


---

## 100G QSFP28 to 4X 25G SFP28 breakout Active Optical Cables

P/N: OTQ-4X25G-AXX-XXXX

### Features

- ◆ Electrical interface compliant to SFF-8436 and SFF-8431
- ◆ Hot Pluggable
- ◆ 850nm VCSEL laser and PIN photo-detector
- ◆ Maximum link length of 70m on OM3 MMF and 100m on OM4 MMF
- ◆ Operating case temperature: 0 to 70°C
- ◆ Internal CDR on both Transmitter and Receiver channels
- ◆ Digital diagnostics functions are available via the I2C interface (Optional)
- ◆ All-metal housing for superior EMI performance
- ◆ RoHS compliant (lead-free) 



### Applications

- ◆ 100GBASE-SR4 100G Ethernet
- ◆ 25GBASE-SR Ethernet
- ◆ Fibre Channel Applications
- ◆ InfiniBand QDR, SDR, DDR
- ◆ High-performance computing clusters
- ◆ Servers, switches, storage and host card adapters

### Description

Optoray QSFP28 to 4x SFP28 breakout Active Optical Cable offers IT professionals a cost-effective interconnect solution for merging 100G QSFP28 and 25G SFP28 enabled host adapters, switches and servers.

For typical applications, users can install this splitter Active Optical cable between an available QSFP28 port on their 100Gbps rated switch and feed up to four upstream 25GbE-SFP28 enabled switches. Each QSFP28-SFP28 splitter Active Optical cable features a single QSFP28 connector (SFF-8436) rated for 100Gbps on one end and (4) SFP28 connectors (SFF-8431), each rated for 25Gb/s, on the other.

HuangShan Optoray Communication Corp.,Ltd.

No.4PiYun Road,Huangshan Economic Development Zone,Huangshan City,Anhui,China 245000

Tel:+86 559 5290615

Fax:+86 559 2585516

Http://www.optoray.com

## QSFP28 interface Specifications

| Parameter                   | Description                         |
|-----------------------------|-------------------------------------|
| Module Form Factor          | QSFP28 (Supports SFF8436)           |
| Data Rate, Each lane        | 25.78125Gbps                        |
| BER                         | $<10^{-12}$                         |
| Operating Case Temperature  | 0 to + 70°C                         |
| Storage Temperature         | -20 to + 85°C                       |
| Supply Voltage              | 3.3V                                |
| Supply Current              | Typical 560mA                       |
| Power Dissipation           | $<2W$ , Level 2                     |
| Management Interface Serial | I <sup>2</sup> C (Supports SFF8436) |

## Optical and Electrical Characteristics

The following optical characteristics are defined over the Recommended Operating Environment unless otherwise specified.

| Parameter  | Symbol  | Min  | Typical | Max  | Unit | Notes                             |
|--|---|------|---------|------|------|-----------------------------------|
| <b>Transmitter</b>                                     |   |      |         |      |      |                                   |
| Centre Wavelength                                      | $\lambda_c$   | 840  | 850     | 860  | nm   | -                                 |
| RMS spectral width                                     | $\Delta\lambda$                                     | -    | -       | 0.60 | nm   | -                                 |
| Average launch power, each lane                        | P <sub>out</sub>                                    | -8.4 | -       | 2.4  | dBm  | -                                 |
| Optical Modulation Amplitude(OMA),each lane            | OMA   | -6.4 |         | 3    | dBm  | -                                 |
| Transmitter and dispersion eye closure(TDEC),each lane | TDEC  |      |         | 4.3  | dB   |                                   |
| Extinction Ratio                                       | ER  | 3    | -       | -    | dB   | -                                 |
| Average launch power of OFF transmitter, each lane     |   |      |         | -30  | dBm  | -                                 |
| Eye Mask coordinates: X1, X2, X3, Y1, Y2, Y3           | SPECIFICATION VALUES<br>0.3,0.38,0.45,0.35,0.41,0.5 |      |         |      |      | Hit Ratio =<br>5x10 <sup>-5</sup> |
| Differential data input swing                          | V <sub>IN,PP</sub>                                  | 40   |         | 1000 | mV   |                                   |
| <b>Receiver</b>  |   |      |         |      |      |                                   |
| Centre Wavelength                                      | $\lambda_c$   | 840  | 850     | 860  | nm   | -                                 |

HuangShan Oporay Communication Corp.,Ltd.

