

# Active Optical Connector **V Series**

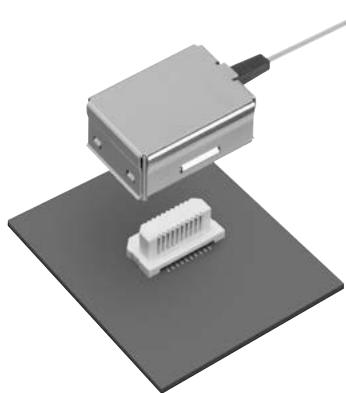
1 channel-Bi-direction/2 channel-Uni-direction

Product Catalog

**IN Your  
Future**

# V Series 1 channel-Bi-direction/2 channel-Uni-direction

## Easy high speed optical transfer inside devices



### FEATURES

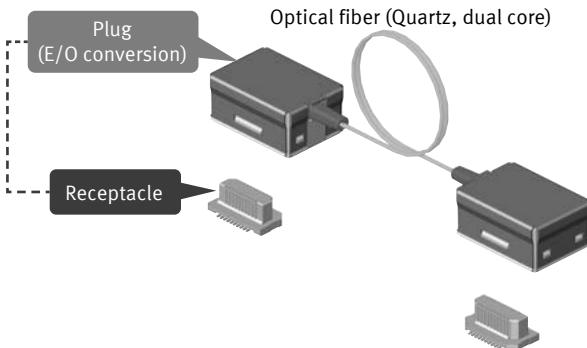
1. Plug is equipped with electrical / optical conversion function.
2. Noise reduction of high speed signal and electrical isolation easily achieved.
3. High speed and wide data rate transmission possible
4. Lineup includes 1 channel-Bi-direction and 2 channel-Uni-direction
  - 1 channel-Bi-direction: 20 Mbps to Max. 8 Gbps
  - 2 channel-Uni-direction: 20 Mbps to Max. 16 Gbps (20 Mbps to Max. 8 Gbps/ch)

### APPLICATIONS

1. Measuring equipment, Image processing instrument, Industrial robots, Printer, Medical equipment, etc. and other high speed transmission, noise reduction and electrical isolation applications

### DETAILED FEATURES

Plug is equipped with electrical/optical conversion function.

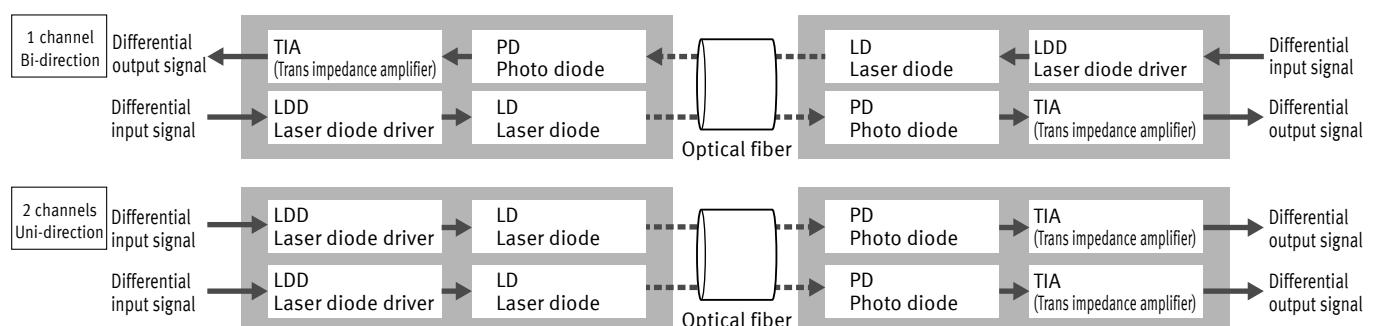


• 1 channel-Bi-direction: Max. 8 Gbps transmission  
Being able to reverse the dual core optical fiber transfer direction makes it ideal for such applications as mutual high speed transfer between connected PC boards.

• 2 channel-Uni-direction: Max. 16 Gbps transmission (Max. 8 Gbps/ch)  
Being able to use the dual core optical fiber unidirectionally makes it ideal for high capacity (max. 16 Gbps) transfer applications.

The differential input signal is converted to an optical signal by the Laser Diode Driver (LDD) and Laser Diode (LD) in the plug.

The optical signal is transmitted through the optical fiber and reproduced as differential output signal by the Photo Diode (PD) and Trans Impedance Amplifier (TIA).



# Active Optical Connector V Series (1 channel-Bi-direction/2 channel-Uni-direction)

## PRODUCT TYPES (1 channel-Bi-direction)

### Integrated cable and plug

| Transmission rate    | Transmission specifications | Cable length | Part No.     | Packing quantity |
|----------------------|-----------------------------|--------------|--------------|------------------|
| 20 Mbps to 8 Gbps/ch | 1 channel-Bi-direction      | 50 mm        | AYG4V10585M1 | 10 pcs.          |
|                      |                             | 500 mm       | AYG4V15085M1 |                  |
|                      |                             | 1000 mm      | AYG4V1A085M1 |                  |
|                      |                             | 50 mm        | AYG4V10585M3 | 100 pcs.         |
|                      |                             | 500 mm       | AYG4V15085M3 |                  |
|                      |                             | 1000 mm      | AYG4V1A085M3 |                  |

Note: Please contact our sales representative to your request, such as different fiber length, adding optical connector, etc.

