SEMICONDUCTOR
TOSHIBA
TECHNICAL DATA

TOSHIBA PHOTO INTERRUPTER
TLP1225(C5), TLP1226(C5)
INFRARED LED + PHOTO IC

(TLP1225(C5))
COPIER, PAGE PRINTER, FACSIMILE
FAN-HEATERS, AIR-CONDITIONER
TERMINAL EQUIPMENT IN BANKING FACILITIES
GAME MACHINE

TLP1225(C5) and TLP1226(C5) are photo interrupters with attached connectors which use a high radiant power GaAs infrared LED and a high-sensitivity low-power consumption Si photo IC. They are optimum as paper carrier location sensors for copiers and page printers.
Operating temperature is up to 90°C. Thus, the devices can be used in high-temperature application like paper-out sensors or air direction sensors for air conditioner louvers. when the light is shielded, outputs are at high level.
TLP1225(C5) and TLP1226(C5) are photo interrupters in a highly reliable package which eliminates the need for a printed circuit board and soldering.

- Small package
- Mountable by one touch (Snap-in mounting type)
- Mountable to boards in 2kinds of thickness (1.0mm, 1.2mm)
- Detection gap : 5mm
- Detecting accuracy : Slit width 0.5mm
- Power supply voltage : For 5V ····· TLP1225 (C5)
  For 12V ····· TLP1226 (C5)
- Digital output (open collector)
- Large temperature range : $T_{opr} = -25 \sim 90°C$, $T_{stg} = -40 \sim 100°C$
- Low current consumption : $I_{CC} = 16.5mA$ (MAX.)
- Connectors : Incorporated in mold package (compatible with AMP Japan Ltd. made CT connector)
- Material of the case : Body ····· Polycarbonate (UL94V-2)
  Connector ··· Polybutylene terephthalate (UL94V-0)

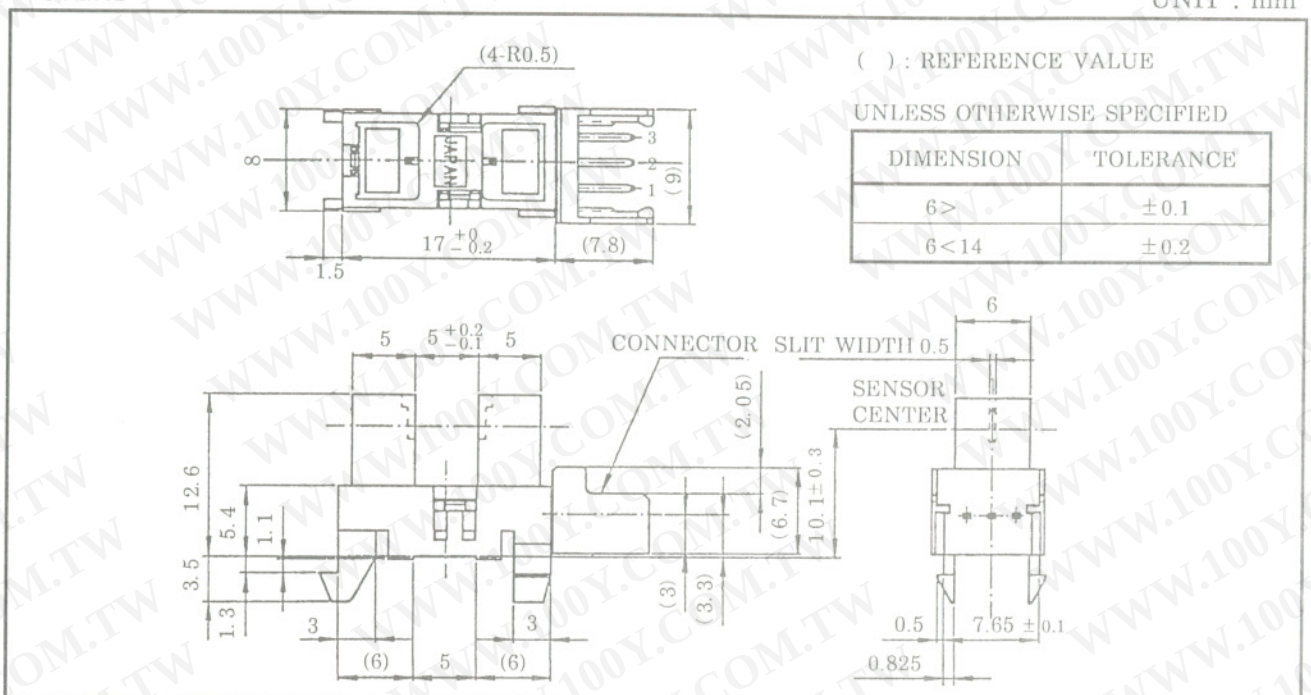
MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage	TLP1225 (C5)	V_{CC}	10	V
	TLP1226 (C5)		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}	−25~90	°C
Storage Temperature Range		T_{stg}	−40~100	°C

