

## 10G SFP+ Copper Transceiver

PN: OP3901

### Product Specification

#### Features:

- ✧ Up to 10Gb/s bi-directional data links
- ✧ Hot-pluggable SFP+ form factor
- ✧ Fully metallic enclosure for low EMI
- ✧ Low power dissipation
- ✧ Compact RJ-45 connector assembly
- ✧ Access to physical layer IC via 2-wire serial bus
- ✧ Supports Links up to 30m using Cat 6a/7 Cable
- ✧ RoHS Compliant
- ✧ Operating case temperature: 0°C to 70°C

#### Applications:

- ✧ 10 Gigabit Ethernet over Cat 6a/7 cable
- ✧ 5GBASE-T over Cat 5e cable
- ✧ 2.5GBASE-T over Cat 5e cable
- ✧ 1000M Ethernet over Cat 5e cable
- ✧ 100M Ethernet over Cat 5e cable
- ✧ 10M Ethernet over Cat 5e cable

#### Description:

OP3901 Copper Small Form Pluggable (SFP) transceivers are high performance, cost effective module compliant with the 10G Ethernet and 10GBASE-T standards as specified in IEEE 802.3az, which supporting 10Gbps data- rate up to 30 meters reach over unshielded twisted-pair category 6a/7 cables. The module provides standard serial ID information compliant with SFP+ MSA, which can be accessed with address of A0h via the 2wire serial EEPROM protocol.

● **Cable Length**

| Line Port  | Cable   | Reach | Host Port |
|------------|---------|-------|-----------|
| 10Gbase-T  | CAT6A/7 | 30m   | 10GBase-R |
| 5Gbase-T   | CAT5E   | 50m   | 10GBase-R |
| 2.5Gbase-T | CAT5E   | 50m   | 10GBase-R |
| 1000base-T | CAT5E   | 100m  | 10GBase-R |
| 100base-Tx | CAT5E   | 100m  | 10GBase-R |
| 10base-Tx  | CAT5E   | 100m  | 10GBase-R |

● **+3.3V Volt Electrical Power Interface**

The OP3901 has an input voltage range of +3.3V +/- 5%.

**Table 1. +3.3V Volt electrical power interface**

| +3.3V volt Electrical Power Interface |        |      |     |      |       |   |
|---------------------------------------|--------|------|-----|------|-------|---|
| Parameter                             | Symbol | Min  | Typ | Max  | Units | Notes/Conditions  |
| Supply Current                        | Is     |      |     | 900  | mA    | 3.0W max power over full range of voltage and temperature. See caution note below |
| Input Voltage                         | Vcc    | 3.13 | 3.3 | 3.47 | V     | Referenced to GND   |
| Maximum Voltage                       | Vmax   |      |     | 4    | V     |   |
| Surge Current                         | Isurge |      |     | 30   | mA    | Hot plug above steady state current. See caution note below                       |

Caution: Power consumption and surge current are higher than the specified values in the SFP MSA.