## Receptacle (both 1 channel-Bi-direction and 2 channel-Uni-direction)

| Product type | Part No.     | Packing quantity |
|--------------|--------------|------------------|
| Receptacle   | AXK6S20447M1 | 20 pcs.          |
|              | AXK6S20447M3 | 200 pcs. (reel)  |

## SPECIFICATIONS (1 channel-Bi-direction)

### Rated specifications (per channel)

| Item                                  | Min. | Typical | Max. | Unit | Condition              |
|---------------------------------------|------|---------|------|------|------------------------|
| Supply voltage                        | 3.2  | 3.3     | 3.4  | V    | —                      |
| Power consumption                     | —    | —       | 230  | mW   | Bi-direction, 1channel |
| Transmission rate                     | 0.02 | —       | 8    | Gbps | 8b/10b coding          |
| Input/output characteristic impedance | 80   | 100     | 125  | Ω    | —                      |
| Differential input voltage            | 400  | —       | 1600 | mVpp | peak-to-peak           |
| Input common mode voltage             | 150  | —       | 340  | mV   | *1                     |
| Input total jitter                    | —    | —       | 0.24 | UI   | *2                     |
| Input rise-time                       | —    | —       | 0.30 | UI   | 20 to 80%*2, *3        |
| Input fall-time                       | —    | —       | 0.30 | UI   | 20 to 80%*2, *3        |
| Differential output voltage           | 300  | 440     | 550  | mVpp | peak-to-peak*2         |
| Output common mode voltage            | 150  | 250     | 275  | mV   | *2                     |
| Output rise-time                      | —    | —       | 0.50 | UI   | 20 to 80%*2            |
| Output fall-time                      | —    | —       | 0.50 | UI   | 20 to 80%*2            |
| Output total jitter                   | —    | —       | 0.60 | UI   | Dj + Rjpp*2            |

\*1: When performing AC coupling, the input common mode voltage is 0 to 1.8 V.

\*2: Input data pattern is PRBS 2<sup>7</sup>-1. Rjpp is equivalent to BER 10<sup>-12</sup>.

\*3: When the transmission rate is under 1.5 Gbps, the time is up to 200 ps.

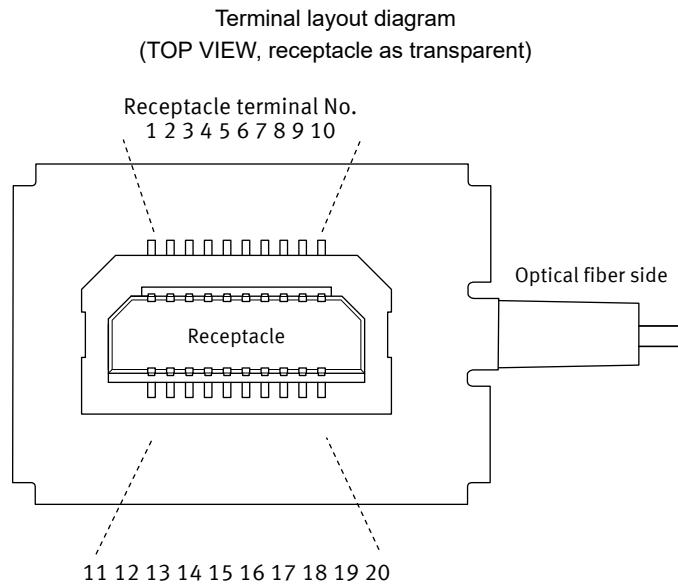
### Use conditions

| Item                                 | Performance  | Remarks  |
|--------------------------------------|--|--|
| Operating ambient temperature        | 0 to +70°C   | No icing or condensation.  |
| Storage temperature                  | -20 to +50°C (packaged form)<br>-20 to +85°C (product only)              | No icing or condensation.  |
| Electrical static discharge          | ±2 kV  | Applied 3 times on the external shell<br>C = 100 pF, R = 1.5 kΩ<br>C = 150 pF, R = 330 Ω |
| Immunity                             | Conformed to IEC61000-6-2 standard                                       | —  |
| Electromagnetic interference         | Conformed to IEC61000-6-4 standard                                       | —  |
| Optical fiber minimum bending radius | 15 mm  | —  |
| Maximum plug pressing force          | Max. 20 N  | —  |
| Insertion and removal life           | 50 times   | Repeated insertion and removal cycles of<br>Max. 200 times/hour                          |
| Laser Class                          | Leser Class 1<br>Emission peak wavelength: 850 nm<br>Max. output: 2.2 mW | IEC 60825-1 Ed. 2: 2007<br>IEC 60825-1 Ed. 3: 2014                                       |

