

OSFPRHS-400GB-P1-5M-NDR-C

MSA and TAA 400GBase-CU OSFP-RHS to OSFP-RHS Direct Attach Cable (Passive Twinax, 1.5m, NDR)

Features:

- OSFP-RHS Module Compliant to OSFP MSA
- Transmission Data Rate Up to PAM4 106.25Gbps Per Channel
- Enable 400Gbps to 400Gbps Transmission (4x100G, CH1-CH4)
- Built-In EEPROM Functions
- Operating Temperature Range: 0 to 70 Celsius
- RoHS Compliant and Lead-Free



Applications:

- 400GBase Ethernet

Product Description

This is a MSA Compliant 400GBase-CU OSFP-RHS to OSFP-RHS direct attach cable that operates over passive copper with a maximum reach of 1.5m. It has been programmed, uniquely serialized, and data-traffic and application tested to ensure it is 100% compliant and functional. We stand behind the quality of our products and proudly offer a limited lifetime warranty. This cable is TAA (Trade Agreements Act) compliant and is built to comply with MSA (Multi-Source Agreement) standards.

ProLabs' transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S. – made or designated country end products."



General Specifications

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|-----------------------------|--------|------|------|------|------|
| Storage Temperature | Tstg | -40 | | 85 | °C |
| Operating Case Temperature | Tc | 0 | | 70 | °C |
| Supply Voltage | Vcc | 3.13 | 3.3 | 3.47 | V |
| Relative Operating Humidity | RH | 5 | | 85 | % |
| Data Rate | DR | | 400 | | Gbps |

Physical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|-----------------|--------|--|------|------|------|-------|
| Length | L | | | 1.5 | M | |
| AWG | | | 26 | | AWG | |
| Jacket Material | | Plastic Braided Mesh Technology Net, Silver Gray | | | | |

Electrical Specifications

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Notes |
|---|-------------|--|------|-------|------|-------|
| Resistance | Rcon | | | 3 | Ω | |
| Insulation Resistance | Rins | | | 10 | MΩ | |
| Raw Cable Impedance | Zca | 95 | | 110 | Ω | |
| Mated Connector Impedance | Zmated | 85 | | 115 | Ω | |
| Maximum Insertion Loss @26.56GHz | SDD21 | 11 | | 19.75 | dB | |
| Differential to Common-Mode Return Loss | SDD11/22 | $RL_{cd}(f) \geq \begin{cases} 22 - 10(f/26.56) & 0.05 \leq f < 26.56 \\ 15 - 3(f/26.76) & 26.56 \leq f \leq 40 \end{cases}$ | | | dB | 1 |
| Differential to Common-Mode Conversion Loss | SCD11/22 | $Conversion_loss(f) - \begin{cases} 10 & 0.05 \leq f < 12.89 \\ 14 - 0.3108f & 12.89 \leq f \leq 40 \end{cases}$ | | | dB | 1 |
| Common-Mode to Common-Mode Return Loss | SCD21-SDD21 | $RL_{cc}(f) \geq 1.08$ | | | dB | 1 |
| Minimum COM | COM | 3 | | | dB | |

Notes:

