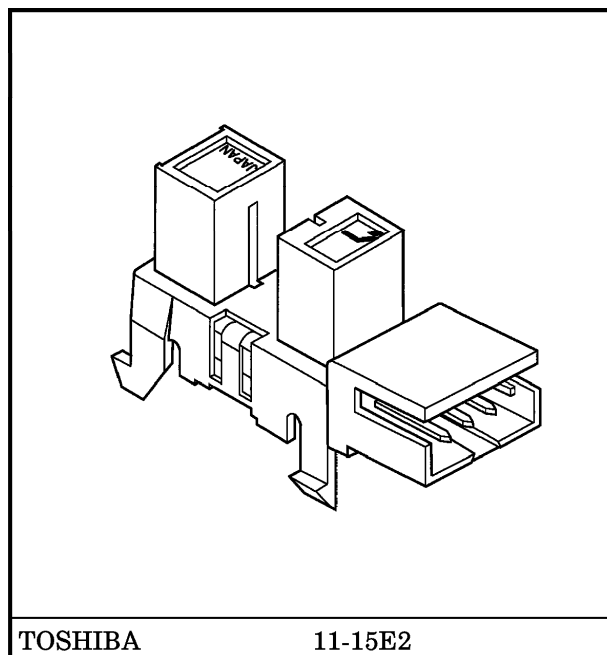


TOSHIBA PHOTOINTERRUPTER INFRARED LED + PHOTO IC

# TLP1252(C6)

COPIER, PAGE PRINTER, FACSIMILE  
 FAN-HEATER, AIR CONDITIONER  
 TERMINAL EQUIPMENT IN BANKING FACILITIES  
 GAME MACHINE

TLP1252(C6) is a compact photointerrupter with attached connector which uses a high-radiant power GaAs infrared LED and a Si photo-IC. TLP1252(C6) is a photointerrupter in highly reliable package which eliminates the need for printed circuit board and soldering. It is optimum as a paper carrier location sensor for copiers and page printers. Operating temperature is up to 95°C. Thus the device can be used for high-temperature applications like paper-out sensors or air direction for air conditioner louvers. When the light is shielded, outputs are at low level.



TOSHIBA 11-15E2

Weight : 1.3 g (Typ.)

- High reliability package (PWBless, Solderingless)
- Small package
- Mountable by one touch (Snap-in mounting type)
- Mountable to boards in 3 kinds of thickness (1.0 mm, 1.2 mm, 1.6 mm)
- Gap : 5 mm
- Resolution : Slit width 0.5 mm
- High temperature operating :  $T_{opr} = 95^{\circ}\text{C}$  (Max.)
- Low current consumption :  $I_{CC} = 14\text{ mA}$  (Max.)
- Digital output (open collector)
- Connected to the CT connector (2 mm pitch MT receptacle type, MT crimp receptacle type II) made by AMP (Japan), Ltd.
- Material of the case : Body . . . . . Polycarbonate (UL94V-2, Black)  
 : Connector .. 66 nylon (UL94V-0, White)

980910EBC2

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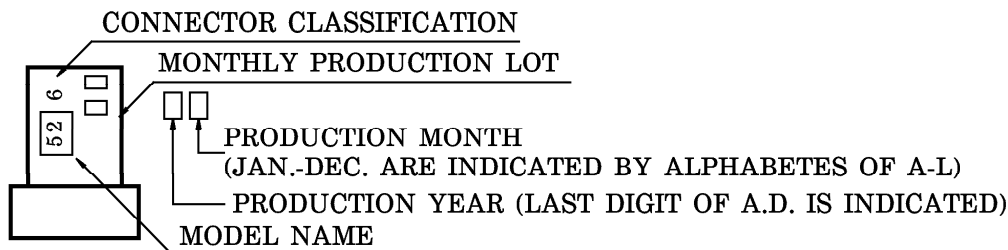
● Gallium arsenide (GaAs) is a substance used in the products described in this document. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them. When disposing of the products, follow the appropriate regulations. Do not dispose of the products with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

● The products described in this document are subject to the foreign exchange and foreign trade laws.

