

TOSHIBA PHOTOINTERRUPTER INFRARED LED + PHOTO IC

TLP1209(C7), TLP1221(C7)

COPIER, PAGE PRINTER, FACSIMILE

AUTOMATIC VENDING MACHINE, TERMINAL EQUIPMENT IN BANKING FACILITIES

VARIOUS POSITION DETECTION SENSOR

Unit in : mm

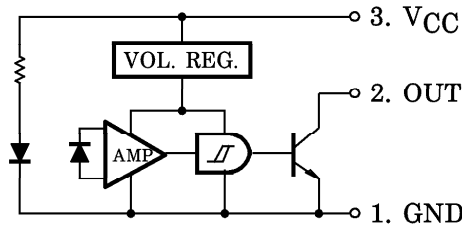
The TLP1209 (C7) and 1221 (C7) are digital output photointerrupters having a connector with a GaAs infrared LED and a high sensitivity low current consumption Si photo IC combined. The output becomes low level when the light is shielded.

- Single sided screw mounting type.
- For 5V of power supply voltage
- Digital output (open collector)
- Gap : 5mm
- Resolution : Slit width 0.5mm
- Low current consumption : I_{CC} = 16.5mA (max)
- Material of the case : Polycarbonate (UL94V-2)
- UL recongnized PWB adopted : UL94V-0
- Connectors : TXL-P03P-A1(Taiko Denki Co., Ltd. made TXL-P Series connector)

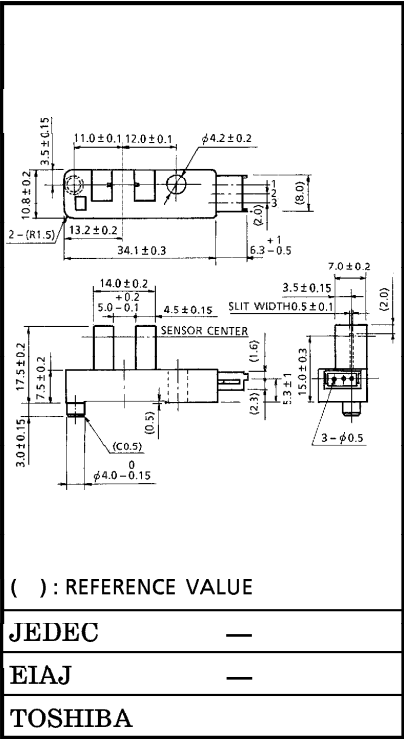
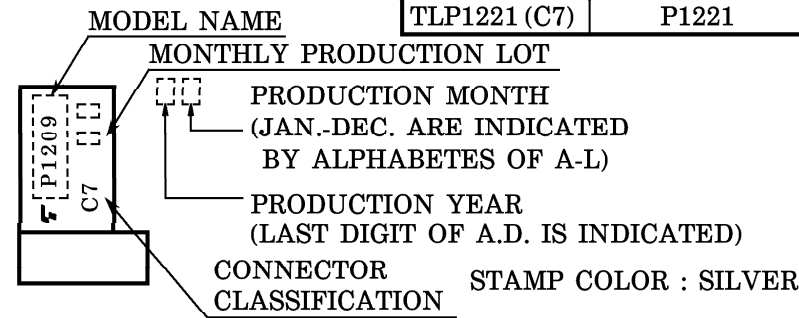
MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage	TLP1209(C7)	V _{CC}	10	V
	TLP1221(C7)		15	
Output Voltage		V _O	28	V
Low Level Output Current		I _{OL}	50	mA
Low Level Output Current Derating (Ta > 25°C)		ΔI _{OL} / °C	-0.67	mA / °C
Operating Temperature Range		T _{opr}	-25~75	°C
Storage Temperature Range		T _{stg}	-40~85	°C

PIN CONNECTION



PRODUCT INDICATION



Weight : 2.5g (typ.)

TYPE	ABBREVIATION
TLP1209 (C7)	P1209
TLP1221 (C7)	P1221

961001EBC2

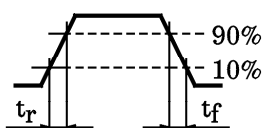
● TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product 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 products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.

RECOMMENDED OPERATING CONDITIONS

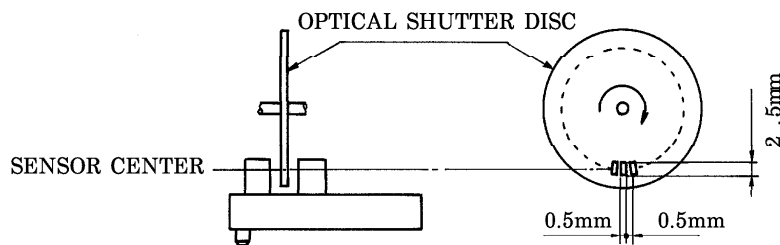
CHARACTERISTIC		SYMBOL	MIN.	TYP.	MAX.	UNIT
Output Voltage	TLP1209 (C7)	V_O	—	5	17	V
	TLP1221 (C7)		—	12	17	
Low Level Output Current		I_{OL}	—	—	16	mA