1. For $0.05 \leq f \leq 40$ GHz, where f is the frequency in GHz.

Pin Descriptions

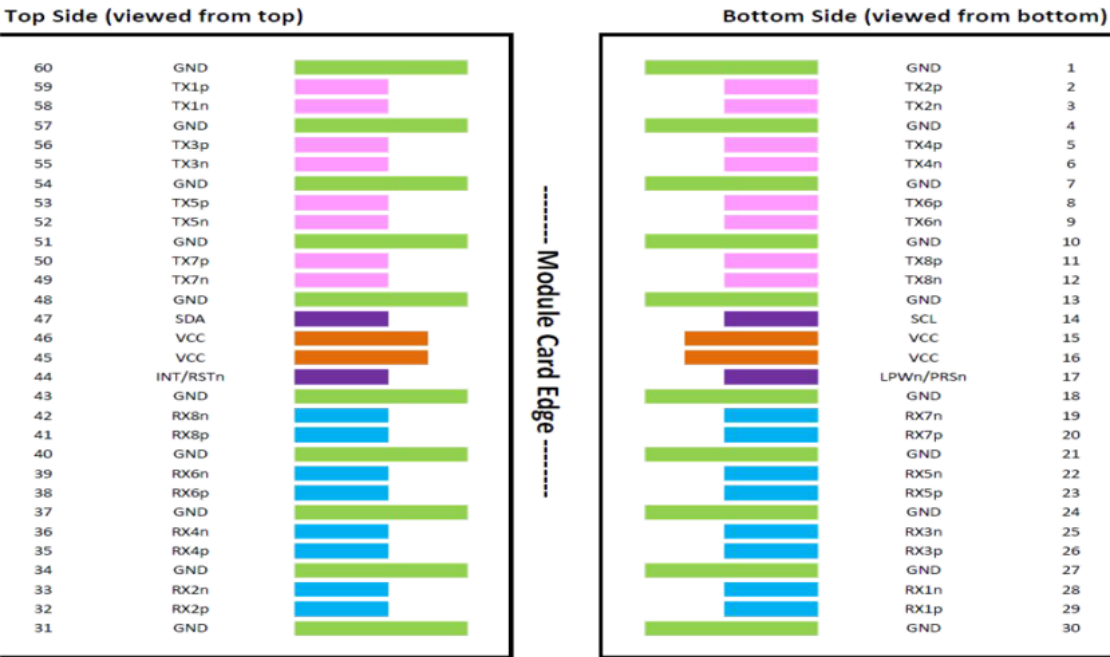
| Pin | Symbol | Name/Description | Logic | Plug Sequence | Direction | Notes |
|-----|-----------|--------------------------------|-------------|---------------|------------------|-------|
| 1 | GND | Module Ground. | | 1 | | |
| 2 | Tx2+ | Transmitter Data Non-Inverted. | CML-I | 3 | Input from Host | |
| 3 | Tx2- | Transmitter Data Inverted. | CML-I | 3 | Input from Host | |
| 4 | GND | Module Ground. | | 1 | | |
| 5 | Tx4+ | Transmitter Data Non-Inverted. | CML-I | 3 | Input from Host | |
| 6 | Tx4- | Transmitter Data Inverted. | CML-I | 3 | Input from Host | |
| 7 | GND | Module Ground. | | 1 | | |
| 8 | Tx6+ | Transmitter Data Non-Inverted. | CML-I | 3 | Input from Host | |
| 9 | Tx6- | Transmitter Data Inverted. | CML-I | 3 | Input from Host | |
| 10 | GND | Module Ground. | | 1 | | |
| 11 | Tx8+ | Transmitter Data Non-Inverted. | CML-I | 3 | Input from Host | |
| 12 | Tx8- | Transmitter Data Inverted. | CML-I | 3 | Input from Host | |
| 13 | GND | Module Ground. | | 1 | | |
| 14 | SCL | 2-Wire Serial Interface Clock. | LVC MOS-I/O | 3 | Bi-Directional | 1 |
| 15 | Vcc | +3.3V Power. | | 2 | Power from Host | |
| 16 | Vcc | +3.3V Power. | | 2 | Power from Host | |
| 17 | LPWn/PRSn | Low-Power Mode/Module Present. | Multi-Level | 3 | Bi-Directional | 2 |
| 18 | GND | Module Ground. | | 1 | | |
| 19 | Rx7- | Receiver Data Inverted. | CML-O | 3 | Output from Host | |
| 20 | Rx7+ | Receiver Data Non-Inverted. | CML-O | 3 | Output from Host | |
| 21 | GND | Module Ground. | | 1 | | |
| 22 | Rx5- | Receiver Data Inverted. | CML-O | 3 | Output from Host | |
| 23 | Rx5+ | Receiver Data Non-Inverted. | CML-O | 3 | Output from Host | |
| 24 | GND | Module Ground. | | 1 | | |
| 25 | Rx3- | Receiver Data Inverted. | CML-O | 3 | Output from Host | |
| 26 | Rx3+ | Receiver Data Non-Inverted. | CML-O | 3 | Output from Host | |
| 27 | GND | Module Ground. | | 1 | | |
| 28 | Rx1- | Receiver Data Inverted. | CML-O | 3 | Output from Host | |
| 29 | Rx1+ | Receiver Data Non-Inverted. | CML-O | 3 | Output from Host | |
| 30 | GND | Module Ground. | | 1 | | |
| 31 | GND | Module Ground. | | 1 | | |
| 32 | Rx2+ | Receiver Data Non-Inverted. | CML-O | 3 | Output from Host | |
| 33 | Rx2- | Receiver Data Inverted. | CML-O | 3 | Output from Host | |
| 34 | GND | Module Ground. | | 1 | | |
| 35 | Rx4+ | Receiver Data Non-Inverted. | CML-O | 3 | Output from Host | |

