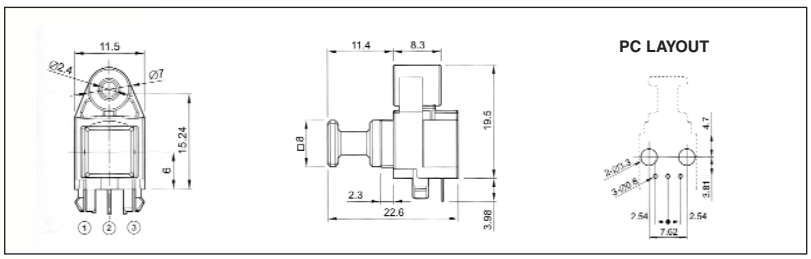
# CLIFF Optical Jacks

The **CLIFF®** range of Optical Transmitter and Receiver jacks feature seven different models that conform to the EIAJ standard CP-1201 for Digital Audio Interfaces including Fibre-Optical inter-connections. Optical Jacks are virtually unaffected by noise when transmitting and receiving signals between digital audio equipment, enabling high-quality audio recording and high speed signal receiving. It continues to be adopted as a virtual standard in portable audio equipment. Several models have a self-tapping hole for panel mounting and three models replace the plug-in cover with a convenient hinged shutter to protect against contamination.

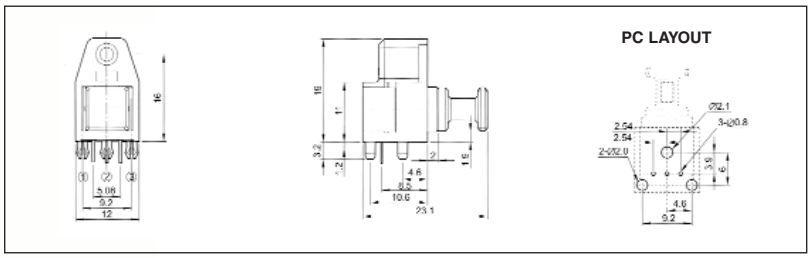
**OTJ-1/ORJ-1 Single Optical Transmitter and Receiver Jack. Right angle PCB mount with self tapping hole for panel mounting. Removable plug-in cover.**

**OTJ-1 (FC6842031T)**
**ORJ-1 (FC6842031R)**



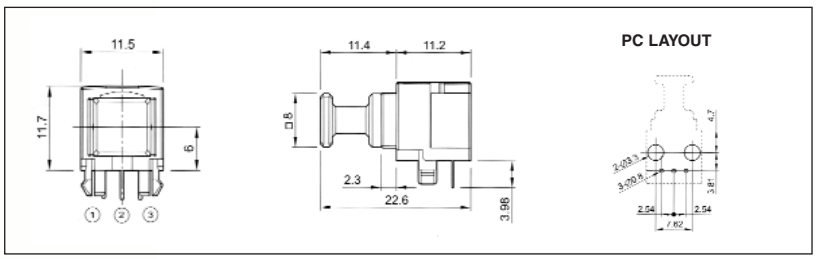

**OTJ-2/ORJ-2 Single Optical Transmitter and Receiver Jack. Right angle PCB mount with self tapping hole for panel mounting. Removable plug-in cover.**