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PRODUCT INDICATION



MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC                                | SYMBOL                          | RATING  | UNIT  |
|---|---------------------------------|---------|-------|
| Supply Voltage                                | V <sub>CC</sub>                 | 7.5     | V     |
| Output Voltage                                | V <sub>O</sub>                  | 15      | V     |
| Low Level Output Current                      | I <sub>O<sub>L</sub></sub>      | 16      | mA    |
| Low Level Output Current Derating (Ta > 76°C) | ΔI <sub>O<sub>L</sub></sub> /°C | -0.67   | mA/°C |
| Operating Temperature Range                   | T <sub>opr</sub>                | -30~95  | °C    |
| Storage Temperature Range                     | T <sub>stg</sub>                | -40~100 | °C    |

RECOMMENDED OPERATING CONDITIONS

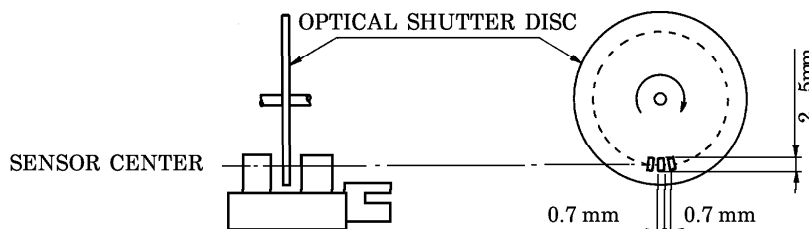
| CHARACTERISTIC           | SYMBOL                     | MIN. | TYP. | MAX. | UNIT |
|--------------------------|----------------------------|------|------|------|------|
| Supply Voltage           | V <sub>CC</sub>            | 4.5  | 5.0  | 5.5  | V    |
| Output Voltage           | V <sub>O</sub>             | —    | 5.0  | 13.2 | V    |
| Low Level Output Current | I <sub>O<sub>L</sub></sub> | —    | —    | 16   | mA   |

OPTO-ELECTRICAL CHARACTERISTICS

(Unless Otherwise Specified, Ta = -30~95°C, V<sub>CC</sub> = 5 V ± 10%)

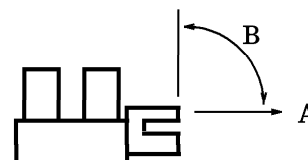
| CHARACTERISTIC              |            | SYMBOL                      | TEST CONDITION  | MIN.                | TYP. | MAX. | UNIT |
|-----------------------------|------------|-----------------------------|---|---------------------|------|------|------|
| Supply Voltage              |            | V <sub>CC</sub>             |   | 4.5                 | 5    | 5.5  | V    |
| Supply Current              | High Level | I <sub>CC<sub>H</sub></sub> | Without Shutter   | —                   | —    | 14   | mA   |
|                             | Low Level  | I <sub>CC<sub>L</sub></sub> | Shutter In  | —                   | —    | 14   |      |
| Output Voltage              | High Level | V <sub>OH</sub>             | Without Shutter, R <sub>L</sub> = 47 kΩ                   | 0.9 V <sub>CC</sub> | —    | —    | V    |
|                             | Low Level  | V <sub>OL</sub>             | Shutter In, I <sub>O<sub>L</sub></sub> = 16 mA, Ta = 25°C | —                   | 0.07 | 0.35 | V    |
|                             |            |                             | Shutter In, I <sub>O<sub>L</sub></sub> = 16 mA            | —                   | —    | 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                           | R <sub>L</sub> = 4.7 kΩ, Ta = 25°C, (Note)                | 5                   | —    | —    | kHz  |
| Rise Time                   |            | t <sub>r</sub>              |   | —                   | 0.8  | —    |      |
| Fall Time                   |            | t <sub>f</sub>              |   | —                   | 0.04 | —    |      |

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



**TERMINAL STRENGTH (Ta = 25°C)**

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



**MATCHED CONNECTOR**

AMP (Japan), Ltd. made CT connector (2 mm pitch MT receptacle type)

| HOUSING-TERMINAL EN BLOCK TYPE | TYPE No. | TERMINAL MATERIAL | AWG SIZE | INSULATION DIAMETER |
|--------------------------------|----------|-------------------|----------|---------------------|
|                                | 173977-3 | PHOSPHOR BRONZE   | AWG26~28 | 0.85~1.05 mm        |

