TOSHIBA PHOTOINTERRUPTER INFRARED LED + PHOTO IC

TLP1217(C2)

COPIER, LASER BEAM PRINTER

FACSIMILE, PRINTER, ELECTRONIC TYPEWRITER

AUTOMATIC VENDING MACHINE, TERMINAL EQUIPMENT IN BANKING FACILITIES

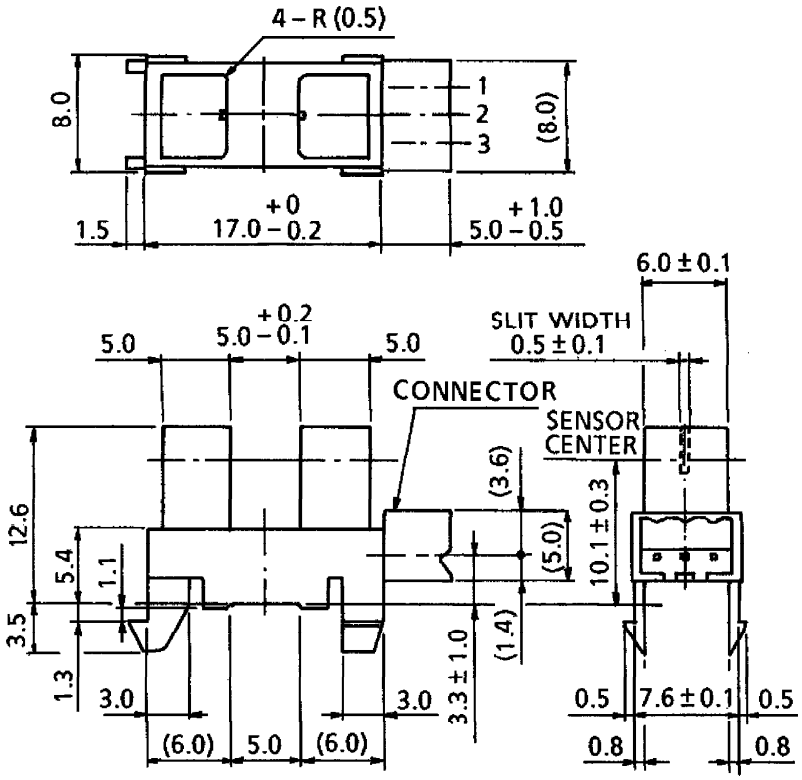
VARIOUS POSITION DETECTION SENSOR

The TLP1217 (C2) 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.

This product is also usable in applications requiring severe using temperature condition such as detection of paper exit on copier, etc.

- Small package
- Mountable by one touch (Snap-in mounting type)
- Mountable to boards in 2 kinds of thickness (1.0mm, 1.2mm)
- For 5V of power supply voltage
- Digital output (open collector)
- Gap : 5mm
- Resolution : Slit width 0.5mm
- Large operating temperature range : $T_{opr} = -25 \sim 90°C$
- Low current consumption : $I_{CC} = 16.5mA$ (Max.)
- UL recongnized PWB adopted : UL94V-0
- Material of the case : Polycarbonate
- Connector
  DF3-3P-2DSA (Hirose Electric Co., Ltd. made DF3 series connector)

OUTLINE DRAWINGS : TOSHIBA 11-15C3 Unit in : mm



UNLESS OTHERWISE SPECIFIED

DIMENSION	TOLERANCE
6>	±0.1
6<14	±0.2

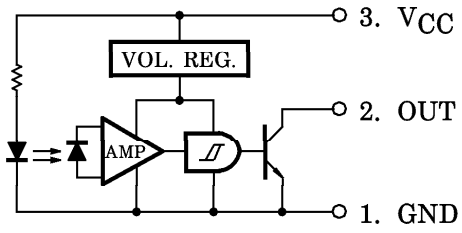
( ) : REFERENCE VALUE

Weight : 1.1g (Typ.)

MAXIMUM RATINGS (Ta = 25°C)

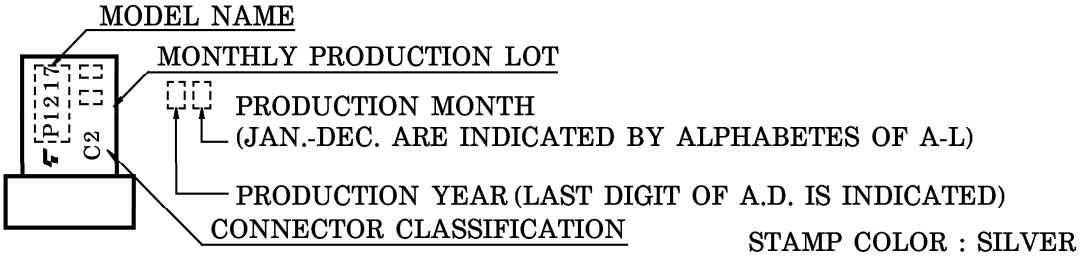
CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	10	V
Output Voltage	V_O	28	V
Low Level Output Current	I_{OL}	50	mA
Low Level Output Current Derating (Ta>25°C)	ΔI_{OL} / °C	−0.67	mA / °C
Operating Temperature Range	T_{opr}	−25~90	°C
Storage Temperature Range	T_{stg}	−40~90	°C