**OTJ-2 (FC684202T)**
**ORJ-2 (FC684202R)**



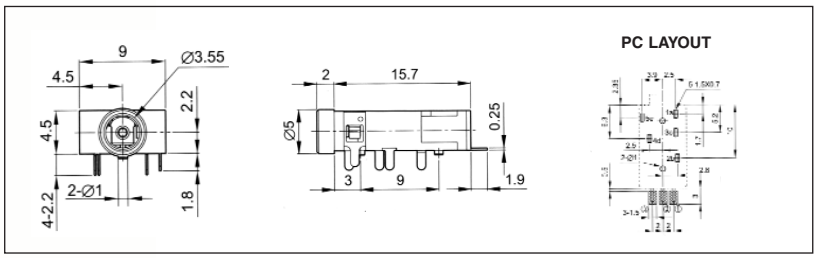

**OTJ-3/ORJ-3 Single Optical Transmitter and Receiver Jack. Right angle PCB mount. Removable plug-in cover.**

**OTJ-3 (FC6842032T)**
**ORJ-3 (FC6842032R)**




**OTJ-4/ORJ-4 Single Optical Transmitter and Receiver Jack. Low profile right angle PCB mount.**

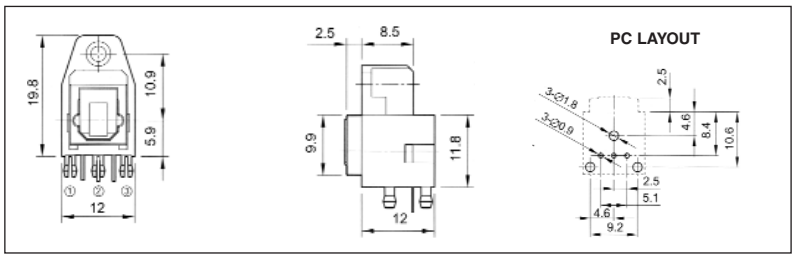
**OTJ-4 (FC684204T)**
**ORJ-4 (FC684204R)**

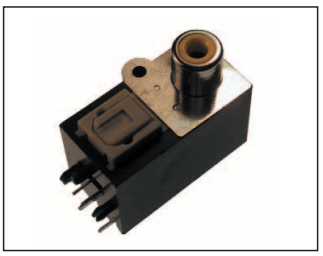


# Optical Jacks

**OTJ-5/ORJ-5 Single Optical Transmitter and Receiver Jack. Right angle PCB mount with self tapping hole for panel mounting. Hinged shutter.**

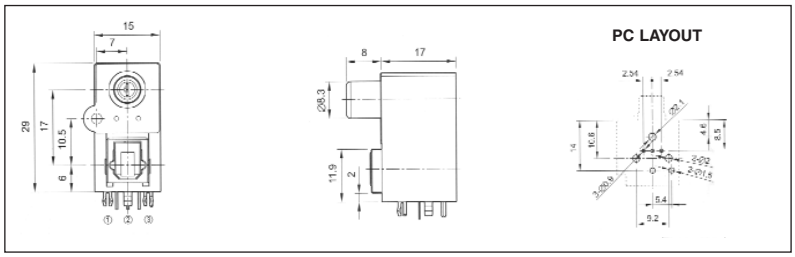
**OTJ-5 (FC684205T)**
**ORJ-5 (FC684205R)**

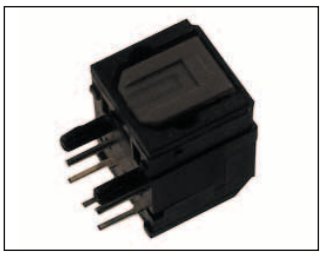


**OTJ-6/ORJ-6 Dual SPDIF RCA and Optical Transmitter and Receiver Jack. Right angle PCB mount with self tapping hole for panel mounting. Hinged shutter. Several different colored inserts available.**

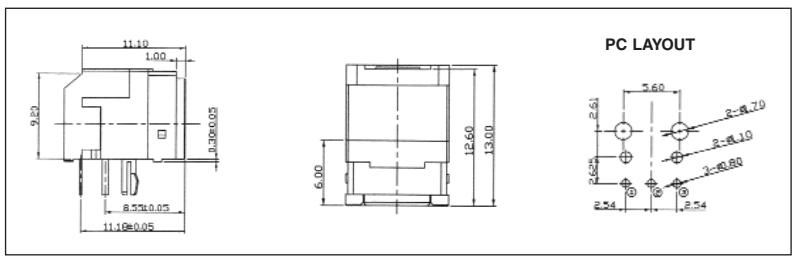
**OTJ-6 (FC684206T)**
**ORJ-6 (FC684206R)**



