

Application

- Data Center & Networking Equipment
- Servers/Storage Devices
- High Performance Computing (HPC)
- Switches/Routers
- Telecom Central Offices (CO)
- Test And Measurement Equipment

Standards Compliance

- Compliant with OSFP MSA Rev 4.1
- Compliant with IEEE 802.3ck
- Compliant with IEEE 802.3cd
- I2C for EEPROM communication
- Compliant with CMIS 5.0

Highlight

- Support 8x106.25G PAM4
- 800G To 800G Data Rate
- 3.3V Power Supply
- Hot Pluggable
- Excellent SI Performance
- RoHS Compliance
- Simplifies The Patching And Offers A Cost-Effective Way For Short Links

1.0 General Description

This datasheet pertains to the **OSFP RHS Type 800G Active Redriver Copper Cable Assembly**, meticulously designed for application in the telecommunications and data center sectors. It facilitates bi-directional transmission of 800Gb traffic per cable, accommodating 8 lanes of 100G PAM4. The cable adheres to the standardized OSFP-RHS form factor and complies rigorously with Multi-Source Agreement (MSA) specifications.

2.0 Product Specification

2.1 Absolute Maximum Ratings

| Parameter | Unit | Min. | Max. | Notes |
|------------------------------------|------|------|------|-------|
| Supply Voltage | V | -0.3 | 3.6 | |
| Data Input Voltage | V | -0.3 | 3.6 | |
| Control Input Voltage | V | -0.3 | 3.6 | |
| Operating Temperature | °C | 0 | 70 | |
| Storage Temperature | °C | -40 | +85 | |
| Relative Humidity (Non-Condensing) | % | 5 | 85 | |

2.2 Operational Specification

| Parameter | Unit | Min | Typical | Max | Notes |
|-----------------------------|------|-----------------|---------|-------|---------|
| Supply Voltage (Vcc) | V | 3.135 | 3.3 | 3.465 | Per End |
| Power Consumption | W | | | 1.5 | Per End |
| Operating Case Temperature | °C | 0 | | 70 | |
| Operating Relative Humidity | % | 0 | | 85 | |
| Modulation Format | | 112G PAM-4 | | | |
| Bit Rate | Gbps | 8x100 to 8x100G | | | |

2.3 Electrical Characteristics

| Parameter | Unit | Min | Typical | Max | Notes |
|--------------------------------------|------|-------|---------|-----|-------|
| Characteristic Impedance | ohm | 90 | 100 | 110 | |
| Time Propagation Delay (Informative) | ns | | | 4.9 | |

2.4 SI performance

| Item | Parameter | Require | Reference |
|---|--|--------------------------------------|----------------------------------|
| 1 | ILdd Insertion loss at 26.56 GHz | 19.75 dB (Max.) | IEEE 802.3ck Section 162.11.2 |
| 2 | ILdd Insertion loss at 26.56 GHz | 11 dB (Min.) | IEEE 802.3ck Section 162.11.2 |
| 3 | ERL Minimum cable assembly | >8.25 dB*. | IEEE 802.3ck Section 162.11.3 |
| 4 | RLcd Differential-mode to common-mode return loss | 0.01GHz – 40GHz Equation (162–20) | IEEE 802.3ck Section 162.11.4 |
| 5 | ILcd Differential-mode to common-mode insertion loss | 0.01GHz – 40GHz Equation (162–21) | IEEE 802.3ck Section 162.11.5 |
| 6 | RLcc Common-mode to common-mode return loss | 0.01GHz – 40GHz Equation (162–22) | IEEE 802.3ck Section 162.11.6 |
| 7 | COM | 3dB (Min.) | IEEE 802.3ck Section 162.11.7 |
| *Cable assemblies with a com greater than 4 dB are not required to meet minimum ERL | | | |

