

TOSHIBA PHOTOINTERRUPTER INFRARED LED + PHOTO IC

# TLP1204(C1), TLP1204(C3)

COPIER, LASER BEAM PRINTER

Unit in mm

FACSIMILE, PRINTER

AUTOMATIC VENDING MACHINE, TERMINAL EQUIPMENT  
IN BANKING FACILITIES

PLAYING EQUIPMENT, FA EQUIPMENT

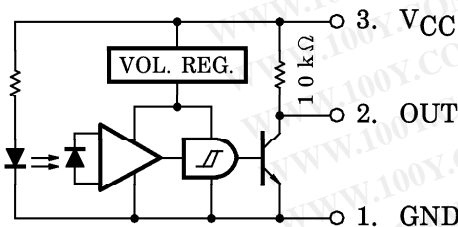
VARIOUS POSITION DETECTION SENSOR

The TLP1204 (C1) and TLP1204 (C3) are digital output photointerrupters having connectors with a GaAs infrared LED and a high sensitivity and low current consumption Si photo IC combined.

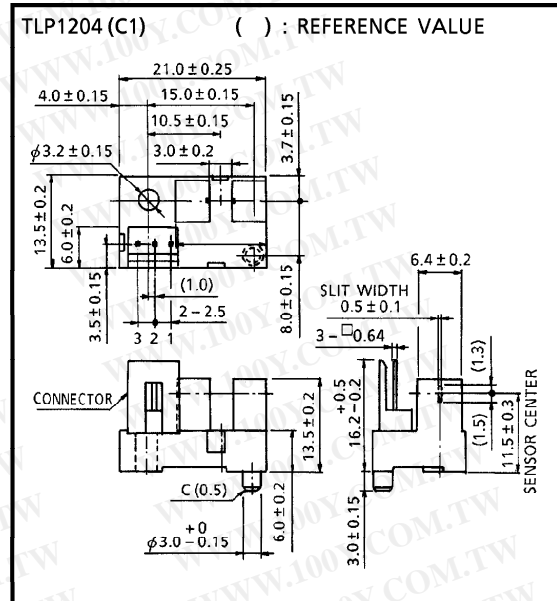
The output becomes low level when the light is shielded.

- One side mounting type
- Supply voltage : 5V
- Digital output (with a pull-up resistor)
- Gap : 3mm
- Resolution : Slit width 0.5mm
- Low current consumption :  $I_{CC} = 17.5\text{mA}$  (max)
- Material of the case : Polycarbonate
- Connector (AMP (Japan), Ltd. made EI Connector)  
TLP1204 (C1) ... 171825-3  
TLP1204 (C3) ... 2-171826-3

**PIN CONNECTION**



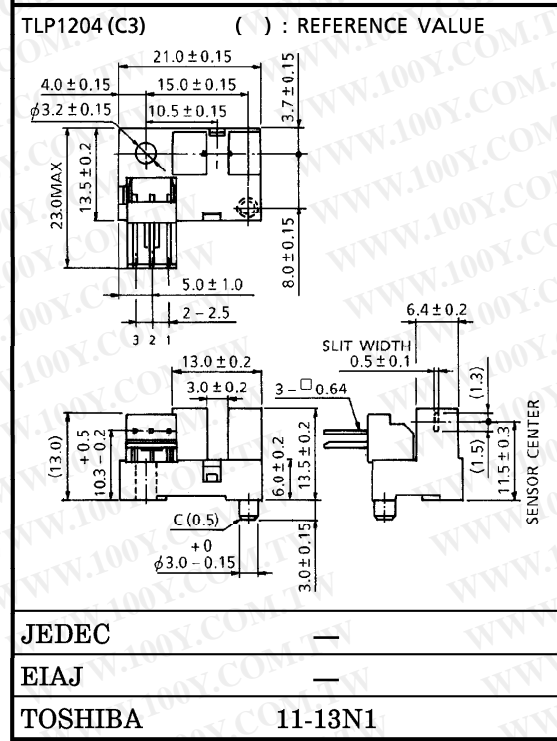
勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
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JEDEC —

EIAJ —

TOSHIBA 11-21A2



JEDEC —

EIAJ —

TOSHIBA 11-13N1

Weight : 2.4g (typ.)

