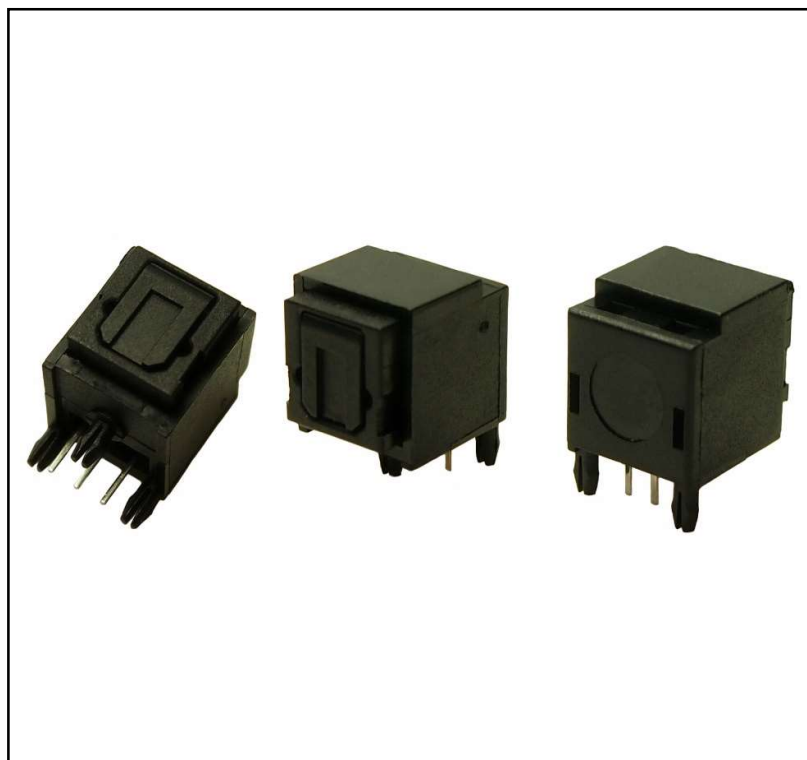**RS PRO**

## Features

- High PD sensitivity for red light
- High speed up to 16Mbps
- Low power consumption and current dissipation
- Nylon body

# RS PRO Optical Receiver jack

RS Stock No.:  0458678

RS Professionally Approved Products bring to you professional quality parts across all product categories. Our product range has been tested by engineers and provides a comparable quality to the leading brands without paying a premium price.

## Product Description

# Optical Jacks

**RS PRO**

This light receiving unit is a standard-package product with connector and opto-electric component packaged with PD and I/V amplifier IC. The function of unit changes the light signal into electrical signal.
The unit is operated at single +3V~ +5V and the input signal is TTL compatible. It has a maximum operating speed of 16Mbps. The unit has high performance at low dissipation current, steady light output and efficient light coupling.

**Applications**
Audio equipment, Digital optical data link, MD, Sound card

## Device Selection Guide

| Chip IC Material | Chip LED λ p(nm) | Operating Voltage (Vcc) | Dissipation Current (mA) | Fibre Coupling Light Output (dBm) |
|---|---|---|---|---|
| Si | 660 | +3~+5V | Typ. 2.5 | Min –24 to Max –14.5 |

## Maximum Ratings (Ta = 25°C)

| Supply Voltage | Vcc | 0 ~ 5.5 V |
|---|---|---|
| Storage Temperature | Tstg | –30 to +80°C |
| Operating Temperature | Topr | –20 to +70°C |
| Soldering Temperature | Tsol | 260°C |
| Soldering Time | | ≤ 5 sec / 2 times |

## Electro-Optical Specification

Supply Voltage   Vcc   –0.5 to 7 V

| Operating voltage | Vcc | 2.7 to 5.5 V |
|---|---|---|
| Peak Detective Wavelength | λp | Typical 660 nm |
| Transfer Speed | | 0.1 to 16 Mbps (NRZ signal) |
| Receiving Distance | | 0.2 to 20 m (Using APF) |
| Pulse Width Distortion | Δtw | –20 to 20 ns (16Mbps NRZ Signal) |
| Input Light power | Pi | –24 to –14.5 dBm. See measuring method |
| Dissipation Current | Icc | Typical 2.5 to 10 max mA. See measuring method |
| High Level Output Voltage | $V_{OH}$ | 2.4v min |
| Low Level Output Voltage | $V_{OL}$ | 0.4v max |
| Rise Time | $t_r$ | 25ns Max. |
| Fall Time | $t_f$ | 25ns Max. |
| Low to High propagation delay time | tPLH | 100ns max |
| High to Low propagation delay time | tPLH | 100ns max |

| Jitter | Δtj | Typical 1.5ns to max 10ns |
|---|---|---|

## Reliability Tests

Sample test size: 22 pcs, no failures

| Item | Test Condition | Test Hours / Cycle |
|---|---|---|
| Soldering Heat | 260°C ± 5°C | 5 sec. / 2 times |
| High temp & Humidity storage | Ta=40°C, 90%RH | 500 |
| High storage temp. | Ta=80°C | 500 |
| Low storage temp. | Ta=–30°C | 500 |
| Temperature cycling | –30°C ~ 80°C (30min) (5min) (30min) | 20 |
| High temp operation life | Ta=60°C, Vcc=5V ON | 500 |
| Repeated operation | 500 times | Coupling force < 2kg 0.4kg < detaching force <2kg |
| Terminal strength (tension) | Weight: 500g, 30 sec each terminal | |
| Terminal strength (bending) | Weight: 500g, 2 times each terminal | |
| Mechanical Shock | Acceleration: 1000m/s2 Pulse width: 6ms, 3 times / X, Y, Z direction | |
| Vibration | Frequency range: 10~55Hz / sweep 1 min Overall amplitude: 1.5mm 2H / X, Y, Z direction | |