PIN CONNECTION



PRODUCT INDICATION

TYPE	ABBREVIATION
TLP1217 (C2)	P1217

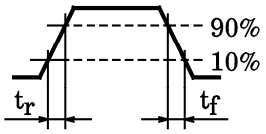


STAMP COLOR : SILVER

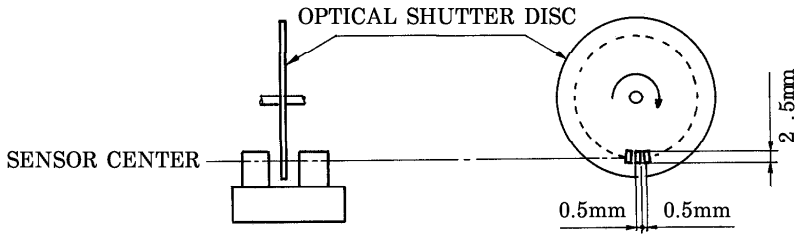
RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{CC}	4.5	5.0	5.5	V
Output Voltage	V_O	—	5.0	17	V
Low Level Output Current	I_{OL}	—	—	16	mA
Operating Temperature	T_{opr}	−25	—	90	°C

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

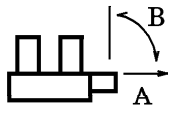
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage		V_{CC}		4.5	5	5.5	V
Supply Current	High Level	I_{CCH}	Without Shutter	—	—	16.5	mA
	Low Level	I_{CCL}	Shutter In	—	—	16.5	
Output Voltage	High Level	V_{OH}	Without Shutter, R_L=47kΩ	0.9V_{CC}	—	—	V
	Low Level	V_{OL}	Shutter In, 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	—	940	—	nm
Peak Sensitivity Wavelength		λ_P	Ta=25°C	—	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) A value measured when the disc shown in the following figure was rotated. No DC current shuld be output.



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. The container is made of polycarbonate. Polycarbonate is usually stable with acid, alcohol, and aliphatic hydrocarbons however, with pertochemicals (such as benzene, toluene, and acetone), alkali, aromatic hydrocarbons, or chloric hydrocarbons, polycarbonate becomes cracked, swollen, or melted. Please take care when chosing 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, ehtyl 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

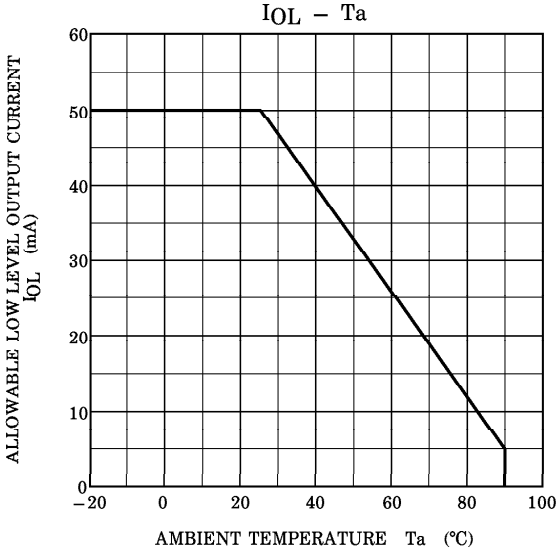
RECOMMENDABLE MATCHED CONNECTOR

Hirose Electric Co., Ltd. made DF3 series connector

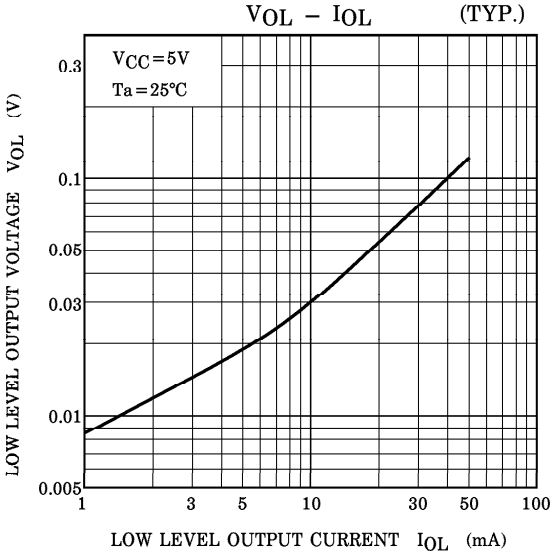
HOUSING	DF3-3S-2C				
TERMINAL	TYPE No.	PRODUCT FORM	MATERIAL	AWG SIZE	INSULATION DIAMETER
	DF3-2428 SC	LOOSEN	PHOSPHOR BRONZE	AWG24~28	0.9~1.4mm
	DF3-2428 SCF	LINKED			