## Materials specifications

| Component name                    | Materials                              | Specifications and Remarks           |
|-----------------------------------|--|--------------------------------------|
| Shell                             | Copper alloy                           | Nickel plating                       |
| Bushing                           | Elastomer                              | Black                                |
| Optical fiber                     | Silica, UV-cured resin                 | Cross section: 0.4 × 0.6 mm, 2 cores |
| Connector                         | LCP resin, copper alloy                | Terminal (Au-plating on Ni-base)     |
| Photoelectric conversion PC board | Glass-fibered epoxy, epoxy resin, etc. | —                                    |
| IC (LDD, TIA)                     | CMOS                                   | —                                    |
| Laser diode                       | GaAs                                   | —                                    |
| Photodiode                        | GaAs                                   | —                                    |

## TERMINAL LAYOUT 1 channel-Bi-direction



| No. | Name                  |
|-----|-----------------------|
| 1   | Monitor               |
| 2   | GND                   |
| 3   | Differential output - |
| 4   | Differential output + |
| 5   | GND                   |
| 6   | Open                  |
| 7   | Open                  |
| 8   | Power Supply          |
| 9   | Power Supply          |
| 10  | GND                   |
| 11  | Open                  |
| 12  | GND                   |
| 13  | Differential input -  |
| 14  | Differential input +  |
| 15  | GND                   |
| 16  | GND                   |
| 17  | Power Supply          |
| 18  | Power Supply          |
| 19  | Power Supply          |
| 20  | GND                   |

# Active Optical Connector V Series (1 channel-Bi-direction/2 channel-Uni-direction)

## PRODUCT TYPES (2 channel-Uni-direction)

### Integrated cable and plug

| Transmission rate    | Transmission specifications | Cable length | Part No.     | Packing quantity |
|----------------------|-----------------------------|--------------|--------------|------------------|
| 20 Mbps to 8 Gbps/ch | 2 channel-Uni-direction     | 50 mm        | AYG5V10585M1 | 10 pcs.          |
|                      |                             | 500 mm       | AYG5V15085M1 |                  |
|                      |                             | 1000 mm      | AYG5V1A085M1 |                  |
|                      |                             | 50 mm        | AYG5V10585M3 | 100 pcs.         |
|                      |                             | 500 mm       | AYG5V15085M3 |                  |
|                      |                             | 1000 mm      | AYG5V1A085M3 |                  |

Note: Please contact our sales representative to your request, such as different fiber length, adding optical connector, etc.

## Receptacle (both 1 channel-Bi-direction and 2 channel-Uni-direction)

| Product type | Part No.     | Packing quantity |
|--------------|--------------|------------------|
| Receptacle   | AXK6S20447M1 | 20 pcs.          |
|              | AXK6S20447M3 | 200 pcs. (reel)  |

## SPECIFICATIONS (2 channel-Uni-direction)

### Rated specifications (per channel)

| Item                                  | Min. | Typical | Max. | Unit | Condition                 |
|---------------------------------------|------|---------|------|------|---------------------------|
| Supply voltage                        | 3.2  | 3.3     | 3.4  | V    | —                         |
| Power consumption                     | —    | —       | 230  | mW   | Uni-direction, 2 channels |
| Transmission rate                     | 0.02 | —       | 8    | Gbps | 8b/10b coding             |
| Input/output characteristic impedance | 80   | 100     | 125  | Ω    | —                         |
| Differential input voltage            | 400  | —       | 1600 | mVpp | peak-to-peak              |
| Input common mode voltage             | 150  | —       | 340  | mV   | *1                        |
| Input total jitter                    | —    | —       | 0.24 | UI   | *2                        |
| Input rise-time                       | —    | —       | 0.30 | UI   | 20 to 80%*2, *3           |
| Input fall-time                       | —    | —       | 0.30 | UI   | 20 to 80%*2, *3           |
| Differential output voltage           | 300  | 440     | 550  | mVpp | peak-to-peak*2            |
| Output common mode voltage            | 150  | 250     | 275  | mV   | *2                        |
| Output rise-time                      | —    | —       | 0.50 | UI   | 20 to 80%*2               |
| Output fall-time                      | —    | —       | 0.50 | UI   | 20 to 80%*2               |
| Output total jitter                   | —    | —       | 0.60 | UI   | Dj + Rjpp*2               |

\*1: When performing AC coupling, the input common mode voltage is 0 to 1.8 V.

\*2: Input data pattern is PRBS 2<sup>7</sup>-1. Rjpp is equivalent to BER 10<sup>-12</sup>.

\*3: When the transmission rate is under 1.5 Gbps, the time is up to 200 ps.

### Use conditions

| Item                                 | Performance  | Remarks  |
|--------------------------------------|--|--|
| Operating ambient temperature        | 0 to +70°C   | No icing or condensation.  |
| Storage temperature                  | -20 to +50°C (packaged form)<br>-20 to +85°C (product only)              | No icing or condensation.  |
| Electrical static discharge          | ±2 kV  | Applied 3 times on the external shell<br>C = 100 pF, R = 1.5 kΩ<br>C = 150 pF, R = 330 Ω |
| Immunity                             | Conformed to IEC61000-6-2 standard                                       | —  |
| Electromagnetic interference         | Conformed to IEC61000-6-4 standard                                       | —  |
| Optical fiber minimum bending radius | 15 mm  | —  |
| Maximum plug pressing force          | Max. 20 N  | —  |
| Insertion and removal life           | 50 times   | Repeated insertion and removal cycles of<br>Max. 200 times/hour                          |
| Laser Class                          | Leser Class 1<br>Emission peak wavelength: 850 nm<br>Max. output: 2.2 mW | IEC 60825-1 Ed. 2: 2007<br>IEC 60825-1 Ed. 3: 2014                                       |