(TLP1225(C5))

OUTLINE

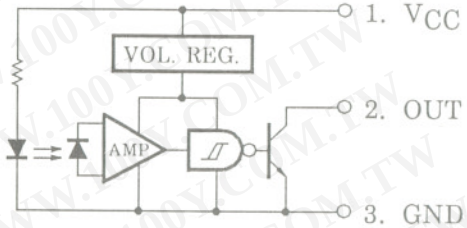
UNIT : mm



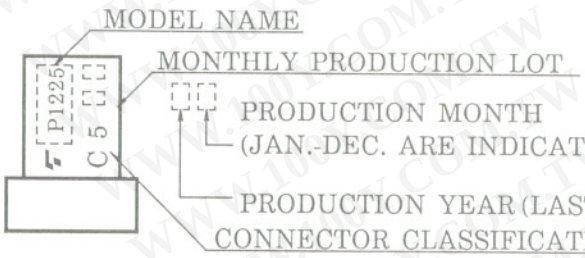
JEDEC	—
EIAJ	—
TOSHIBA	

Weight : 1.4g (TYP)

PIN CONNECTION



PRODUCT INDICATION



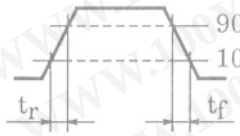
TYPE	ABBREVIATION
TLP1225 (C5)	P1225
TLP1226 (C5)	P1226

(TLP1225(C5))

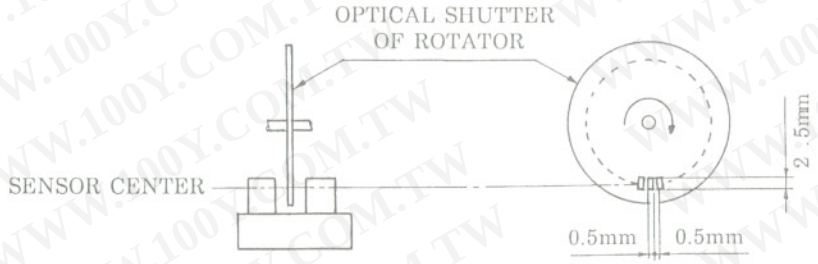
RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC		SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	TLP1225(C5)	V_{CC}	4.5	5	5.5	V
	TLP1226(C5)		10.8	12	13.2	
Output Voltage	TLP1225(C5)	V_O	—	5	17	V
	TLP1226(C5)		—	12	17	
Low Level Output Current		I_{OL}	—	—	16	mA

OPTO-ELECTRICAL CHARACTERISTICS
(Unless Otherwise Specified, Ta = −25~90°C, V_{CC} = 5V ± 10% : TLP1225(C5), 12V ± 10% : TLP1226(C5))

CHARACTERISTIC		SYMBOL	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Supply Voltage		V_{CC}		TLP1225 (C5)	4.5	5	5.5	V
				TLP1226 (C5)	10.8	12	13.2	
Supply Current	High Level	I_{CCH}	Shutter In		—	—	16.5	mA
	Low Level	I_{CCL}	Without Shutter		—	—	16.5	mA
Output Voltage	High Level	V_{OH}	Shutter In, R_L = 47kΩ		V_{CC}×0.9	—	—	V
	Low Level	V_{OL}	Without Shutter I_{OL} = 16mA, Ta = 25°C		—	0.07	0.35	V
			Without Shutter, 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	R_L = 47kΩ, Ta = 25°C (Note)		3000	—	—	Hz
Rise Time		t_r			—	8	—	μs
Fall Time		t_f			—	0.03	—	

(Note) Response frequency is a value measured when the disc shown in the following figure was rotated. No DC current shuld be output.