2.5 Pin Assignments

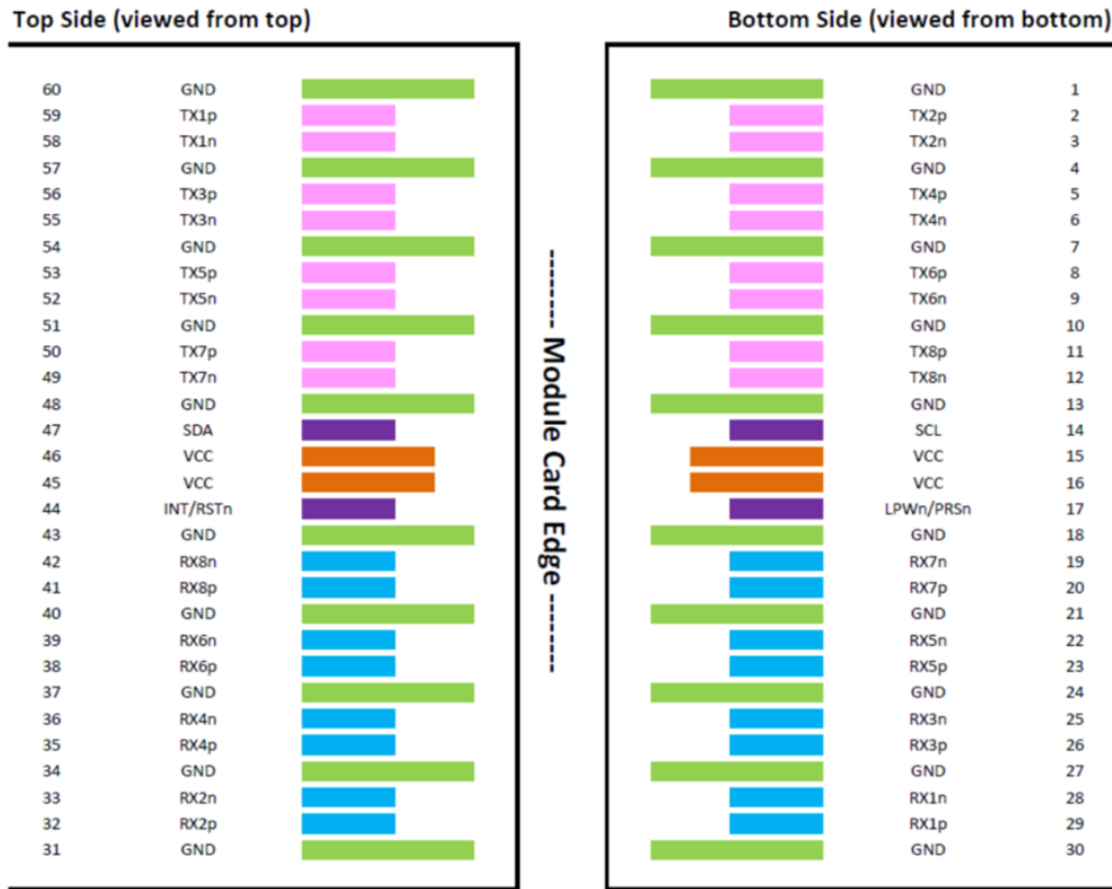


Figure 1 OSFP-RHS 800G Module Contact Assignment

2.6 Pin Description

Table 1 OSFP-RHS Module Pin Description

| Pin | Logic | Symbol | Description | Plug Sequence | Notes |
|-----|-------|--------|-------------------------------|---------------|-------|
| 1 | | GND | Ground | 1 | |
| 2 | CML-I | TX2p | Transmitter Data Non-Inverted | 3 | |
| 3 | CML-I | TX2n | Transmitter Data Inverted | 3 | |
| 4 | | GND | Ground | 1 | |
| 5 | CML-I | TX4p | Transmitter Data Non-Inverted | 3 | |
| 6 | CML-I | TX4n | Transmitter Data Inverted | 3 | |
| 7 | | GND | Ground | 1 | |
| 8 | CML-I | TX6p | Transmitter Data Non-Inverted | 3 | |
| 9 | CML-I | TX6n | Transmitter Data Inverted | 3 | |
| 10 | | GND | Ground | 1 | |