No.4PiYun Road,Huangshan Economic Development Zone,Huangshan City,Anhui,China 245000

Tel:+86 559 5290615

Fax:+86 559 2585516

Http://www.optoray.com

|  |  |       |  |      |     |   |
|--|--|-------|--|------|-----|---|
| Stressed receiver sensitivity in OMA, each lane    |  |       |  | -5.2 | dBm | 1 |
| Maximum Average power at receiver input, each lane |  |       |  | 2.4  | dBm | - |
| Minimum Average power at receiver , each lane      |  | -10.3 |  |      | dBm |   |
| Receiver Reflectance                               |  |       |  | -12  | dB  | - |
| LOS Assert   |  | -30   |  |      | dBm | - |
| LOS Deassert                                       |  |       |  | -7.5 | dBm | - |
| LOS Hysteresis                                     |  | 0.5   |  |      | dB  | - |
| Receive Eye Amplitude                              |  | 300   |  | 800  | mV  |   |
| Receive Eye Width                                  |  | 25    |  |      | Ps  |   |
| Receive Eye Height                                 |  | 250   |  |      | mV  |   |

**Note:**

1. Measured with conformance test signal at TP3 for BER = 10e-12

**SFP28 interface Specifications**

| Parameter                   | Description                              |
|-----------------------------|--|
| Module Form Factor          | SFP28 (Supports SFF8431/SFF8432/SFF8472) |
| Channel Data Rate           | 25.78125Gbps                             |
| BER                         | <10 <sup>-12</sup>                       |
| Operating Case Temperature  | 0 to + 70°C                              |
| Storage Temperature         | -20 to + 85°C                            |
| Supply Voltage              | 3.3V                                     |
| Supply current              | Typical 180mA                            |
| Power Dissipation           | <1W,Level I                              |
| Management Interface Serial | I <sup>2</sup> C (Supports SFF8472)      |

## Optical and Electrical Characteristics

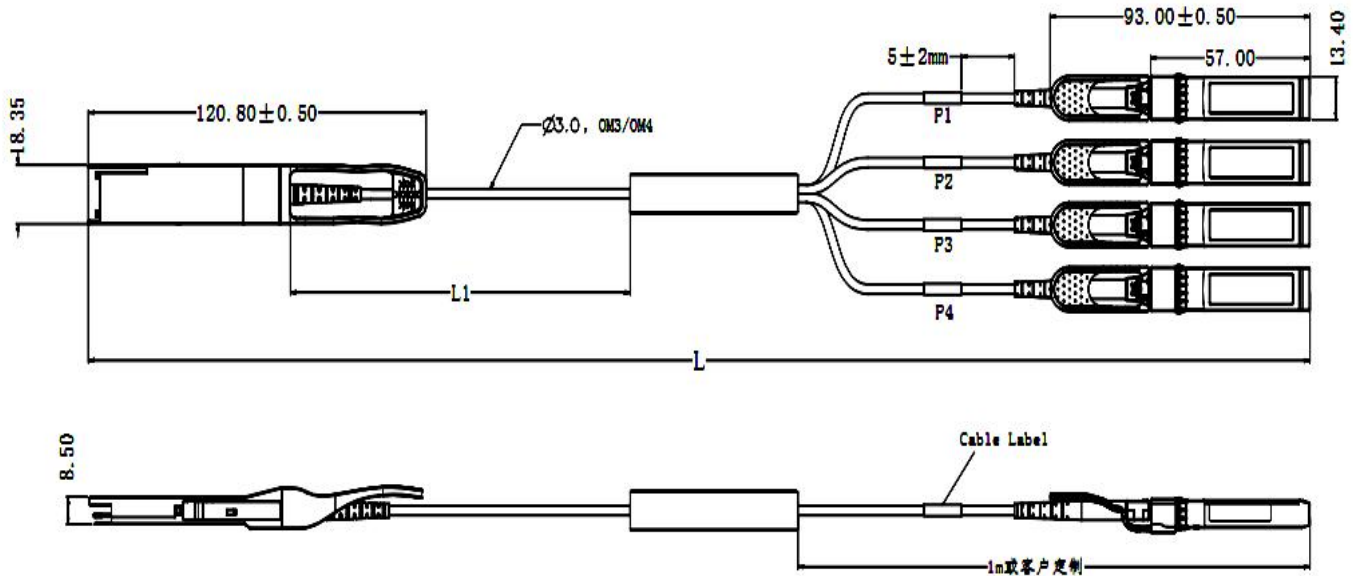
The following optical characteristics are defined over the Recommended Operating Environment unless otherwise specified.