(TLP1225(C5))

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 100μs 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. It is recommended to mount this product by inserting from the sheet metal pressed side.
4. Do not solder the lead or printed circuit board to the connector. Connect the connector to the recommended connector correctly.
5. 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.

RECOMMENDABLE MATCHED CONNECTOR

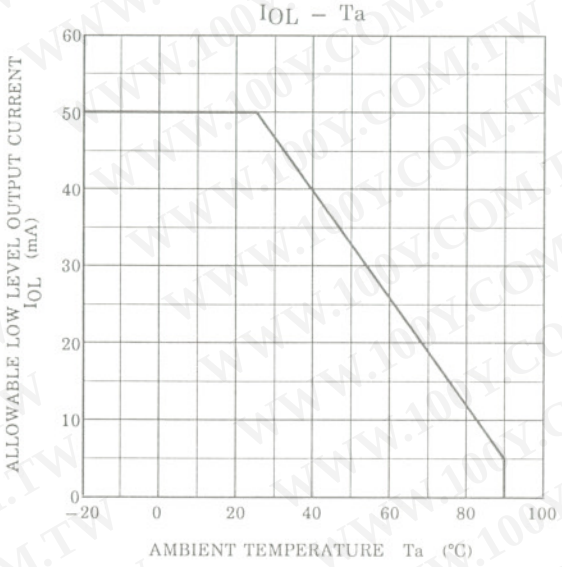
AMP Japan Ltd. made CT connector

HOUSING-TERMINAL EN BLOCK TYPE	TYPE No.	TERMINAL MATERIAL	AWG SIZE	INSULATION COATED SIZE
	173977-3	PHOSPHOR BRONZE	AWG 26~28	0.85~1.05mm

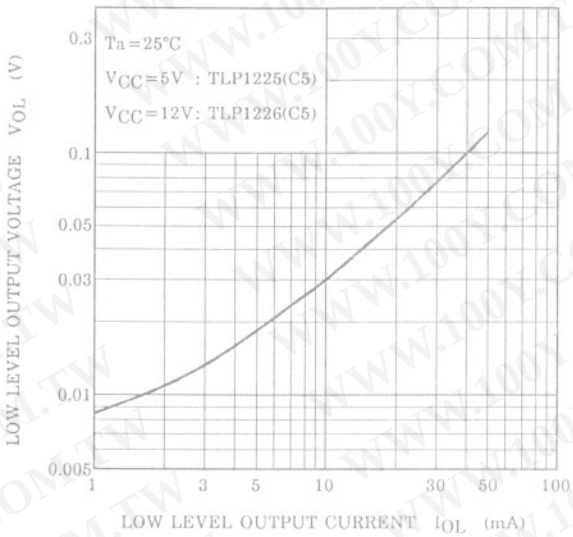
For details of the connectors, please refer to the connector maker.

(TLP1225(C5))