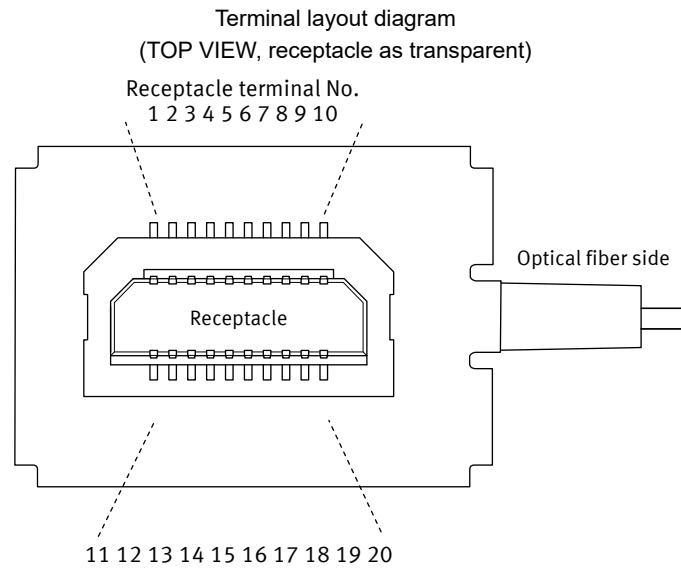
# Active Optical Connector V Series (1 channel-Bi-direction/2 channel-Uni-direction)

## Materials specifications

| Component name                    | Materials                              | Specifications and Remarks           |
|-----------------------------------|--|--------------------------------------|
| Shell                             | Copper alloy                           | Nickel plating                       |
| Bushing                           | Elastomer                              | Black                                |
| Optical fiber                     | Silica, UV-cured resin                 | Cross section: 0.4 × 0.6 mm, 2 cores |
| Connector                         | LCP resin, copper alloy                | Terminal (Au-plating on Ni-base)     |
| Photoelectric conversion PC board | Glass-fibered epoxy, epoxy resin, etc. | —                                    |
| IC (LDD, TIA)                     | CMOS                                   | —                                    |
| Laser diode                       | GaAs                                   | —                                    |
| Photodiode                        | GaAs                                   | —                                    |

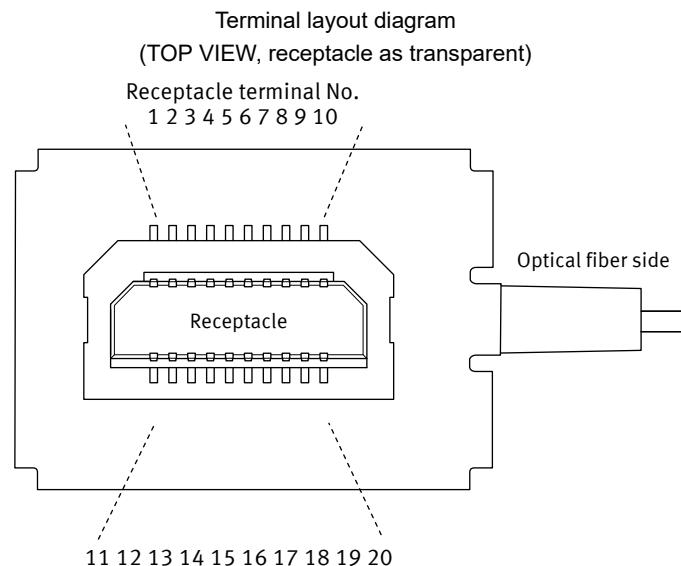
## TERMINAL LAYOUT 2 channel-Uni-direction

### Transmitter side



| No. | Name                     |
|-----|--------------------------|
| 1   | Open                     |
| 2   | GND                      |
| 3   | ch1 Differential input + |
| 4   | ch1 Differential input - |
| 5   | GND                      |
| 6   | Open                     |
| 7   | Power Supply             |
| 8   | Power Supply             |
| 9   | Open                     |
| 10  | GND                      |
| 11  | Open                     |
| 12  | GND                      |
| 13  | ch2 Differential input - |
| 14  | ch2 Differential input + |
| 15  | GND                      |
| 16  | Open                     |
| 17  | Power Supply             |
| 18  | Power Supply             |
| 19  | Open                     |
| 20  | GND                      |

### Receiver side



| No. | Name                      |
|-----|---------------------------|
| 1   | Open                      |
| 2   | GND                       |
| 3   | ch2 Differential output - |
| 4   | ch2 Differential output + |
| 5   | GND                       |
| 6   | Monitor (ch2)             |
| 7   | Open                      |
| 8   | Open                      |
| 9   | Power Supply              |
| 10  | GND                       |
| 11  | Open                      |
| 12  | GND                       |
| 13  | ch1 Differential output + |
| 14  | ch1 Differential output - |
| 15  | GND                       |
| 16  | Monitor (ch1)             |
| 17  | Open                      |
| 18  | Open                      |
| 19  | Power Supply              |
| 20  | GND                       |