**OTJ-8/ORJ-8 Optical Transmitter and Receiver Jack. Right angle PCB mount. Hinged shutter.**

**OTJ-8 (FC684208T)**
**ORJ-8 (FC684208R)**




## Electrical Specifications:

**Supply Voltage:** -0.5 to 7.0V Maximum.
**Input Voltage:** -0.5 to +0.5V Maximum.
**Operating Temperature:** -20 deg. C to +70 deg. C Maximum.
**Storage Temperature:** -30 deg. C to +80 deg. C Maximum.
**Soldering Temperature:** 260 deg. C Maximum.

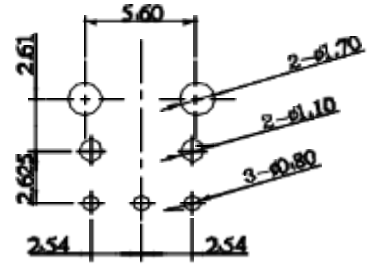
## Mechanical Specifications:

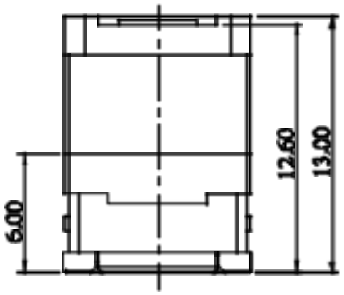
**Insertion Force:** 5.9N Minimum, 39.2N Maximum.
**Withdrawal Force:** 5.9N Minimum, 39.2N Maximum.

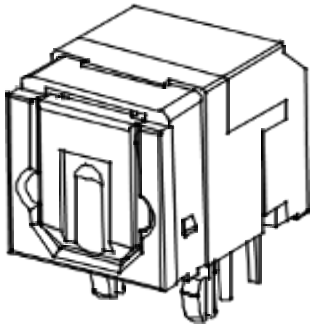
## Materials:

**Body:** PBT +30G, ABS 94-V-0 (depends on model)
**Shutter:** Nylon PA66

Please refer to the individual technical data sheets available for each model for the recommended operating conditions, characteristics, PC layouts and technical information. We also manufacture molded optical lead assemblies for use with our optical jacks. Please contact our sales office for more details.