| | | | | | |
|----|-------------|-----------|---------------------------------|---|---|
| 11 | CML-I | TX8p | Transmitter Data Non-Inverted | 3 | |
| 12 | CML-I | TX8n | Transmitter Data Inverted | 3 | |
| 13 | | GND | Ground | 1 | |
| 14 | LVC MOS-I/O | SCL | 2-wire Serial interface clock | 3 | 1 |
| 15 | | VCC | +3.3V Power | 2 | |
| 16 | | VCC | +3.3V Power | 2 | |
| 17 | Multi-Level | LPWn/PRSn | Low-Power Mode / Module Present | 3 | 2 |
| 18 | | GND | Ground | 1 | |
| 19 | CML-O | RX7n | Receiver Data Inverted | 3 | |
| 20 | CML-O | RX7p | Receiver Data Non-Inverted | 3 | |
| 21 | | GND | Ground | 1 | |
| 22 | CML-O | RX5n | Receiver Data Inverted | 3 | |
| 23 | CML-O | RX5p | Receiver Data Non-Inverted | 3 | |
| 24 | | GND | Ground | 1 | |
| 25 | CML-O | RX3n | Receiver Data Inverted | 3 | |
| 26 | CML-O | RX3p | Receiver Data Non-Inverted | 3 | |
| 27 | | GND | Ground | 1 | |
| 28 | CML-O | RX1n | Receiver Data Inverted | 3 | |
| 29 | CML-O | RX1p | Receiver Data Non-Inverted | 3 | |
| 30 | | GND | Ground | 1 | |
| 31 | | GND | Ground | 1 | |
| 32 | CML-O | RX2p | Receiver Data Non-Inverted | 3 | |
| 33 | CML-O | RX2n | Receiver Data Inverted | 3 | |
| 34 | | GND | Ground | 1 | |
| 35 | CML-O | RX4p | Receiver Data Non-Inverted | 3 | |
| 36 | CML-O | RX4n | Receiver Data Inverted | 3 | |
| 37 | | GND | Ground | 1 | |
| 38 | CML-O | RX6p | Receiver Data Non-Inverted | 3 | |
| 39 | CML-O | RX6n | Receiver Data Inverted | 3 | |
| 40 | | GND | Ground | 1 | |
| 41 | CML-O | RX8p | Receiver Data Non-Inverted | 3 | |
| 42 | CML-O | RX8n | Receiver Data Inverted | 3 | |
| 43 | | GND | Ground | 1 | |
| 44 | Multi-Level | INT/RSTn | Module Interrupt / Module Reset | 3 | 2 |
| 45 | | VCC | +3.3V Power | 2 | |
| 46 | | VCC | +3.3V Power | 2 | |
| 47 | LVC MOS-I/O | SDA | 2-wire Serial interface data | 3 | 1 |
| 48 | | GND | Ground | 1 | |
| 49 | CML-I | TX7n | Transmitter Data Inverted | 3 | |
| 50 | CML-I | TX7p | Transmitter Data Non-Inverted | 3 | |

OSFP-RHS 800G Active Redriver Cable Assembly

| | | | | | |
|----|-------|------|-------------------------------|---|--|
| 51 | | GND | Ground | 1 | |
| 52 | CML-I | TX5n | Transmitter Data Inverted | 3 | |
| 53 | CML-I | TX5p | Transmitter Data Non-Inverted | 3 | |
| 54 | | GND | Ground | 1 | |
| 55 | CML-I | TX3n | Transmitter Data Inverted | 3 | |
| 56 | CML-I | TX3p | Transmitter Data Non-Inverted | 3 | |
| 57 | | GND | Ground | 1 | |
| 58 | CML-I | TX1n | Transmitter Data Inverted | 3 | |
| 59 | CML-I | TX1p | Transmitter Data Non-Inverted | 3 | |
| 60 | | GND | Ground | 1 | |

Note 1:
Open-Drain with pull- up resistor on Host.