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.

### MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V <sub>CC</sub>	6	V
Output Voltage	V <sub>O</sub>	V <sub>CC</sub> + 0.5	V
Low Level Output Current	I <sub>O<sub>L</sub></sub>	50	mA
Low Level Output Current Derating (Ta > 25°C)	ΔI <sub>O<sub>L</sub></sub> / °C	-0.67	mA / °C
Operating Temperature Range	T <sub>opr</sub>	-25~75	°C
Storage Temperature Range	T <sub>stg</sub>	-40~85	°C

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### RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V <sub>CC</sub>	4.5	5.0	5.5	V
Low Level Output Current	I <sub>O<sub>L</sub></sub>	—	—	16	mA
Operating Temperature	T <sub>opr</sub>	-25	—	75	°C

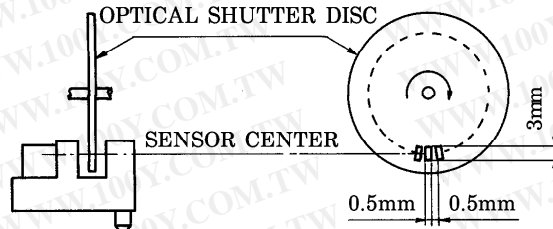
### OPTO-ELECTRICAL CHARACTERISTICS (Unless Otherwise Specified, Ta = -25~75°C, V<sub>CC</sub> = 5V ± 10%)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage		V <sub>CC</sub>	—	4.5	5.0	5.5	V
Supply Current	High Level	I <sub>CCH</sub>	Without Shutter	—	—	17.5	mA
	Low Level	I <sub>CCL</sub>	Shutter In	—	—	17.5	mA
Output Voltage	High level	V <sub>OH</sub>	Without Shutter	0.9V <sub>CC</sub>	—	—	V
	Low level	V <sub>OL</sub>	Shutter In, I <sub>O<sub>L</sub></sub> = 16mA, Ta = 25°C	—	0.07	0.35	V
Shutter In, I <sub>O<sub>L</sub></sub> = 16mA			—	—	0.4		
Peak Emission Wavelength		λ <sub>p</sub>	Ta = 25°C, LED Side	—	940	—	nm
Peak Sensitivity Wavelength		λ <sub>p</sub>	Ta = 25°C, Photo IC Side	—	900	—	nm
Response Frequency		f	Ta = 25°C (Note)	3000	—	—	Hz
Rise Time	t <sub>r</sub>		—	2	—	μs	
Fall Time	t <sub>f</sub>		—	0.03	—		

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

961001EBC2'

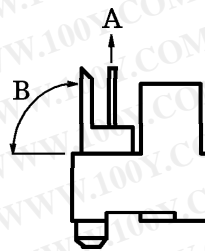
- Gallium arsenide (GaAs) is a substance used in the products described in this document. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them. When disposing of the products, follow the appropriate regulations. Do not dispose of the products with 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.
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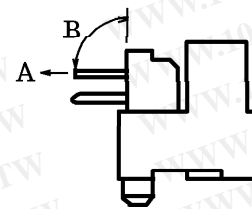
TERMINAL STRENGTH (Ta = 25°C)

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	

\* TLP1204 (C3) : 78.4N



TLP1204 (C1)



TLP1204 (C3)

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### PRECAUTION

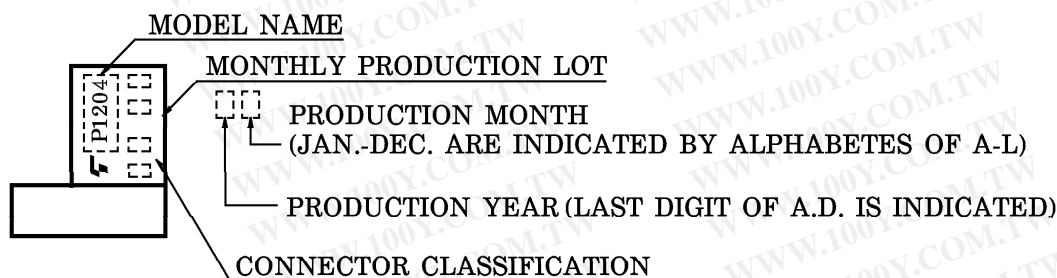
Please be careful of the followings.