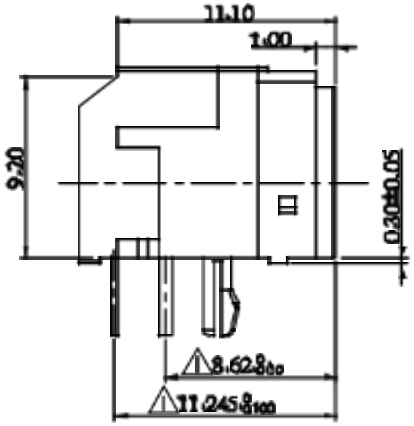



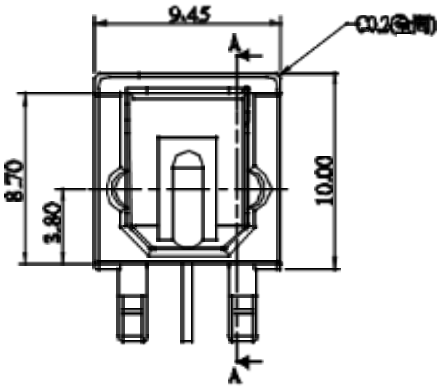



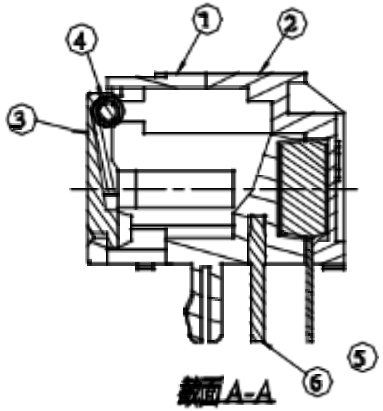
| 基準寸法許容許差 JIS B 0405 | | | | |
|---|---|---|---|---|
| 基準寸法(mm) | 公差等級(mm)(級) | | | |
| | 精級 | 中級 | 粗級 | 極粗級 |
| 0.5-3 | ±0.05 | ±0.1 | ±0.2 | - |
| 3-6 | ±0.05 | ±0.1 | ±0.3 | ±0.5 |
| 6-30 | ±0.1 | ±0.2 | ±0.5 | ±1 |
| 30-120 | ±0.15 | ±0.3 | ±0.8 | ±1.5 |
| 120-400 | ±0.2 | ±0.5 | ±1.2 | ±2.5 |
| 使用記號 | m | | | |

D-045

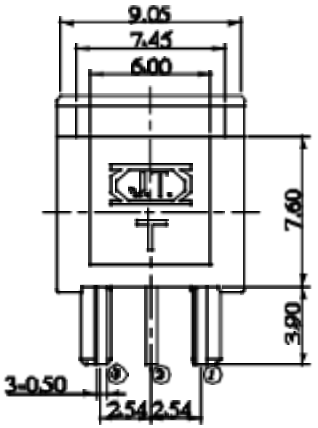
*BOTTOM VIEW*
*P.C.B TOLERANCE ±0.05*
Recommended PCB thinkness:1.6 mm

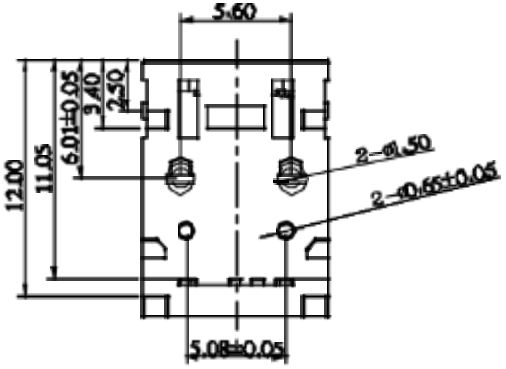



截面 A-A




| Transmitter | |
|---|---|
| ① | Vin |
| ② | Vcc |
| ③ | GND |

| NO. | PART NAME | PCS | MATERIAL | FINISH |
|---|---|---|---|---|
| 6 | NO.1 PIN | 2 | C1100W | |
| 5 | Transmitter | 1 | 5V (5mm) | |
| 4 | Coil Spring | 1 | SWPA | |
| 3 | Shutter | 1 | NYLON PA-66(黑色) | PANTONE 424C |
| 2 | Case | 1 | NYLON PA-66(黑色) | BLACK |
| 1 | Body | 1 | NYLON PA-66(黑色) | BLACK |

| NOTICE | PLATING COLOR | ANGLE TOL. ±1° | SCALE 4.000 | ⚠X.2 03.08.25 修改圖面尺寸(NO.38020) | |
|---|---|---|---|---|---|
| | THICKNESS | TOLERANCES | UNIT mm | REVISED RECORD DATE | REVISION |
| | MATERIAL | ANGLE 3rd. | ORIGINAL DATE 02.05.30 | PART NAME 成品圖 | |
| | DESIGNED DRAWN | checked | APPROVED | PART NUMBER D608T*001 | SHEET 1/1 |

捷泰精密工業股份有限公司

# SPECIFICATION

| CUSTOMER MODEL NO. / TITLE<br>OPTICAL TRANSMITTER JACK | SPECIFICATION NO.<br>FC684208T | PAGE : 1 OF 5<br>DATE : OCT,16,2006 |
|---|---|---|

OPTICAL CONNECTOR

## 1. Features

(1) Uni-directional data transmission using plastic fiber.