Note 2:
See pin description for required circuit

2.7 Cable Wiring

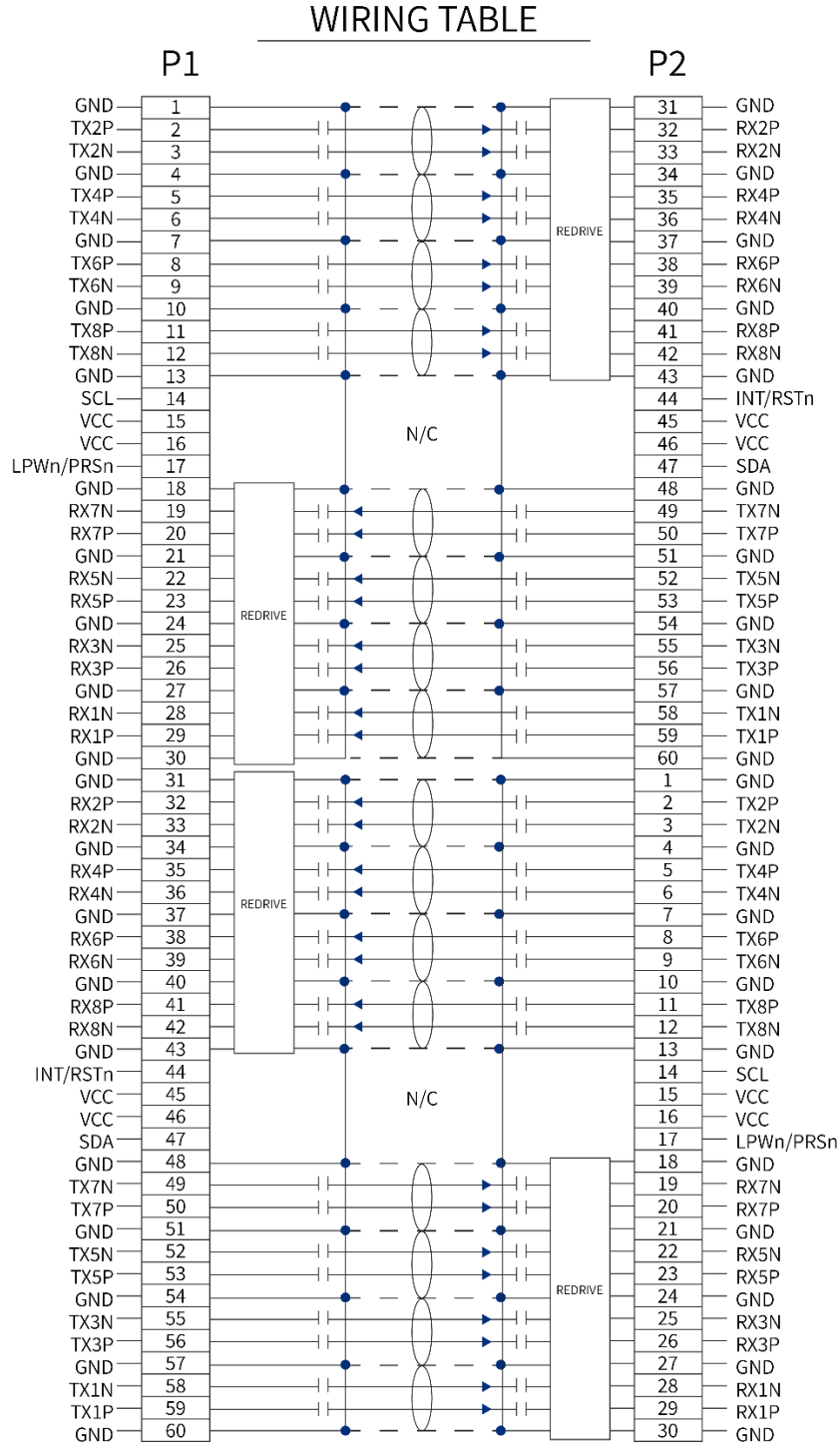


Figure 2 OSFP-RHS 800G Active Redriver Cable Assembly Wiring