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

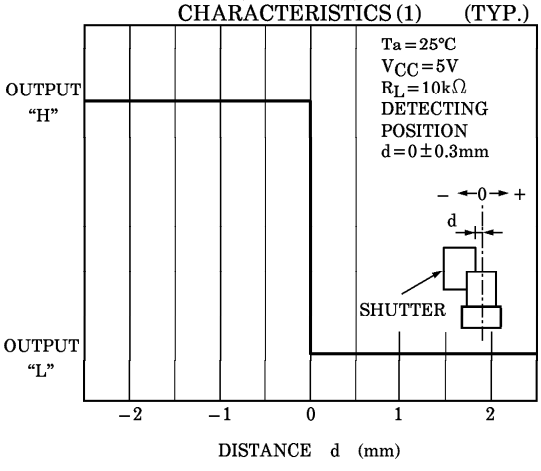
I_{OL} – Ta



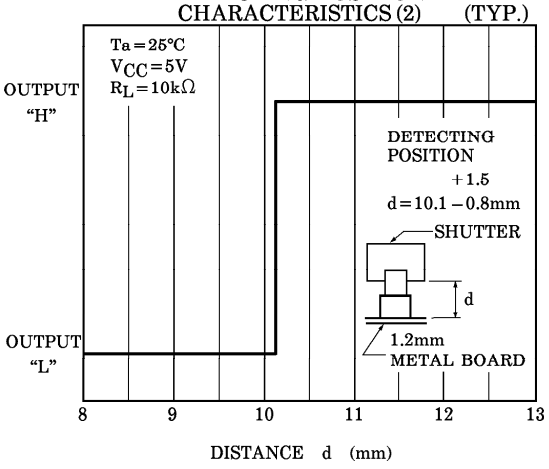
V_{OL} – I_{OL} (TYP.)



DETECTING POSITION CHARACTERISTICS (1) (TYP.)



DETECTING POSITION CHARACTERISTICS (2) (TYP.)

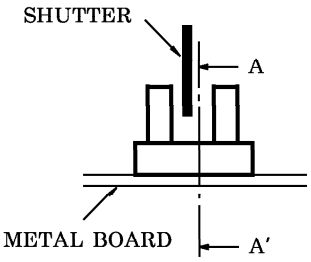


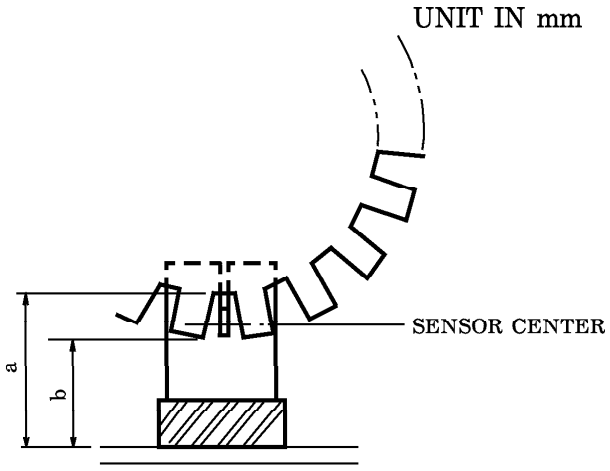
POSITIONING OF SHUTTER AND DEVICE

To operate correctly, make sure that the shutter and the device are positioned as shown in the figure below.

The shit pitch of the shutter must be set wider than the slit width of the device.
Determine the width taking the switching time into consideration.

UNIT IN mm



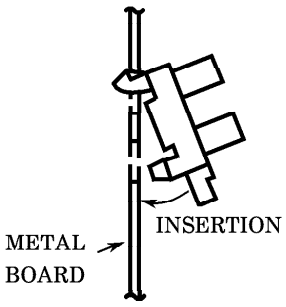


Unit : mm

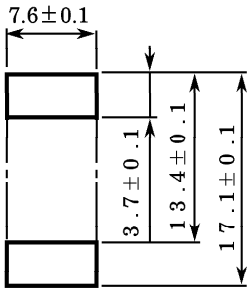
METAL BOARD THICKNESS	a SIZE	b SIZE
1.0	11.9MIN.	9.4MAX.
1.2	11.7MIN.	9.2MAX.

A – A' CROSS SECTION

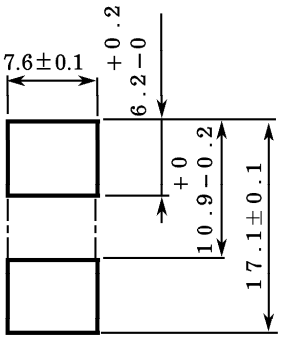
RECOMMENDED MOUNTING HOLE



MOUNTING AWAY



FOR THICKNESS
1.0mm



FOR THICKNESS
1.2mm