(2) Signal transmission speed: MAX. 12.5Mbps

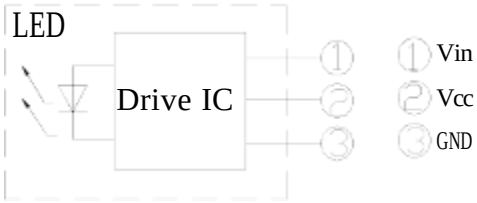
(3) Low voltage drive

Operating voltage: 2.75 to 5.25V

(4) Minimum input optical power: MIN. –21dBm (EIAJ)

(5) TTL and high speed C-MOS LOGIC IC compatible.

Internal equivalent circuit




## 2. Applications

(1) CD players

(2) MD players

(3) DVD players

## 3. Absolute Maximum Ratings

(Ta=25℃)

| Parameter | Symbol | Rating | Unit |
|---|---|---|---|
| Supply voltage | Vcc | -0.5 to +7.0 | V |
| Input voltage | Vin | -0.5 to Vcc +0.5 | V |
| Operating temperature | Topr | -20 to +70 ℃ | |
| Storage temperature | Tstg | -30 to +80 ℃ | |
| Soldering temperature | Tsol | Solder Pool: 260 ±3℃ 5s $^{+1s}_{-0s}$ | |
| | | Soldering Iron: 380 ±10℃ 3s $^{+1s}_{-0s}$ | |

| REV. | NAME | DATE | REMARK |
|---|---|---|---|
| A | C | C | W |
| P | H | H | R |
| V | K | K | T |
| D | D | D | N |

4. Recommended Operating Conditions

| Parameter | Symbol | MIN. | TYP. | MAX. | Unit |
|---|---|---|---|---|---|
| Operating supply voltage | Vcc | 2.75 | 3.0 | 5.25 | V |
| Operating transfer rate | T | - | - | 12.5 | Mbps |

5. Electro-optical Characteristics

| Parameter | Symbol | Conditions | MIN. | TYP. | MAX. | Unit. |
|---|---|---|---|---|---|---|
| Peak emission wavelength | λp | | 630 | 660 | 690 | nm |
| Optical power output coupling with fiber | Pc | Refer to Fig.1 | -21 | -18 | -15 | dBm |
| Dissipation current | Icc | Refer to Fig.2 | - | 8 | 13 | mA |
| High level input voltage | $V_{iH}$ | Refer to Fig.2 | 2.1 | - | - | V |
| Low level input voltage | $V_{iL}$ | Refer to Fig.2 | - | - | 0.8 | V |
| Low → High delay time | $t_{pLH}$ | Refer to Fig.3 | - | - | 180 | ns |
| High → Low delay time | $t_{pHL}$ | Refer to Fig.3 | - | - | 180 | ns |
| Pulse width distortion | Δtw | Refer to Fig.3 | -15 | - | +15 | ns |
| Jitter | Δtj | Refer to Fig.3 | - | 1 | 15 | ns |

6. Mechanical Characteristics

6-1.

| Parameter | Symbol | MIN. | TYP. | MAX. | Unit |
|---|---|---|---|---|---|
| Insertion force. | - | 3 | - | 40 | N |
| Withdrawal force. | - | 6 | - | 40 | N |