● **General Specifications**

**Table 2. General specifications**

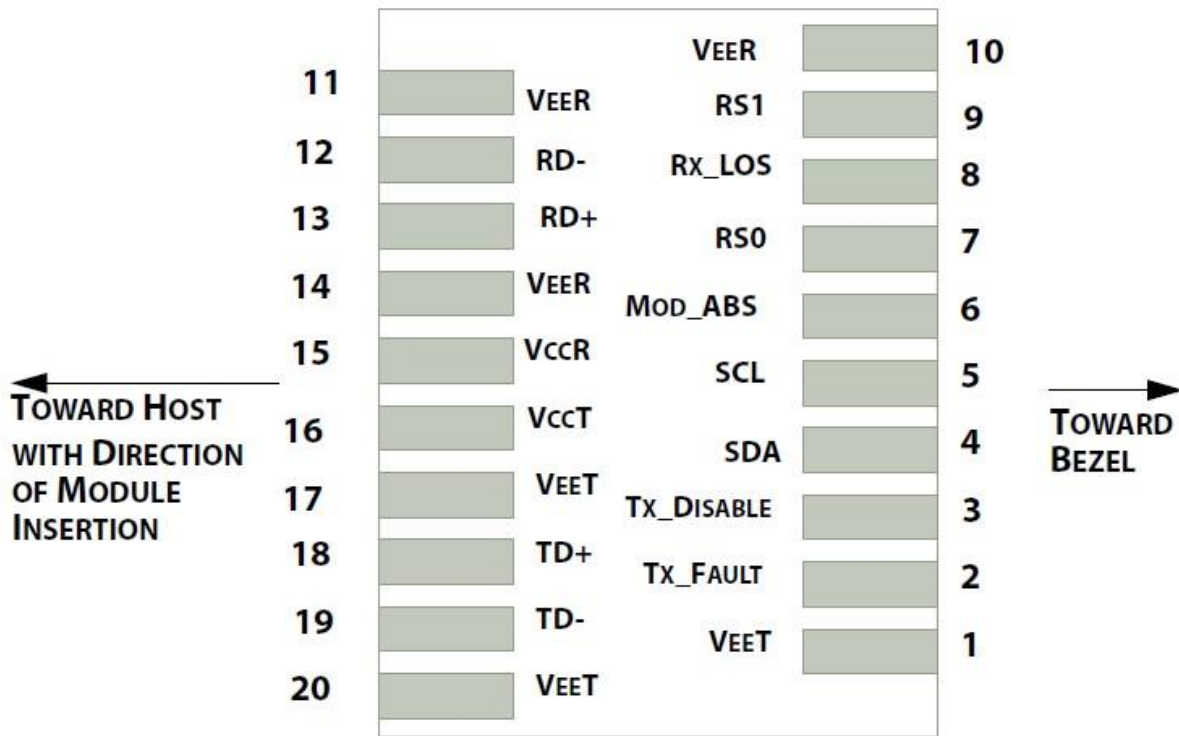
| General      |        |     |      |     |        |                               |
|--------------|--------|-----|------|-----|--------|-------------------------------|
| Parameter    | Symbol | Min | Typ  | Max | Units  | Notes/Conditions              |
| Data Rate    | BR     |     | 10.3 |     | Gb/sec | IEEE 802.3 compatible.        |
| Cable Length | L      |     |      | 30  | m      | Category 6a/7 UTP. BER <10-12 |