| | | | | | | |
|----|----------|--------------------------------|-------------|---|------------------|---|
| 36 | Rx4- | Receiver Data Inverted. | CML-O | 3 | Output from Host | |
| 37 | GND | Module Ground. | | 1 | | |
| 38 | Rx6+ | Receiver Data Non-Inverted. | CML-O | 3 | Output from Host | |
| 39 | Rx6- | Receiver Data Inverted. | CML-O | 3 | Output from Host | |
| 40 | GND | Module Ground. | | 1 | | |
| 41 | Rx8+ | Receiver Data Non-Inverted. | CML-O | 3 | Output from Host | |
| 42 | Rx8- | Receiver Data Inverted. | CML-O | 3 | Output from Host | |
| 43 | GND | Module Ground. | | 1 | | |
| 44 | INT/RSTn | Module Interrupt/Module Reset. | Multi-Level | 3 | Bi-Directional | 2 |
| 45 | Vcc | +3.3V Power. | | 2 | Power from Host | |
| 46 | Vcc | +3.3V Power. | | 2 | Power from Host | |
| 47 | SDA | 2-Wire Serial Interface Data. | LVC MOS-I/O | 3 | Bi-Directional | 1 |
| 48 | GND | Module Ground. | | 1 | | |
| 49 | Tx7- | Transmitter Data Inverted. | CML-I | 3 | Input from Host | |
| 50 | Tx7+ | Transmitter Data Non-Inverted. | CML-I | 3 | Input from Host | |
| 51 | GND | Module Ground. | | 1 | | |
| 52 | Tx5- | Transmitter Data Inverted. | CML-I | 3 | Input from Host | |
| 53 | Tx5+ | Transmitter Data Non-Inverted. | CML-I | 3 | Input from Host | |
| 54 | GND | Module Ground. | | 1 | | |
| 55 | Tx3- | Transmitter Data Inverted. | CML-I | 3 | Input from Host | |
| 56 | Tx3+ | Transmitter Data Non-Inverted. | CML-I | 3 | Input from Host | |
| 57 | GND | Module Ground. | | 1 | | |
| 58 | Tx1- | Transmitter Data Inverted. | CML-I | 3 | Input from Host | |
| 59 | Tx1+ | Transmitter Data Non-Inverted. | CML-I | 3 | Input from Host | |
| 60 | GND | Module Ground. | | 1 | | |

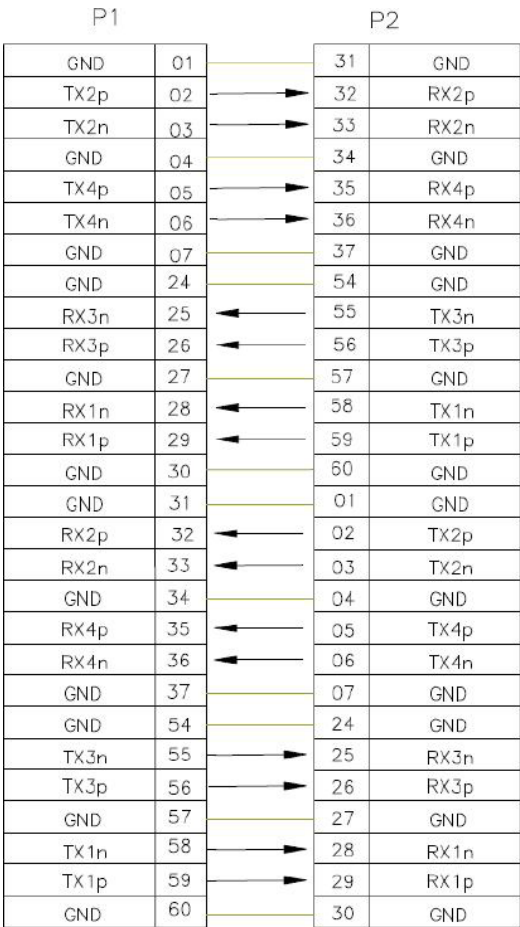
Notes:

1. Open-drain with pull-up resistor on the host.
2. See Pin Assignment below for the required circuit.

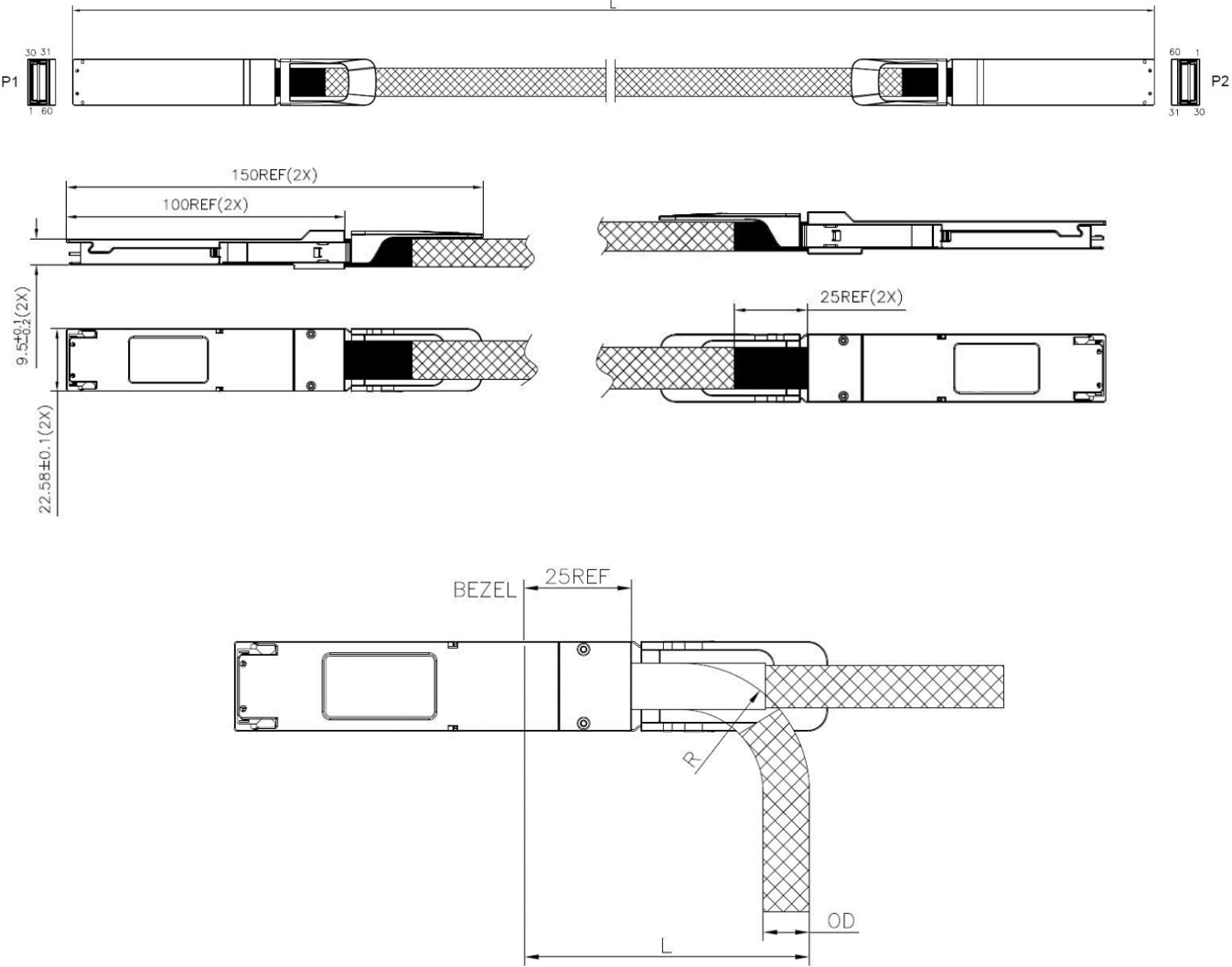
Pin Assignment



Wiring Diagram



Mechanical Specifications



Bending Radius

| Wire Gauge | OD (Ref.) | Bend Radius "R" | Min. Bend Radius "L" |
|------------|-----------|-----------------|----------------------|
| 26AWG | 8.3mm | 17mm | 65mm |

About ProLabs

Our experience comes as standard; for over 15 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with over 90 optical switching and transport platforms.

Complete Portfolio of Network Solutions

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 400G while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

Trusted Partner

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure that you get immediate answers to your questions and compatible product when needed. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.



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