# Active Optical Connector V Series (1 channel-Bi-direction/2 channel-Uni-direction)

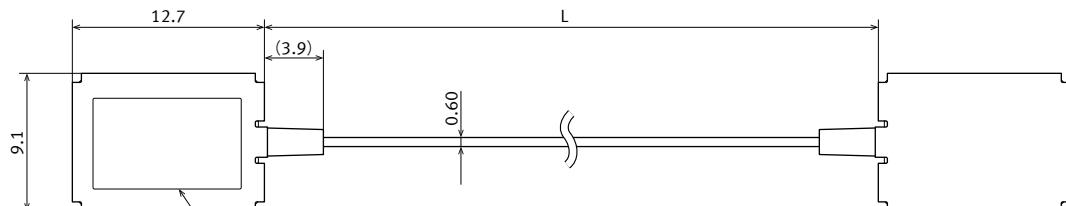
## DIMENSIONS

**CAD** The CAD data of the products with a "CAD" mark can be downloaded from our Website.

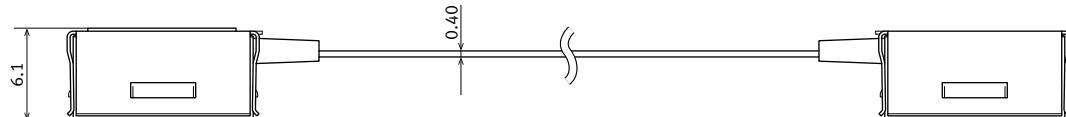
Unit: mm

### Integrated cable and plug (both 1 channel-Bi-direction and 2 channel-Uni-direction)

#### CAD



Label. NOTES: 1 channel-Bi-direction : The label is attached to only one plug.  
2 channel-Uni-direction: The labels are attached to a plug on both side



General tolerance:  $\pm 0.3$

### 1 channel-Bi-direction

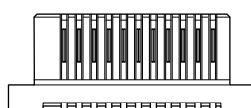
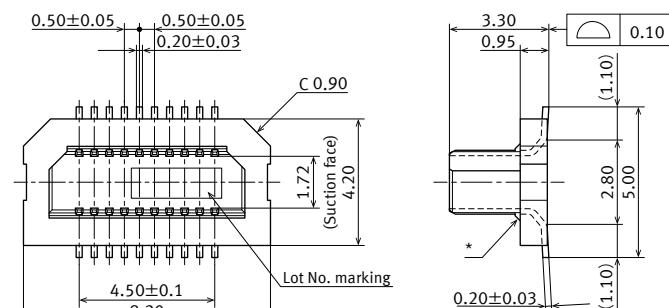
| L: Cable length (mm) | Tolerance (mm) |
|----------------------|----------------|
| 50                   | +10<br>-0      |
| 500                  | +50<br>-0      |
| 1000                 | +100<br>-0     |

### 2 channel-Uni-direction

| L: Cable length (mm) | Tolerance (mm) |
|----------------------|----------------|
| 50                   | +10<br>-0      |
| 500                  | +50<br>-0      |
| 1000                 | +100<br>-0     |

### Receptacle (both 1 channel-Bi-direction and 2 channel-Uni-direction)

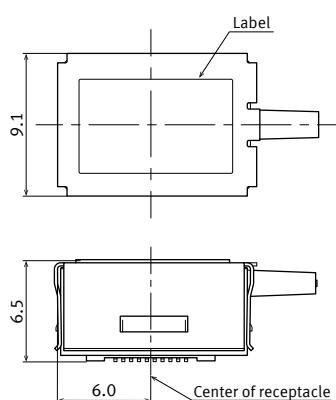
#### CAD



General tolerance:  $\pm 0.2$

\* The terminal close to the portion to be soldered have nickel barriers (except nickel portions).

### Plug and receptacle are mated (both 1 channel-Bi-direction and 2 channel-Uni-direction)



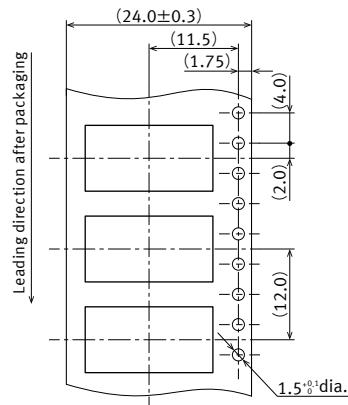
## EMBORESSED TAPE DIMENSIONS

Unit: mm

### Receptacle: Embossed tape packaging

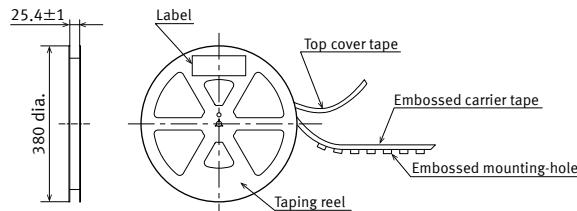
#### Specifications for taping

In accordance with JIS C 0806: 1990. However, not applied to the mounting-hole pitch of some connectors.