1. During 100 $\mu$ s after turning on V<sub>CC</sub>, 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. Screw shall be tightened to clamping torque of 0.59N·m.
4. 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	<ul style="list-style-type: none"> <li>• nitric acid (low concentration), hydrogen peroxide, chlorine</li> </ul>
B	Cracked, crazed, or swollen	<ul style="list-style-type: none"> <li>• acetic acid (70% or more)</li> <li>• gasoline</li> <li>• methyl ethyl ketone, ethyl acetate, butyl acetate</li> <li>• ethyl methacrylate, ethyl ether, MEK</li> <li>• acetone, m-amino alcohol, carbon tetrachloride</li> <li>• carbon disulfide, trichloroethylene, cresol</li> <li>• thinners, oil of turpentine</li> <li>• triethanolamine, TCP, TBP</li> </ul>
C	Melted { } : Used as solvent.	<ul style="list-style-type: none"> <li>• concentrated sulfuric acid</li> <li>• benzene</li> <li>• styrene, acrylonitrile, vinyl acetate</li> <li>• ethylenediamine, diethylenediamine</li> <li>• {chloroform, methyl chloride, tetrachloromethane, dioxane, 1, 2-dichloroethane}</li> </ul>
D	Decomposed	<ul style="list-style-type: none"> <li>• ammonia water</li> <li>• other alkali</li> </ul>

### PRODUCT INDICATION



STAMP COLOR : SILVER

TYPE	ABBREVIATION	CONNECTOR CLASSIFICATION
TLP1204 (C1)	P1204	C1
TLP1204 (C3)	P1204	C3

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**RECOMMENDABLE MATCHED CONNECTOR**