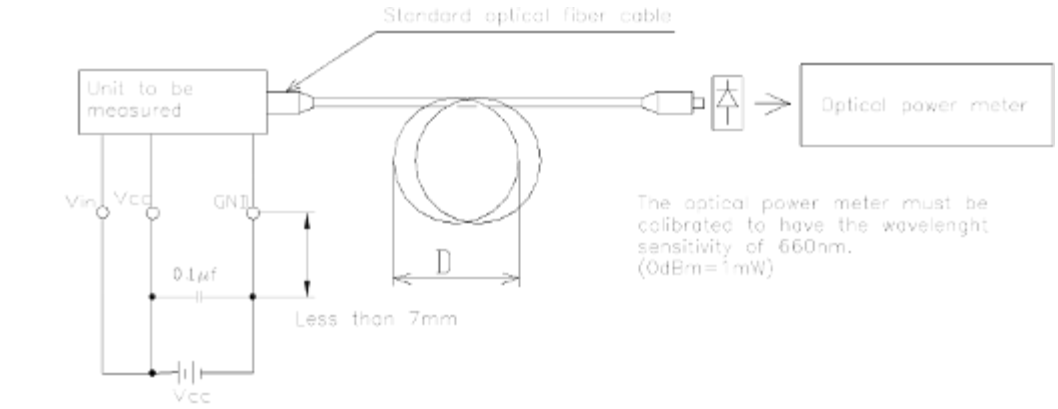
6-2. Repeated operation

Inserting and withdrawing shall be made at a speed of 20 times or less/min using mating plug 500 times.

6-3. Strength of tapping part

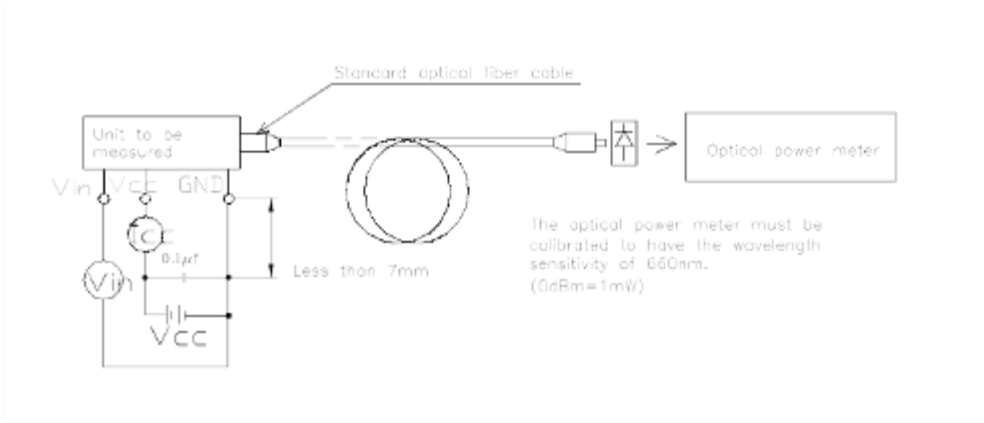
The tapping part shall be capable of a torque of 8kgf-cm for 5 seconds by TP3 ×8 tapping tight screw and panel (t=0.8), the jack shall not be broken.

Fig.1 Measuring Method of Optical Output Coupling with Fiber.




Notes: (1) OC-08 Vcc=3.0V (State of operating).
(2) To bundle up the standard fiber optic cable, make it into a loop with the diameter D=10cm or more. (The standard fiber optic cable will be specified elsewhere.)

Fig.2 Measuring Method of Input Voltage and Supply Current.