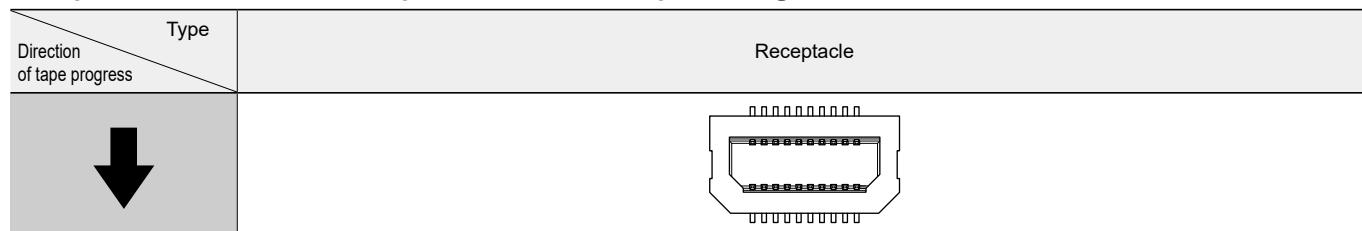


#### Specifications for the plastic reel

In accordance with EIAJ ET-7200B.



### Receptacle orientation with respect to embossed tape feeding direction

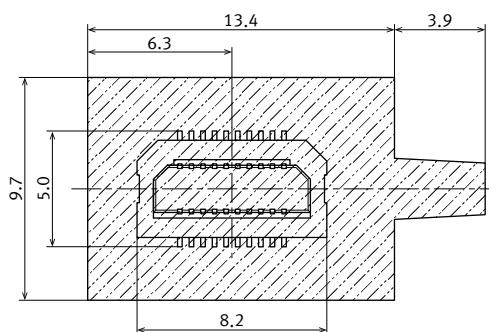


## NOTES

Unit: mm

#### Mounting layout (Component prohibited area)

The shaded area cannot be used for the placement of other components since it is used by the active optical connector. The PC board in the shaded area should be covered with solder resist except for the receptacle's mounting pad.



## Design of PC board patterns

Conduct the recommended foot pattern design, in order to preserve the mechanical strength of terminal solder areas.

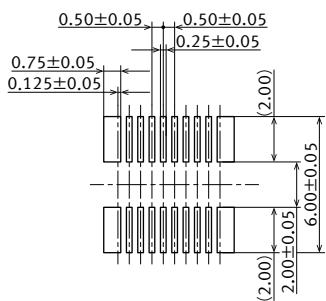
## Recommended PC board and metal mask patterns

Connectors are mounted with high pitch density, intervals of 0.35 mm, 0.4 mm or 0.5 mm. In order to reduce solder and flux rise, solder bridges and other issues make sure the proper levels of solder is used.

The figures are recommended patterns. Please use them as a reference.

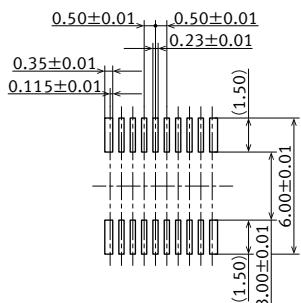
### Recommended PC board pattern

(TOP VIEW)



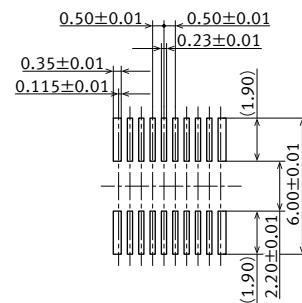
### Recommended metal mask pattern

Metal mask thickness: When 150  $\mu\text{m}$   
(Opening area ratio: 69%)



### Recommended metal mask pattern

Metal mask thickness: When 120  $\mu\text{m}$   
(Opening area ratio: 87%)



# Notes on Using Active Optical Connector V Series

## About safety remarks

Observe the following safety remarks to prevent accidents and injuries.

- Do not use these connectors beyond the specification sheets. The usage outside of specified rated current, dielectric strength, and environmental conditions and so on may cause circuitry damage via abnormal heating, smoke, and fire, or eye or skin injuries by laser beam.
- In order to avoid accidents, your thorough specification review is appreciated. Please contact our sales representative if your usage is out of the specifications. Otherwise, Panasonic Industry Co., Ltd. cannot guarantee the quality and reliability.
- We are doing our best to constantly improve the quality and reliability of our products. However, some electric items/components do in fact fail despite our efforts. The durability of products also varies depending on service environments and conditions. Please check your product under actual service conditions before use. If you continue to use a product in a poor condition, items with deteriorated

insulation performance may generate abnormal heat or smoke or even ignite. The product's failure or end of service life may cause accidents involving risks to human health, fire, or danger to the public at large. We advise you to apply safety measures and regular maintenance work, such as the use of redundant design, fireproofing, and malfunction-preventing design, to rule out such accidents.

- Caution at the time of a breakage of optical fiber  
When the optical fiber breaks, immediately shut off the power. This product uses a laser diode (class 1) of non-visible light with oscillation wavelength 850 nm. Do not look into the tip of an optical fiber. The laser beam does not irradiate outside in normal operation, but a breakage of the optical fiber may cause irradiation outside. When the optical fiber breaks, be very careful not to injury at the fiber tip.