2.8 Memory Map information (CMIS Version)

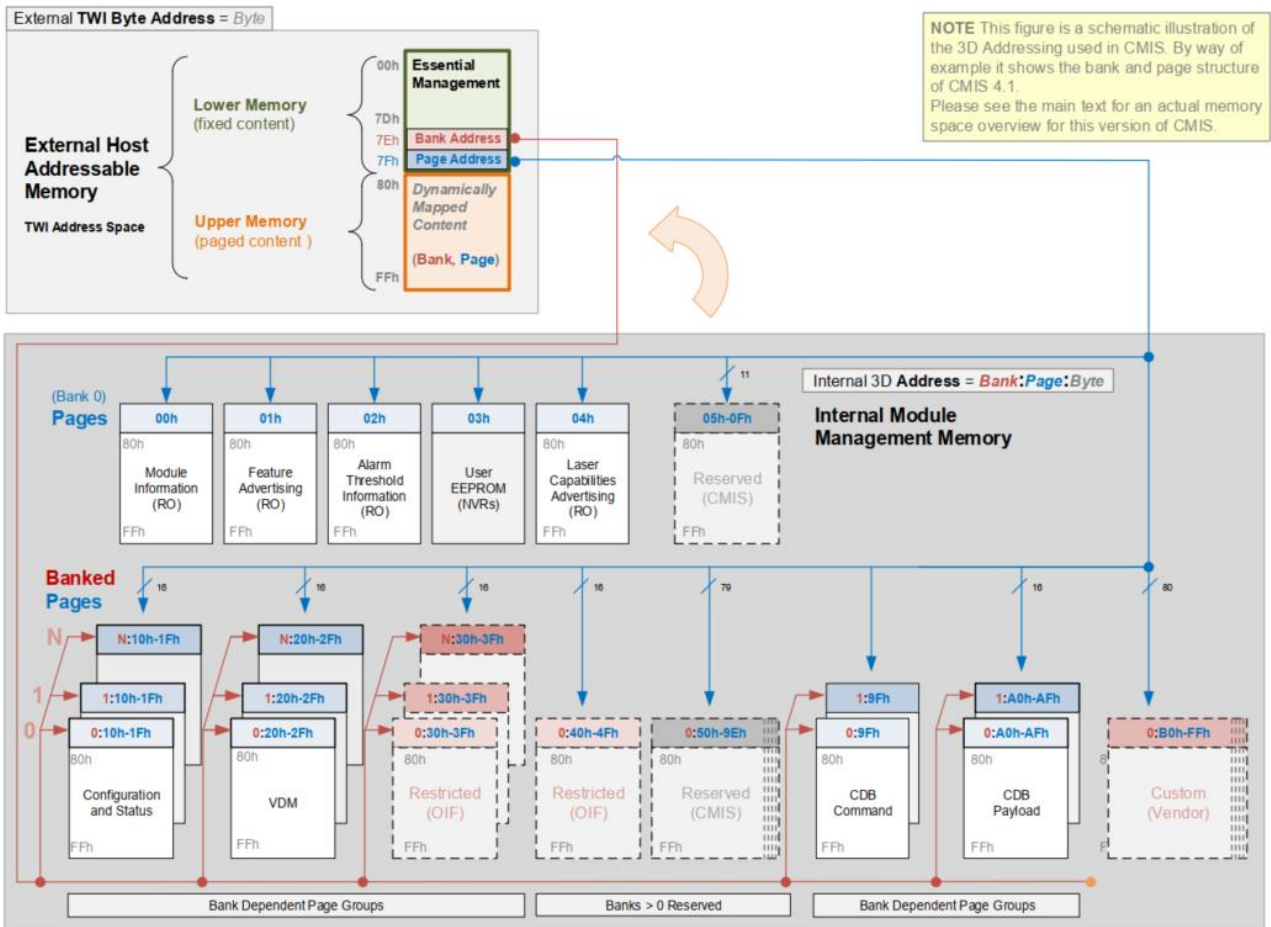


Figure 3 CMIS Module Memory Map (Conceptual View)

