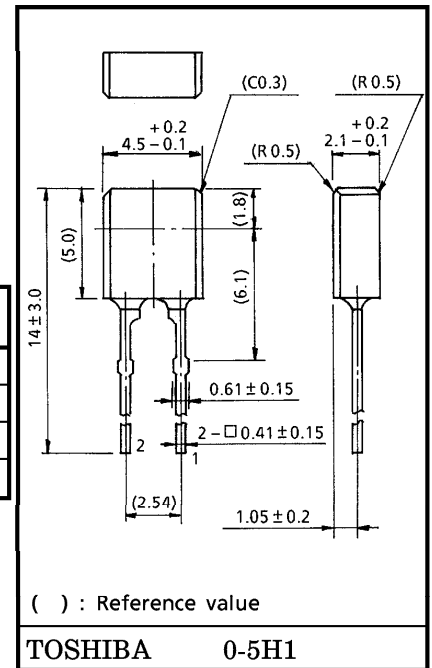
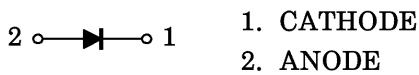
Unit : mm

- Low dark current : $I_D = 0.5 \text{ nA (typ.)}$
- High current transfer ratio : $S_f = 0.36 \text{ A/W (typ.)}$
- High-speed applications possible : $f_c = 70 \text{ MHz (typ.)}$

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Reverse Voltage	V_R	50	V
Power Dissipation	P_D	150	mW
Operating Temperature Range	T_{opr}	-30~85	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-40~100	$^\circ\text{C}$

PIN CONNECTION



Weight : 0.12 g (typ.)

OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

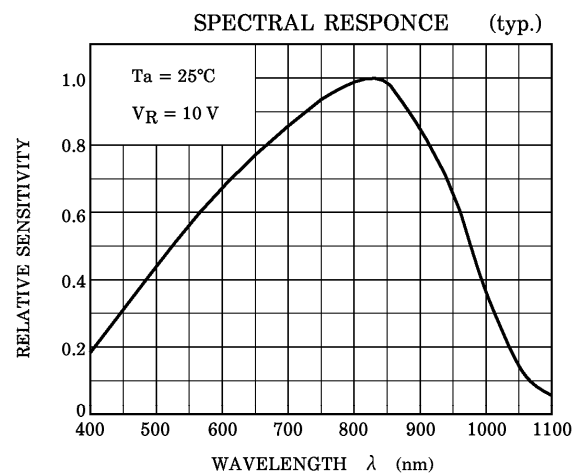
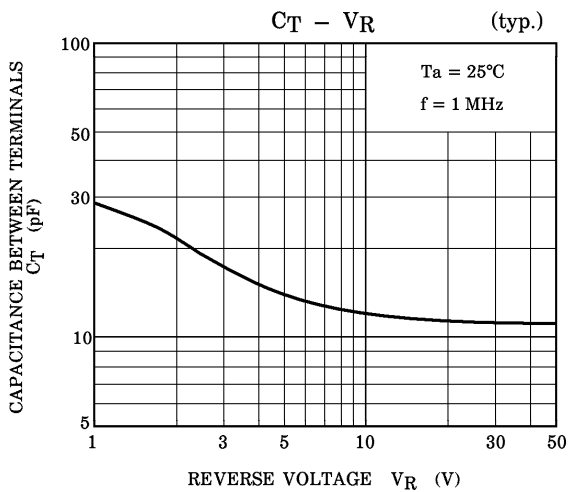
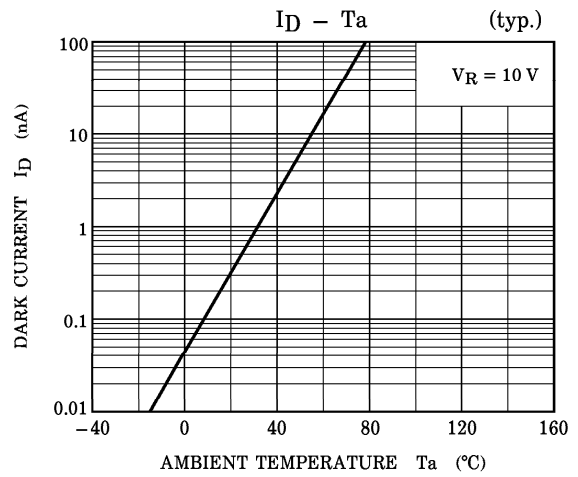
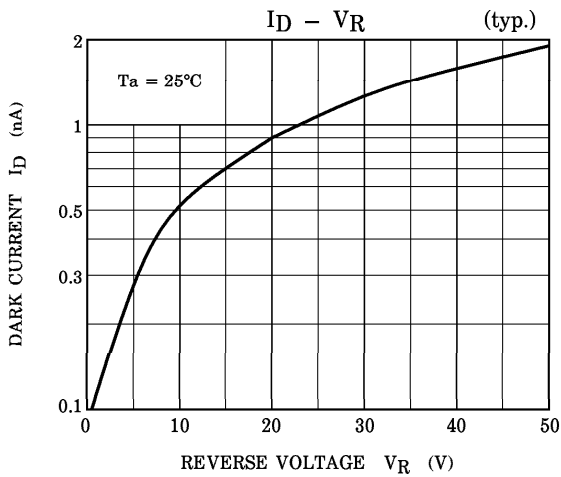
CHARACTERISTIC	SYMBOL	TEST CONDITION	Min	Typ.	Max	UNIT
Dark Current	$I_D (I_{CEO})$	$V_{CE} = 10 \text{ V}, E = 0$	—	0.5	8	nA
Fiber Coupling Sensitivity (Note)	S_f	$V_{CE} = 10 \text{ V}, \lambda = 660\text{nm}, P_f = 1 \mu\text{W}$	0.33	0.36	—	A/W
Peak Sensitivity Wavelength	λ_p	$V_R = 10 \text{ V}$	—	840	—	nm
Directional Angle Half Value Width	$\theta_{\frac{1}{2}}$	$V_R = 10 \text{ V}$	—	± 65	—	$^\circ$
Capacitance between Terminal	C_T	$V_R = 10 \text{ V}, f = 1 \text{ MHz}$	—	10	—	pF
Switching Time	Rise Time	$V_R = 10 \text{ V}, R_L = 50 \Omega$	—	4	—	ns
	Fall Time		—	4	—	
Cut-off Frequency	f_c	$V_R = 10 \text{ V}, R_L = 50 \Omega$	—	70	—	MHz