## Cautions when using the product

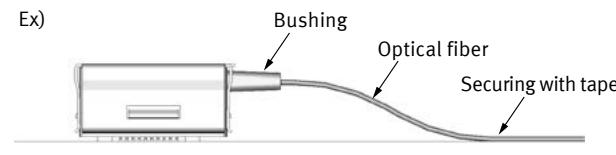
### ■ Cautions about the operating and storage environments

Please use the product in accordance with the conditions described in these specifications.

The product quality cannot be warranted if the product fails because it is used outside the conditions in these specifications.

- Product failure due to condensation cannot be warranted.
- Use caution for avoiding dust.

- This product has a structure requiring an insertion force for mating, but the mating may come off when an external force is applied to the plug, impact is applied by dropping, or vibration is applied in equipment. Sufficient caution should be used with the equipment to avoid such incidents.
- The product cannot be used in a movable parts while the optical fiber is bent. Such use may cause deformation of the receptacle or breakage of the optical fiber.
- In order to avoid a load on the plug and receptacle applied by the tensile force of the optical fiber, a redundant design is required with respect to the optical fiber length.
- Use caution for wiring the optical fiber to avoid getting entangled or twisting. Also, use adhesive tape for securing the optical fiber for preventing excessive stress caused by vibration and impact.



## Plug

### ■ Direction of mating and insertion

#### 1 channel-Bi-direction

Mating of the plug and receptacle requires orientation. Align the receptacle shape in the direction of the optical fiber of plug.

#### 2-channel-Uni-direction

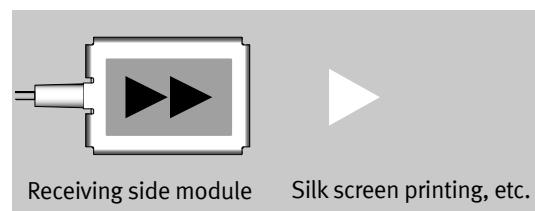
The plugs on each end of the optical fiber cable are different (transmission side and receiving side).

The cable will not work if inserted incorrectly; therefore, please verify the ends prior to installation.

The receiving end plug has an arrow printed on it for the purpose of verification.

Please implement a measure to avoid incorrect insertion such as by printing a similar mark on the PC board.

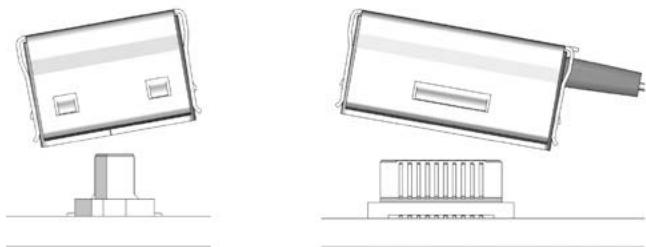
#### Example of avoid incorrect insertion



## ■ Insertion

Because this product has been designed with a thin mating structure between the plug and receptacle for compact-sizing purposes, excessive tilting during insertion or removal leads to product fracture and separation of the solder section of terminals.

For avoiding breakage of the mating parts, confirm the alignment before mating.

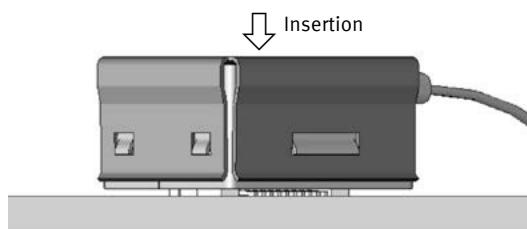


## ■ Mating of plug

Make sure the plug is securely inserted into the receptacle.

After mating, a gap remains between the PC board and plug.

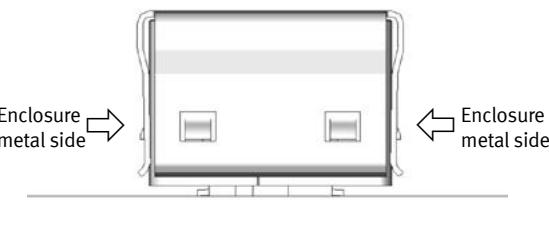
Avoid applying more pressure, than 20 N.



## ■ Plug removal

For the removal operation, hold both sides of the metal enclosure and lift the plug upward.

Do not pull the optical fiber and bushing.

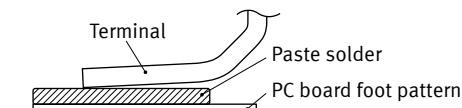


## Receptacle

### ■ Regarding soldering

#### Reflow soldering

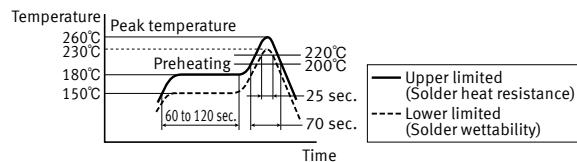
- Measure the recommended profile temperature for reflow soldering by placing a sensor on the PC board near the connector surface or terminals. (Please refer to the specification for detail because the temperature setting differs by products.)
- As for cream solder printing, screen printing is recommended.
- When setting the screen opening area and PC board foot pattern area, refer the recommended PC board pattern and window size of metal mask on the specification sheet, and make sure that the size of board pattern and metal mask at the base of the terminals are not increased.
- Please pay attentions not to provide too much solder. It makes miss mating because of interference at soldering portion when mating.