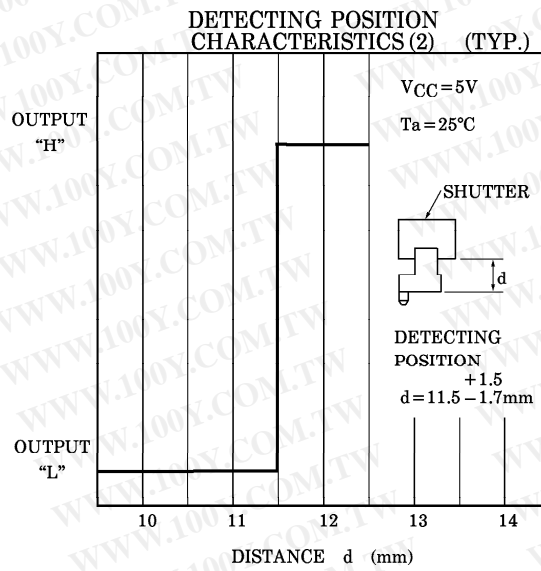
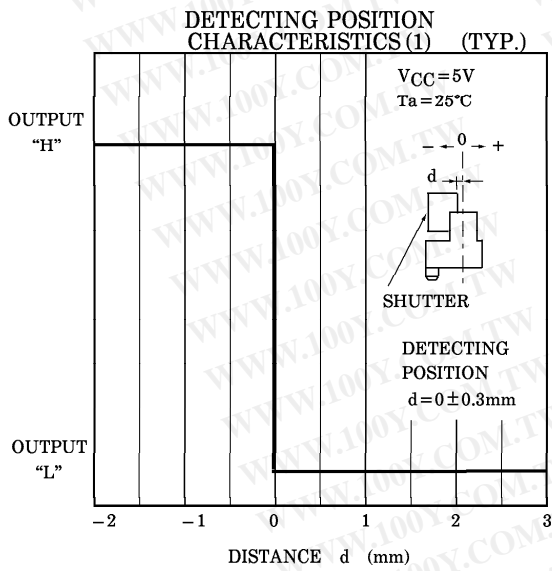
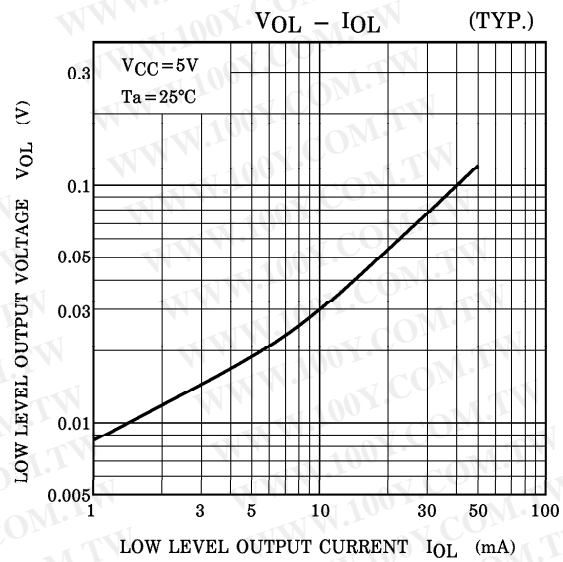
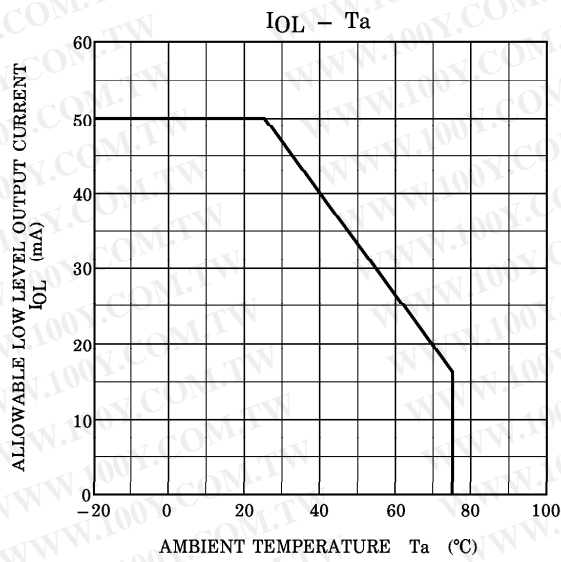
AMP (Japan), Ltd. made EI series connector (Standard type)

HOUSING	NATURAL COLOR	BLACK	BLUE	GREEN	RED
	171822-3	2-171822-3	4-171822-3	6-171822-3	8-171822-3
TERMINAL	TYPE No.	PRODUCT FORM	MATERIAL	AWG SIZE	INSULATION DIAMETER
	170204-1	LOOSEN	BRASS	AWG20~26	1.1~1.9mm
	170204-2		PHOSPHOR BRONZE		
	170262-1	LINKED	BRASS		
	170262-2		PHOSPHOR BRONZE		
	170205-1	LOOSEN	BRASS	AWG26~30	1.0~1.4mm
	170205-2		PHOSPHOR BRONZE		
	170263-1	LINKED	BRASS		
170263-2	PHOSPHOR BRONZE				

AMP (Japan), Ltd. made EI series connector (Low profile type) (Except TLP1204 (C1))

HOUSING	NATURAL COLOR	BLACK	BLUE	GREEN	RED
	172142-3	2-172142-3	4-172142-3	6-172142-3	8-172142-3
TERMINAL	TYPE No.	PRODUCT FORM	MATERIAL	AWG SIZE	INSULATION DIAMETER
	170369-1	LOOSEN	PHOSPHOR BRONZE	AWG20~26	1.1~1.9mm
	170354-1	LINKED		AWG26~30	1.0~1.5mm
	170370-1	LOOSEN			
170355-1	LINKED				

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