(Note) : Plastic fiber used : Fiber length 0.5 m, Core diameter 980 μm , NA 0.5

PRECAUTIONS

Please be careful of the followings.

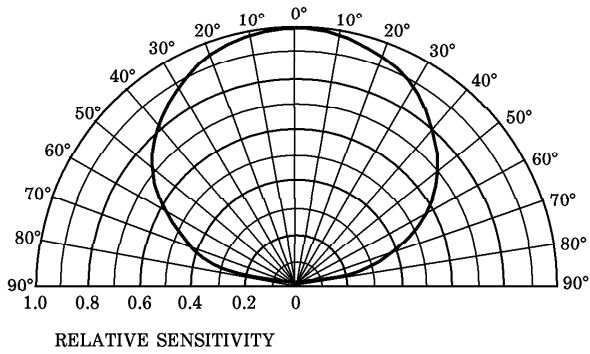
1. Soldering temperature : 260°C max
 Soldering time : 3 s max
 (Soldering must be performed 2.5 mm under the package body.)
2. When forming the leads, bend each lead under the 2.5 mm from the body of the device.
 Soldering must be performed after the leads have been formed.



RADIATION PATTERN CHARACTERISTIC

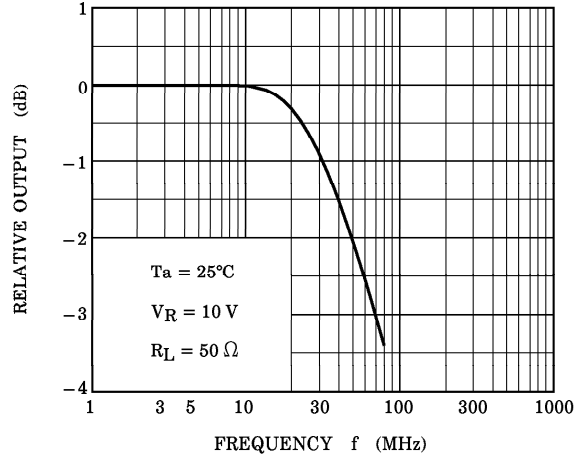
(typ.)

RADIATION ANGLE (Ta = 25°C)



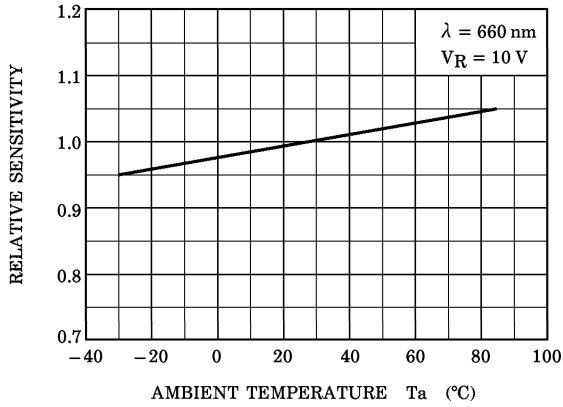
FREQUENCY RESPONSE CHARACTERISTIC

(typ.)



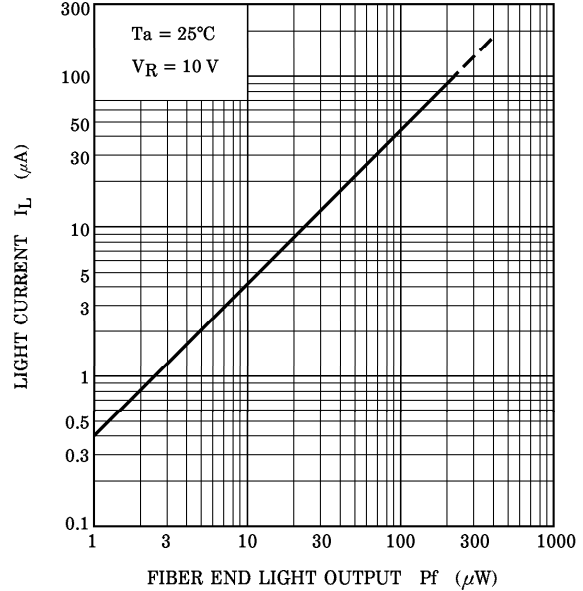
LIGHT SENSITIVITY TEMPERATURE CHARACTERISTICS

(typ.)



IL - Pf

(typ.)



RESTRICTIONS ON PRODUCT USE

000707EAA

- TOSHIBA is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the "Handling Guide for Semiconductor Devices," or "TOSHIBA Semiconductor Reliability Handbook" etc..
- The TOSHIBA products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These TOSHIBA products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury ("Unintended Usage"). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of TOSHIBA products listed in this document shall be made at the customer's own risk.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.