Lower Memory Overview

| Address | Size | Subject Area | Description |
|---------|------|-------------------------|---|
| 0-3 | 4 | ID and Status Area | Module ID from SFF-8024 list, version number, Type and status |
| 4-7 | 4 | Lane Flag Summary | Flag summary of all lane flags on pages 10h-1Fh |
| 8-13 | 6 | Module-Level Flags | All flags that are not lane or data path specific |
| 14-25 | 12 | Module-Level Monitors | Monitors that are not lane or data path specific |
| 26-3 | 5 | Module Global Controls | Controls applicable to the module as a whole |
| 31-36 | 6 | Module-Level Flag Masks | Masking bits for the Module-Level flags |
| 37-38 | 2 | CDB Status Area | Status of most recent CDB command |
| 39-40 | 2 | Module Firmware Version | Module Firmware Version |
| 41-63 | 23 | Reserved Area | Reserved for future standardization |

| | | | |
|---------|----|---------------------------|---|
| 64-82 | 19 | Custom Area | Vendor or module type specific use |
| 83-84 | 2 | Inactive Firmware Version | Version Number of Inactive Firmware. Values of 00h indicates module supports only a single image. |
| 85-117 | 33 | Application Advertising | Combinations of host and media interfaces that are supported by module data path(s) |
| 118-125 | 8 | Password Entry and Change | |
| 126 | 1 | Bank Select Byte | Bank address of currently visible Page |
| 127 | 1 | Page Select Byte | Page address of currently visible Page |

■ **Page 00h Overview**

| Address | Size (bytes) | Name | Description |
|---------|--------------|---------------------------------|---|
| 128 | 1 | Identifier | Identifier Type of module |
| 129-144 | 16 | Vendor name | Vendor name (ASCII) |
| 145-147 | 3 | Vendor OUI | Vendor IEEE company ID |
| 148-163 | 16 | Vendor PN | Part number provided by vendor (ASCII) |
| 164-165 | 2 | Vendor rev | Revision level for part number provided by vendor (ASCII) |
| 166-181 | 16 | Vendor SN | Vendor Serial Number (ASCII) |
| 182-189 | 8 | Date Code | |
| 190-199 | 10 | CLEI code | Common Language Equipment Identification code |
| 200-201 | 2 | Module power characteristics | |
| 202 | 1 | Cable assembly length | |
| 203 | 1 | Media Connector Type | |
| 204-209 | 6 | Copper Cable Attenuation | |
| 210-211 | 2 | Cable Assembly Lane Information | |
| 212 | 1 | Media Interface Technology | |
| 213-220 | 8 | Reserved | |
| 221 | 1 | Custom | |
| 222 | 1 | Checksum | Includes bytes 128-221 |
| 223-255 | 33 | Custom Info NV | |

Note: For the above, refer to **Common Management Interface Specification Rev5.0**.