● **Environmental Specifications**

**Table 3. Environmental specifications**

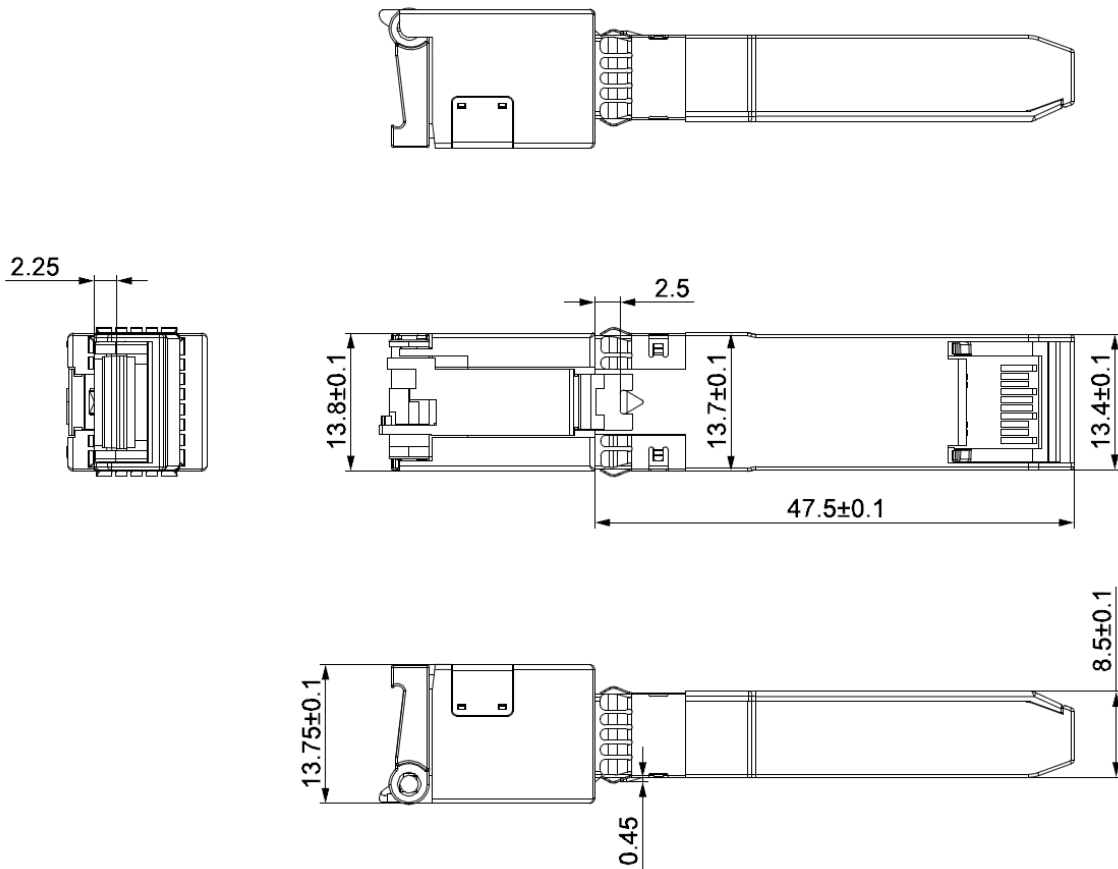
| Environmental Specifications |        |     |     |     |       |                     |
|------------------------------|--------|-----|-----|-----|-------|---------------------|
| Parameter                    | Symbol | Min | Typ | Max | Units | Notes/Conditions    |
| Operating Temperature        | Top    | 0   |     | 70  | °C    | Case temperature    |
| Storage Temperature          | Tsto   | -40 |     | 85  | °C    | Ambient temperature |

● **Pin Descriptions**



| Pin | Signal Name      | Description                               | Plug Seq. | Notes         |
|-----|------------------|---|-----------|---------------|
| 1   | V <sub>EET</sub> | Transmitter Ground                        | 1         |               |
| 2   | TX FAULT         | Transmitter Fault Indication              | 3         | Not supported |
| 3   | TX DISABLE       | Transmitter Disable                       | 3         |               |
| 4   | SDA              | SDA Serial Data Signal                    | 3         |               |
| 5   | SCL              | SCL Serial Clock Signal                   | 3         |               |
| 6   | MOD_ABS          | Module Absent. Grounded within the module | 3         |               |
| 7   | RS0              | Not Connected                             | 3         |               |
| 8   | LOS              | Loss of Signal                            | 3         |               |
| 9   | V <sub>EER</sub> | Receiver ground                           | 1         |               |
| 10  | V <sub>EER</sub> | Receiver ground                           | 1         |               |
| 11  | V <sub>EER</sub> | Receiver ground                           | 1         |               |
| 12  | RD-              | Inv. Received Data Out                    | 3         |               |
| 13  | RD+              | Received Data Out                         | 3         |               |
| 14  | V <sub>EER</sub> | Receiver ground                           | 1         |               |
| 15  | V <sub>CCR</sub> | Receiver Power Supply                     | 2         |               |
| 16  | V <sub>cCT</sub> | Transmitter Power Supply                  | 2         |               |
| 17  | V <sub>EET</sub> | Transmitter Ground                        | 1         |               |
| 18  | TD+              | Transmit Data In                          | 3         |               |
| 19  | TD-              | Inv. Transmit Data In                     | 3         |               |
| 20  | V <sub>EET</sub> | Transmitter Ground                        | 1         |               |

● **Mechanical Specifications(Unit:mm)**



● **Document Revision**

| Version No. | Date       | Reviser | Description    |
|-------------|------------|---------|----------------|
| V1.0        | 2023-10-09 | Kevin   | Initial issued |
|             |            |         |                |
|             |            |         |                |

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