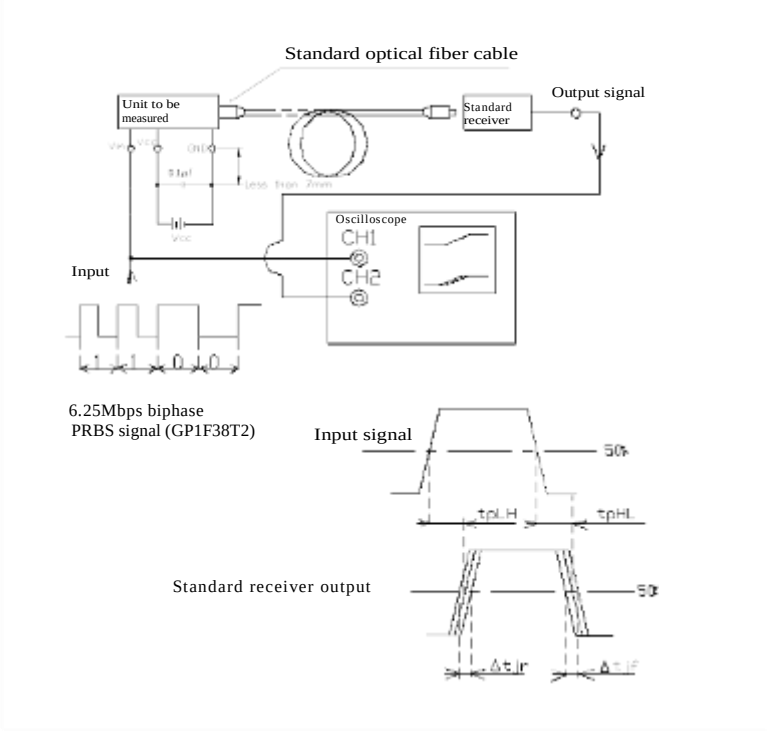



Input conditions and judgement method.

| Condition | Judgment method |
|---|---|
| $V_{in}$=2.1V or more. | -21≦Pc≦-15dBm, Icc=13mA or less. |
| $V_{in}$=0.8V or less. | Pc≦-36dBm, Icc=13mA or less. |

Note) Vcc=3.0V (State of operating).

Fig.3 Measuring Method of Pulse Response and Jitter.




Test item

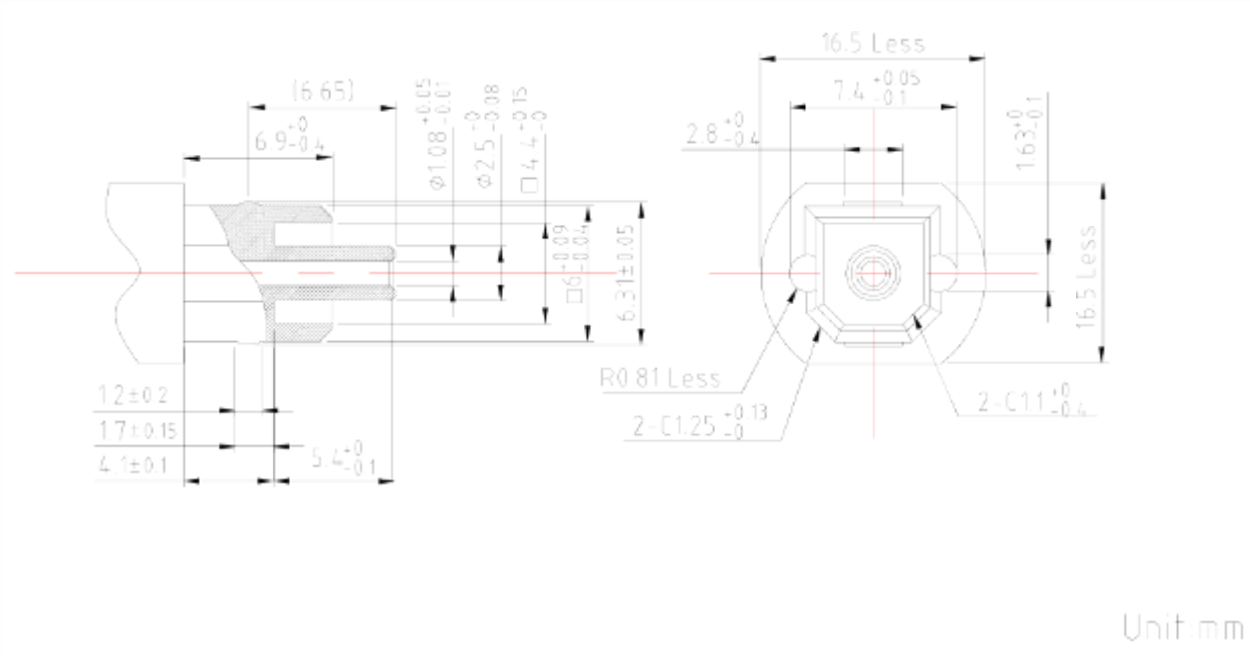
| Test item | Symbol | Test condition |
|---|---|---|
| Low → High pulse delay time | $t_{PLH}$ | Refer to the above prescriptions |
| High → Low pulse delay time | $t_{PHL}$ | Refer to the above prescriptions |
| Pulse width distortion Δtw | Δtw=$t_{PHL}$-$t_{PLH}$ | |
| Low → High Jitter | Δtjr | Set the trigger on the rise of input signal to measure the jitter of the rise of output |
| High → Low Jitter | Δtjf | Set the trigger on the fall of input signal to measure the jitter of the rise of output |