AMP (Japan), Ltd. made CT connector (2 mm pitch MT crimp receptacle type II)

| HOUSING  | 179228-3 |              |                 |          |                     |
|----------|----------|--------------|-----------------|----------|---------------------|
| TERMINAL | TYPE No. | PRODUCT FORM | MATERIAL        | AWG SIZE | INSULATION DIAMETER |
|          | 179518-1 | LOOSEN       | PHOSPHOR BRONZE | AWG22~26 | 0.93~1.5 mm         |
|          | 179227-1 | LINKED       |                 |          |                     |

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

**PRECAUTION**

1. When  $V_{CC}$  is turned on, it takes at least  $100\ \mu\text{s}$  for the internal circuit to stabilize. During this time the output signal is unstable. Please do not use the unstable signal as the output signal.
2. A visible light cut-off type photo IC which blocks light with frequencies of 700 nm or less is used. However, the device cannot block ambient light with a wavelength of 700 nm or more, or sunlight. Install avoiding interference from external light.
3. The environment to install the device should be determined carefully. Oil or chemicals may cause the package to be dissolved or cracked.
4. When installing, avoid to work by holding the connector by hand. Always, install by holding the main body of the device while assuring the metal board is not warped or twisted. The connectors shall be inserted or pulled out at normal temperature.
5. It is recommended to mount this product by inserting from the metal board pressed side.
6. We recommend checking the strength of the mounting on metal board by mounting the device in advance.
7. Do not solder to the pins of the connector block. Use the matched connector.
8. When connecting/disconnecting the connector, hold the matched connector and power line in parallel to the TLP1252 pins. Pushing or pulling diagonally may damage the connector block or degrade the connection.

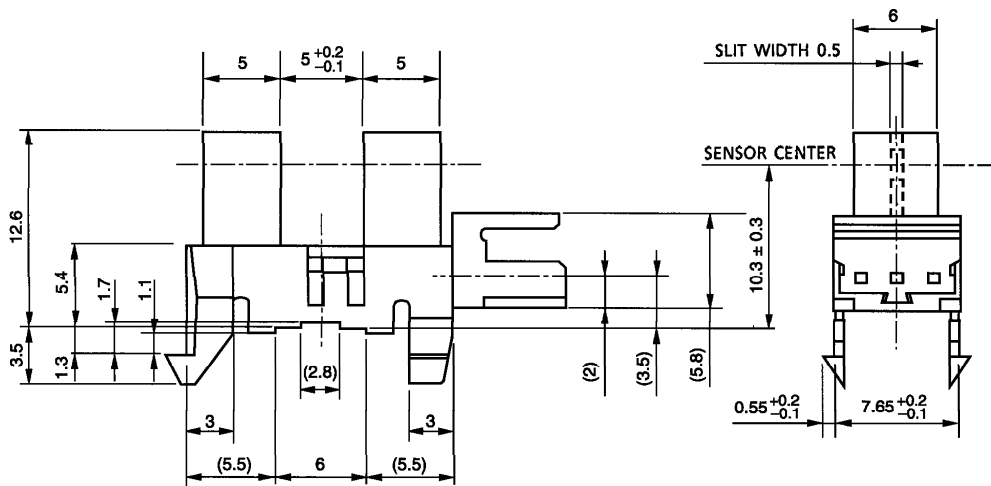
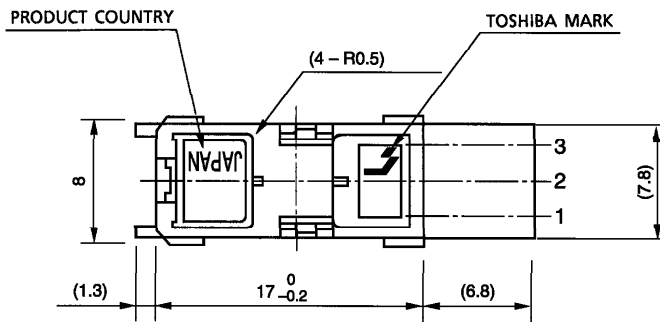
OUTLINE : TOSHIBA 11-15E2