| Parameter  | Symbol  | Min.  | Typical | Max  | Unit | Notes                             |
|--|---|-------|---------|------|------|-----------------------------------|
| <b>Transmitter</b>                                     |   |       |         |      |      |                                   |
| Center Wavelength                                      | $\lambda_t$   | 840   | 850     | 860  | nm   |                                   |
| RMS spectral width                                     | P <sub>m</sub>                                      | -     | -       | 0.6  | nm   |                                   |
| Average Optical Power                                  | P <sub>avg</sub>                                    | -8.4  | -       | 2.4  | dBm  |                                   |
| Optical Power OMA                                      | P <sub>OMA</sub>                                    | -6.4  |         | 3    | dBm  |                                   |
| Transmitter and dispersion eye closure(TDEC),each lane | TDEC  |       |         | 4.3  | dB   |                                   |
| Extinction Ratio                                       | ER  | 2     | -       | -    | dB   | 3                                 |
| Eye Mask coordinates:<br>X1, X2, X3, Y1, Y2, Y3        | SPECIFICATION VALUES<br>0.3,0.38,0.45,0.35,0.41,0.5 |       |         |      |      | Hit Ratio =<br>5x10 <sup>-5</sup> |
| Differential data input swing                          | V <sub>IN,PP</sub>                                  | 40    |         | 1000 | mV   |                                   |
| <b>Receiver</b>  |   |       |         |      |      |                                   |
| Center Wavelength                                      | $\lambda_r$   | 840   | 850     | 860  | nm   |                                   |
| Stressed receiver sensitivity in OMA, each lane        |   |       |         | -5.2 | dBm  |                                   |
| Maximum Average power at receiver input, each lane     |   |       |         | 2.4  | dBm  |                                   |
| Minimum Average power at receiver , each lane          |   | -10.3 |         |      | dBm  |                                   |
| Receiver Reflectance                                   |   | -     | -       | -12  | dB   |                                   |
| LOS De-Assert  | LOS <sub>D</sub>                                    |       |         | -7.5 | dBm  |                                   |
| LOS Assert   | LOS <sub>A</sub>                                    | -30   |         |      | dBm  |                                   |
| LOS Hysteresis   |   | 0.5   |         |      | dB   |                                   |
| Receive Eye Amplitude                                  |   | 500   |         | 1300 | mV   |                                   |
| Receive Eye Width                                      |   | 25    |         |      | Ps   |                                   |
| Receive Eye Height                                     |   | 250   |         |      | mV   |                                   |

### Note:

1. Measured with conformance test signal at TP3 for BER = 10e-12

## Mechanical Dimensions



注：客户没要求分支长度情况下，比如总长为0.5米以内/0.5~1米(含1米)以内，可定义L1=15CM即可

## Figure1. Mechanical Specifications

### Regulatory Compliance

Optoray OTQ-4X25G-AXX-XXXX Active Optical Cables are Class 1 Laser Products. They meet the requirements of the following standards.

| Feature                  | Standard   |
|--------------------------|--|
| Laser Safety             | IEC 60825-1:2014 (3 <sup>rd</sup> Edition)<br>IEC 60825-2:2004/AMD2:2010<br>EN 60825-1:2014<br>EN 60825-2:2004+A1+A2 |
| Electrical Safety        | EN 62368-1: 2014<br>IEC 62368-1:2014<br>UL 62368-1:2014  |
| Environmental protection | Directive 2011/65/EU with amendment(EU)2015/863  |
| CE EMC                   | EN55032: 2015<br>EN55035: 2017<br>EN61000-3-2:2014<br>EN61000-3-3:2013   |
| FCC                      | FCC Part 15, Subpart B<br>ANSI C63.4-2014  |

### Ordering information

| Part Number  | Product Description                              |
|--|--|
| OTQ-4X25G-AXX-XXXX   | 100G QSFP28 to 4x 25G SFP28 Active Optical Cable |
| xxx :001~100,1~100 Length in meters. (OM4 fiber is available)        |  |
| Further details are available from any Optoray sales representative. |  |