Notes (1) The waveform write time shall be 4 seconds. But do not allow the waveform to be distorted by increasing the brightness too much.
(2) Vcc=3.0V (State of operating)
(3) The probe for the oscilloscope must be more than 1MΩ and less than 10pF.

# SPECIFICATION

| CUSTOMER MODEL NO. / TITLE | SPECIFICATION NO. | PAGE : 5 OF 5 |
|---|---|---|
| OPTICAL TRANSMITTER JACK | OC08T-10-E | DATE : OCT,16,2006 |

Mating plug



1. This part should not contain any substances which are specified in follow .(Except cadmium is less than 5ppm, Lead is under 90ppm)

2. In this case, pre-processing methods and measurement methods shall conform to ROHS.

3. List of "Environment-related Substances to be Controlled ('The Controlled Substances')"

| Substances | | Allowable concentration |
|---|---|---|
| Heavy metals | Cadmium and cadmium compounds | Less 5ppm |
| | Lead and lead compounds | Less 90ppm |
| | Lead in the plastic,rubber,paints,ink | Less 50ppm |
| | Mercury and mercury compounds | |
| | Hexavalent chromium compounds | |
| Chlorinated organic compounds | Polychlorinated biphenyls (PCB) | |
| | Polychlorinated naphthalenes (PCN) | |
| | Chlorinated paraffins (CP) | |
| | Mirex (Perchlordecone) | |
| | Other chlorinated organic compounds | |
| Brominated organic compounds | Polybrominated biphenyls (PBB) | |
| | Polybrominated diphenylethers (PBDE) | |
| | Tetrabromobisphenol-A-bis- (2, 3-dibromopropylether) (TBBP-A-bis) | |
| | Other brominated organic compounds | |
| Organic tin compounds (tributy tin compounds, Triphenyl tin compounds) | | |
| Asbestos | | |
| Azo compounds | | |
| Formaldehyde | | |
| Polyvinyl chloride (PVC) and PVC blends | | |

4. Allowable concentrations:
   Less than 90ppm is determined as an allowable total-concentration of four heavy metals (mercury, cadmium, hexavalent chromium, and lead). Less than 5ppm is determined as an allowable cadmium-concentration in a plastic (including rubber) part.

| | | | |
|---|---|---|---|
| A | C | C | W |
| P | H | H | R |
| V | K | K | T |
| D | D | D | N |

**E I DUPONT DE NEMOURS & CO INC**

ENGINEERING POLYMERS CHESTNUT RUN PLAZA PO BOX 80713 WILMINGTON DE 19880

Material Designation: **70G33L(+)**

Product Description: Polyamide 66 (PA66), glass reinforced, designated "Zytel" furnished as pellets.

| Color | Min. Thick. (mm) | Flame Class | HWI | HAI | RTI Elec | RTI Imp | RTI Str | IEC GWIT | IEC GWFI |
|---|---|---|---|---|---|---|---|---|---|
| ALL | 0.71 | HB | 4 | 0 | 130 | 120 | 130 | - | - |
| | 1.5 | HB | 4 | 0 | 130 | 120 | 130 | - | - |
| | 3.0 | HB | 4 | 0 | 130 | 120 | 130 | - | - |

**CTI:** 0 **HVTR:** 1 **D495:** 5 **IEC BP:** -

(+) Virgin and Regrind up to 50% by weight inclusive, have the same basic material characteristics.

NOTE (1) Material designations that are color pigmented may be followed by suffix letters and numbers. (2) Material designations may be prefixed by "ZYT" or "MIN".