Unit in mm

( ) : REFERENCE VALUE

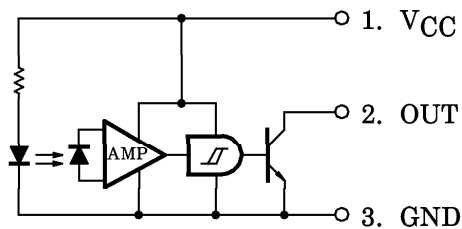
UNLESS OTHERWISE SPECIFIED

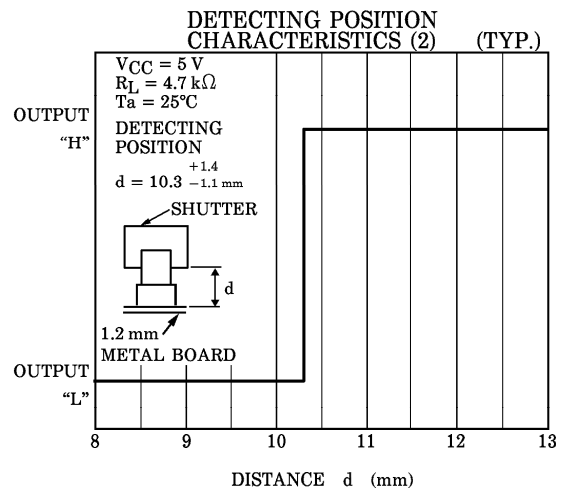
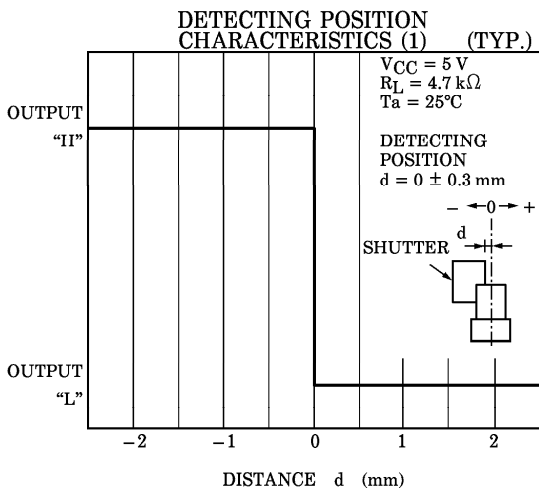
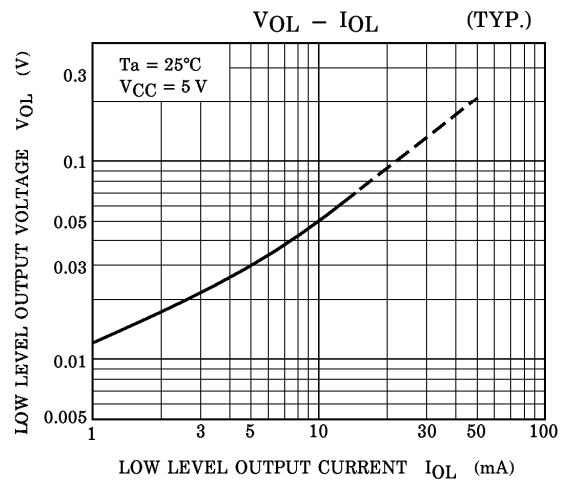
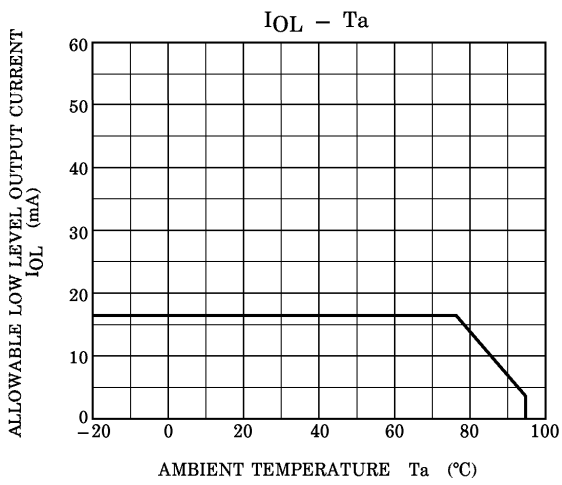
| DIMENSION | TOLERANCE |
|-----------|-----------|
| 6 >       | ±0.1      |
| 6 < 14    | ±0.2      |



Weight : 1.3 g (Typ.)