- When mounting on both sides of the PC board and the connector is mounting on the underside, use adhesives or other means to ensure the connector is properly fixed to the PC board.  
(Double reflow soldering on the same side is possible.)
- The condition of solder or flux rise and wettability varies depending on the type of solder and flux. Solder and flux characteristics should be taken into consideration and also set the reflow temperature and oxygen level.
- Do not use resin-containing solder. Otherwise, the contacts might be firmly fixed.

#### Soldering conditions

Please use the reflow temperature profile conditions recommended below for reflow soldering. Please contact our sales representative before using a temperature profile other than that described below (e.g. lead-free solder)



- The temperature profiles given in this catalog are values measured when using the connector on a resin-based PC board. When performed reflow soldering on a metal board (iron, aluminum, etc.) or a metal table to mount on a FPC, make sure there is no deformation or discoloration of the connector before mounting.
- Please contact our sales representative when using a screen-printing thickness other than that recommended.

# Active Optical Connector V Series (1 channel-Bi-direction/2 channel-Uni-direction)

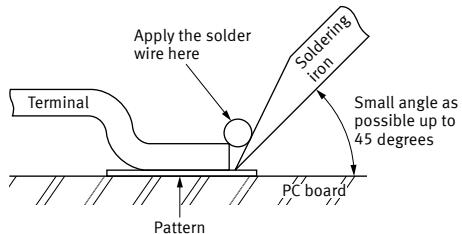
## Manual soldering

- Set the soldering iron so that the tip temperature is less than that given in the table below.

Table A

| Product name                     | Soldering iron temperature                 |
|----------------------------------|--|
| SMD type connectors all products | 300°C within 5 sec.<br>350°C within 3 sec. |

- Do not allow flux to spread onto the connector leads or PC board. This may lead to flux rising up to the connector inside.
- Touch the soldering iron to the foot pattern. After the foot pattern and connector terminal are heated, apply the solder wire so it melts at the end of the connector terminals.



- Be aware that soldering while applying a load on the connector terminals may cause improper operation of the connector.
- Thoroughly clean the soldering iron.
- Flux from the solder wire may get on the contact surfaces during soldering operations. After soldering, carefully check the contact surfaces and clean off any solder before use.
- These connector is low profile type. If too much solder is supplied for hand soldering, it makes miss mating because of interference at soldering portion. Please pay attentions.

## Solder reworking

- Finish reworking in one operation.
- In case of soldering rework of bridges. Do not use supplementary solder flux. Doing so may cause contact problems by flux.
- Keep the soldering iron tip temperature below the temperature given in Table A.

## Handling single components

- Make sure not to drop or allow parts to fall from work bench.
- Excessive force applied to the terminals could cause warping, come out, or weaken the adhesive strength of the solder. Handle with care.

- Do not insert or remove the connector when it is not soldered. Forcibly applied external pressure on the terminals can weaken the adherence of the terminals to the molded part or cause the terminals to lose their evenness.

## Cleaning flux from PC board

There is no need to clean this product. If cleaning it, pay attention to the following points to prevent the negative effect to the product.

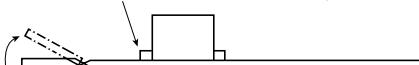
- Keep the cleaning solvent clean and prevent the connector contacts from contamination.
- Some cleaning solvents are strong and they may dissolve the molded part and characters, so pure water passed liquid solvent is recommended.

## Handling the PC board

### Handling the PC board after mounting the connector

When cutting or bending the PC board after mounting the connector, be careful that the soldered sections are subjected to excessive force.

The soldered areas should not be subjected to force.



## Storage of connectors

- To prevent problems from voids or air pockets due to heat of reflow soldering, avoid storing the connectors in areas of high humidity.
- Depending on the connector type, the color of the connector may vary from connector to connector depending on when it is produced. Some connectors may change color slightly if subjected to ultraviolet rays during storage. This is normal and will not affect the operation of the connector.

- When storing the connectors with the PC boards assembled and components already set, be careful not to stack them up so the connectors are subjected to excessive forces.
- Avoid storing the connectors in locations with excessive dust. The dust may accumulate and cause improper connections at the contact surfaces.

## Other Notes

- Do not remove or insert the electrified connector (in the state of carrying current or applying voltage).
- Dropping of the products or rough mishandling may bend or damage the terminals and possibly hinder proper reflow soldering.
- Before soldering, try not to insert or remove the connector more than absolutely necessary.
- When coating the PC board after soldering the connector to prevent the deterioration of insulation, perform the coating in such a way so that the coating does not get on the connector.

- There may be variations in the colors of products from different production lots. This is normal.
- The connectors are not meant to be used for switching.
- Product failures due to condensation are not covered by warranty.

Please refer to "the latest product specifications"

when designing your product.

• Requests to customers:

<https://industrial.panasonic.com/ac/e/salespolicies/>

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