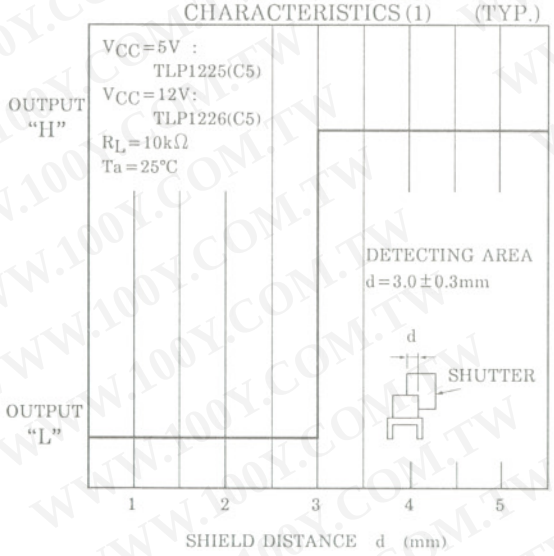
I_{OL} – Ta



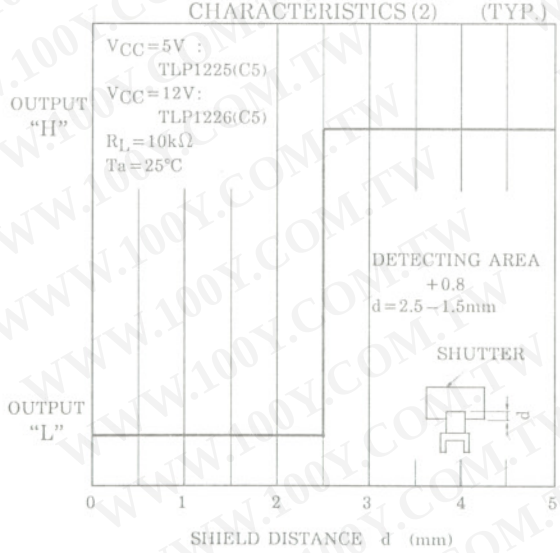
V_{OL} – I_{OL} (TYP.)



DETECTING POSITION CHARACTERISTICS (1) (TYP.)



DETECTING POSITION CHARACTERISTICS (2) (TYP.)

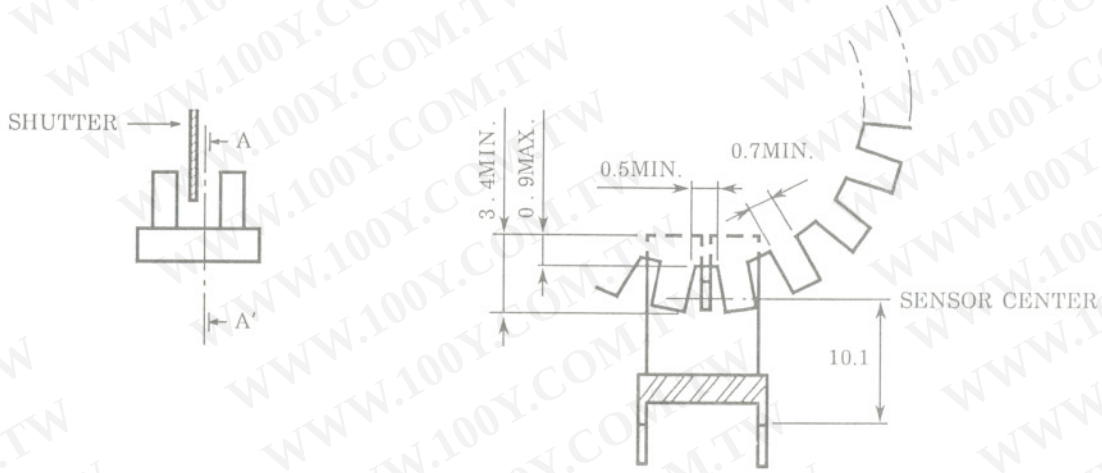


(TLP1225(C5))

DESIGN SLIT FOR ROTATING LIGHT BLOCKING BOARD.

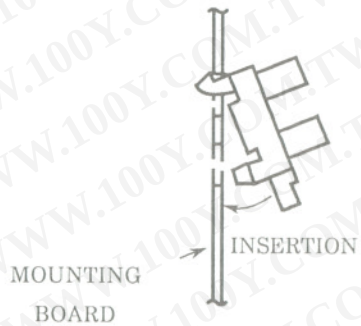
Design the pitch between slits taking the following into consideration:
release time, light block time, and switching time of photo interrupter when the disk is rotating.

UNIT IN mm

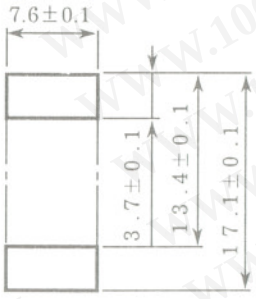


A–A' CROSS SECTION

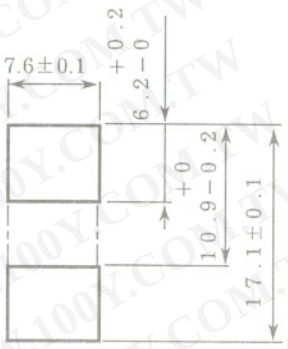
RECOMMENDED MOUNTING HOLE



MOUNTING AWAY



FOR THICKNESS
1.0mm



FOR THICKNESS
1.2mm