Icc (dissipation current): CURRENT ATTENUATE DIFFERENCE < 20%
$T_{PLH}$ (propagation L➜H delay time): DELAY TIME DIFFERENCE < 20%
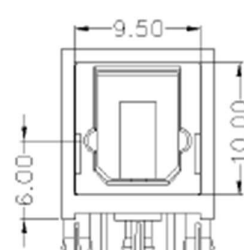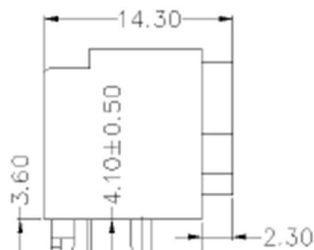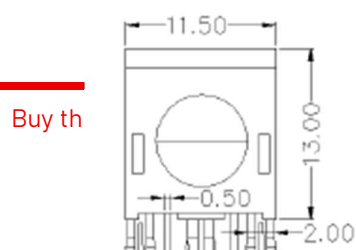$T_{PLH}$ (propagation H➜L delay time): DELAY TIME DIFFERENCE < 20%
Tr (rise time): TIME DIFFERENCE < 20%
Tf (fall time): TIME DIFFERENCE < 20%

## Approvals

| Conforms to | EIAJ CP–1201 digital audio interface standard |
|---|---|
| Standards Met | RoHS |

## Dimensions

**Shutter Black**

**Notes:** 1.All dimensions are in millimeters.
2.General Tolerance:±0.2mm

**Pin Function**
1. Vout    2.GND    3.Vcc

## PCB Layout



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9.2
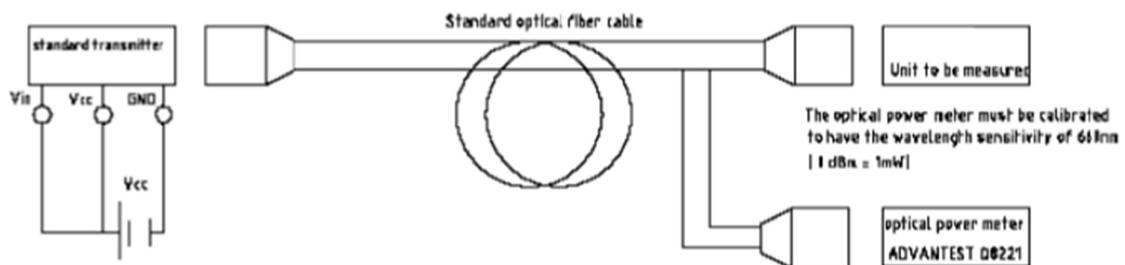
4.6

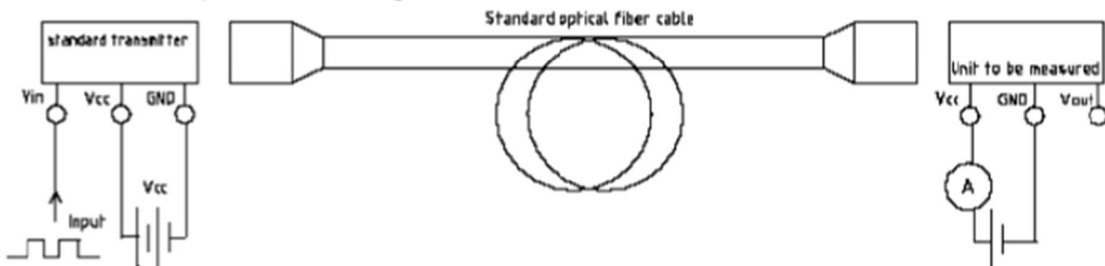$3-\emptyset0.8$

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2.54 2.54
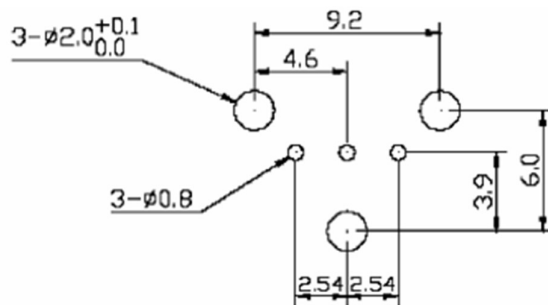
**Notes:**
1. Unit: mm
2. Unspecified tolerance: ±0.3mm
3. Substrate Thickness:1.6mm

## Measuring Method

*1    Maximum receiver input optical power/Minimum receiver input optical power



Standard optical fiber cable

standard transmitter

Vin   Vcc   GND

Vcc

Unit to be measured

The optical power meter must be calibrated to have the wavelength sensitivity of 661nm [1 dBm = 1mW]

optical power meter
ADVANTEST Q8221

*2    Current dissipation measuring method



Standard optical fiber cable

standard transmitter

Vin   Vcc   GND

Vcc

Input

Unit to be measured

Vcc   GND   Vout

A

*3    Pulse response and jitter measuring method

## Precautions for Using Method

1. Connect a by-pass capacitor (0.1uF) close to the optical jack within 7 mm of the unit lead frame.

2. Connect a by-pass capacitor(30pF) between GND and Vout avoid loading effect.

3. Take proper electrostatic-discharge (ESD) precautions while handling these devices. These devices are sensitive to ESD.