OPTO-ELECTRICAL CHARACTERISTICS

(Unless Otherwise Specified, $T_a = -25 \sim 75^\circ\text{C}$ $V_{CC} = 5\text{V} \pm 10\%$: TLP1209 (C7), $12\text{V} \pm 10\%$: TLP1221 (C7))

CHARACTERISTIC		SYMBOL	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Supply Voltage		V _{CC}		TLP1209(C7)	4.5	5	5.5	V
				TLP1221(C7)	10.8	12	13.2	
Supply Current	High Level	I _{CCH}	Without Shutter		—	—	16.5	mA
	Low Level	I _{CCL}	Shutter In		—	—	16.5	
Output Voltage	High Level	V _{OH}	Without Shutter, R _L =47kΩ		0.9V _{CC}	—	—	V
	Low Level	V _{OL}	Shutter In, I _{OL} =16mA, Ta=25°C		—	0.07	0.35	V
			Shutter In, I _{OL} =16mA		—	—	0.4	
Peak Emission Wavelength		λ _P	Ta=25°C, LED Side		—	940	—	nm
Peak Sensitivity Wavelength		λ _P	Ta=25°C, Photo IC Side		—	900	—	nm
Response Frequency		f			3000	—	—	Hz
Rise Time		t _r			—	8	—	μs
Fall Time		t _f			—	0.03	—	

(Note) A value measured when the disc shown in the following figure was rotated. No DC current should be output.

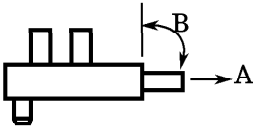


961001EBC2'

- Gallium arsenide (GaAs) is a substance used in the products described in this document. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them. When disposing of the products, follow the appropriate regulations. Do not dispose of the products with other industrial waste or with domestic garbage.
- The products described in this document are subject to foreign exchange and foreign trade control laws.
- 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.

TERMINAL STRENGTH (Ta = 25°C)

CHARACTERISTIC	TEST CONDITION		LIMIT
PULL	DIRECTION	A	NO DEFECT OF ELECTRICAL CHARACTERISTICS
	WEIGHT	19.6N	
	TIME	5s / ONCE	
BEND	DIRECTION	B	
	WEIGHT	9.8N	
	TIME	5s / THRICE	



PRECAUTION

Please be careful of the followings.

1. During $100\mu\text{s}$ after turning on V_{CC} , output voltage changes for stabilizing the inner circuit.
2. When installing, avoid to work by holding the connector by hand. Always, install by holding the main body of the element while assuring the mounting board is not warped or twisted. The connectors shall be inserted or pulled out at normal temperature.
3. Do not solder the lead or printed circuit board to the connector. Connect the connector to the recommended connector correctly.
4. A visible light cut-off type photo IC which blocks light with frequencies of 700nm or above is used. However, the device cannot block ambient light with a wavelength of 700nm or more or sunlight. Install avoiding the disturbance light.
5. Screw shall be tightened to clamping torque of 0.59N·m.
6. The container is made of polycarbonate. Polycarbonate is usually stable with acid, alcohol, and aliphatic hydrocarbons however, with peroxochemicals (such as benzene, toluene, and acetone), alkali, aromatic hydrocarbons, or chloric hydrocarbons, polycarbonate becomes cracked, swollen, or melted. Please take care when choosing a packaging material by referencing the table below.

<Chemicals to avoid with polycarbonate>

	PHENOMENON	CHEMICALS
A	Little deterioration but staining	• nitric acid (low concentration), hydrogen peroxide, chlorine
B	Cracked, crazed, or swollen	• acetic acid (70% or more) • gasoline • methyl ethyl ketone, ethyl acetate, butyl acetate • ethyl methacrylate, ethyl ether, MEK • acetone, m-amino alcohol, carbon tetrachloride • carbon disulfide, trichloroethylene, cresol • thinners, oil of turpentine • triethanolamine, TCP, TBP
C	Melted { } : Used as solvent.	• concentrated sulfuric acid • benzene • styrene, acrylonitrile, vinyl acetate • ethylenediamine, diethylenediamine • {chloroform, methyl chloride, tetrachloromethane, dioxane, } 1, 2-dichloroethane
D	Decomposed	• ammonia water • other alkali

RECOMMENDABLE MATCHED CONNECTOR

Taiko Denki Co., Ltd. made TXL-P series connector

HOUSING	TXL-P03H-A1				
TERMINAL	TYPE No.	PRODUCT FORM	MATERIAL	AWG SIZE	INSULATION DIAMETER
	085T-1100	LINKED	PHOSPHOR BRONZE	AWG24~30	1.5mmMAX.

For details of the connectors, please refer to the connector maker.