**PIN CONNECTION**

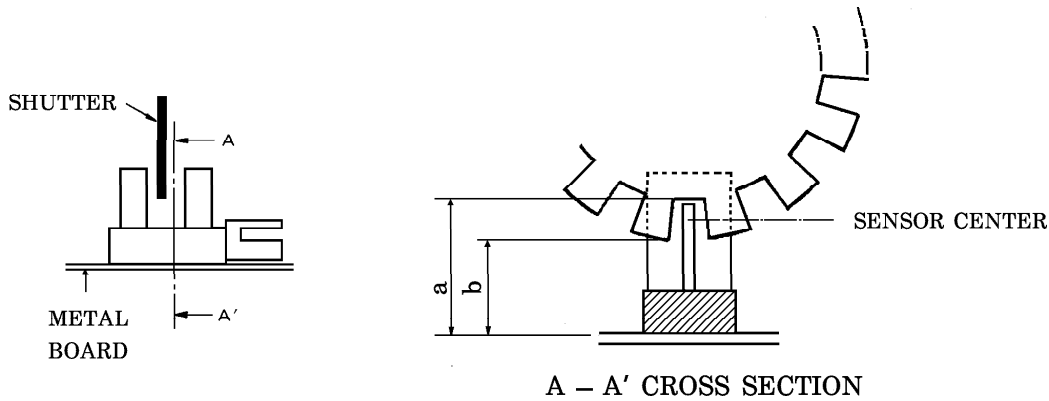




**POSITIONING OF SHUTTER AND DEVICE**

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

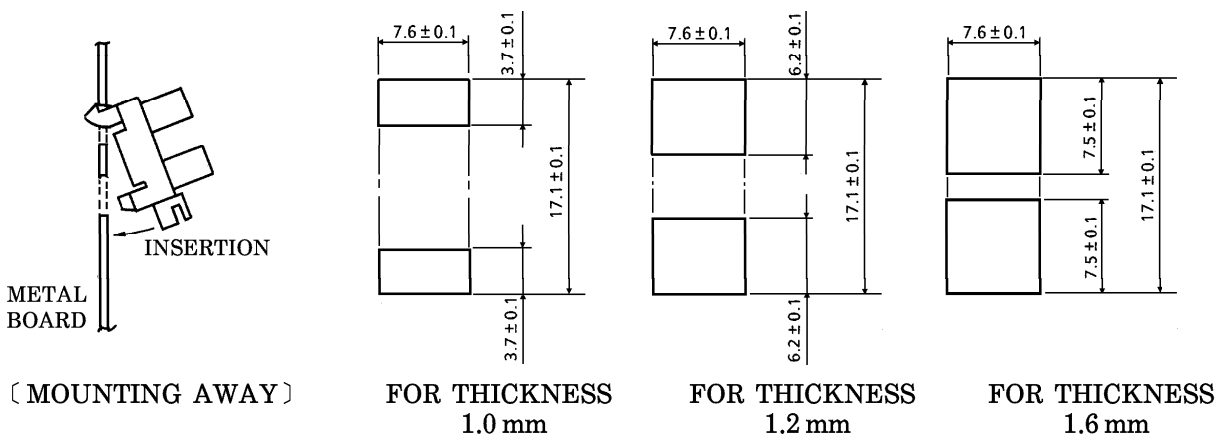
The slit pitch of the shutter must be set wider than the slit width of the device.  
Determine the width taking the switching time into consideration.



Unit : mm

| METAL BOARD THICKNESS | a SIZE    | b SIZE   |
|-----------------------|-----------|----------|
| 1.0                   | 11.9 MIN. | 9.4 MAX. |
| 1.2                   | 11.7 MIN. | 9.2 MAX. |
| 1.6                   | 11.3 MIN. | 8.8 MAX. |

**RECOMMENDED MOUNTING HOLE (Unit : mm)**



When mounting on other than metal board as shown above, contact TOSHIBA.