2.9 Mechanical Specifications

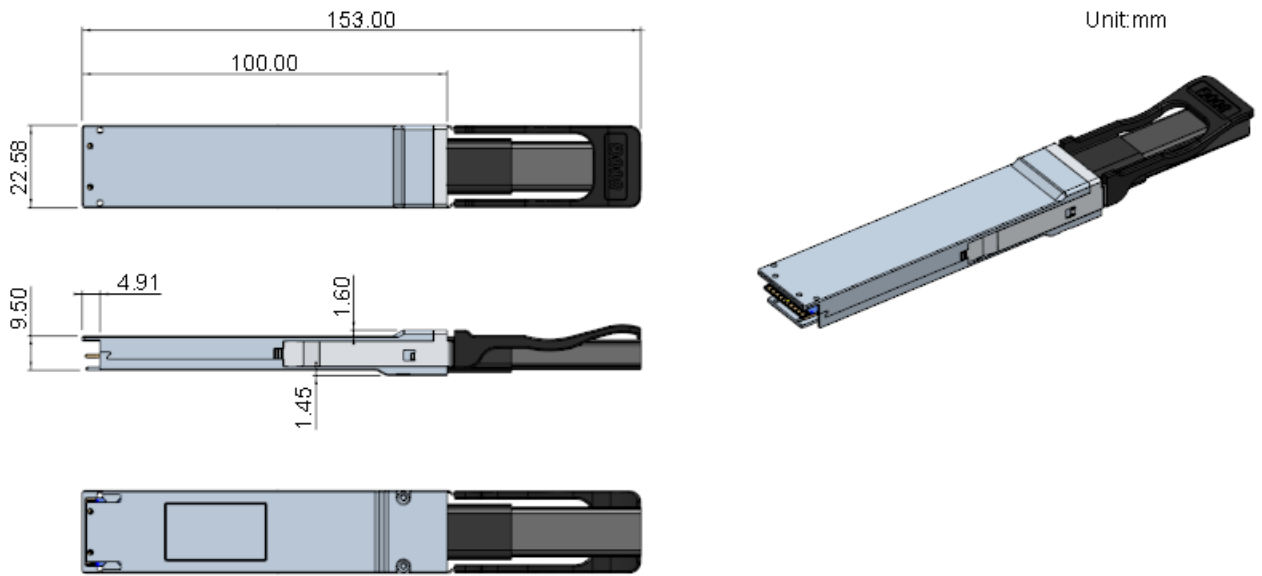
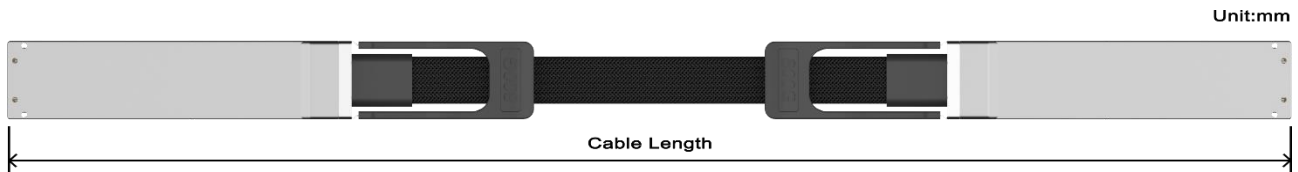


Figure 4 OSFP-RHS Form Factor

3.0 Product Information



| Product ID | Product Description | Tolerance | AWG |
|------------------------|--|-----------|-----|
| OSFP-RHS 800G-ACC-3025 | OSFP-RHS 800G Active Redriver Copper Cable, 30AWG-2.5M | ±50 | 30 |
| OSFP-RHS-800G-ACC-3030 | OSFP-RHS 800G Active Redriver Copper Cable, 30AWG-3.0M | ±50 | 30 |
| OSFP-RHS-800G-ACC-3035 | OSFP-RHS 800G Active Redriver Copper Cable, 30AWG-3.5M | ±60 | 30 |
| OSFP-RHS-800G-ACC-2830 | OSFP-RHS 800G Active Redriver Copper Cable, 28AWG-3.0M | ±50 | 28 |
| OSFP-RHS-800G-ACC-2835 | OSFP-RHS 800G Active Redriver Copper Cable, 28AWG-3.5M | ±60 | 28 |
| OSFP-RHS-800G-ACC-2840 | OSFP-RHS 800G Active Redriver Copper Cable, 28AWG-4.0M | ±60 | 28 |
| OSFP-RHS-800G-ACC-2630 | OSFP-RHS 800G Active Redriver Copper Cable, 26AWG-3.0M | ±50 | 26 |
| OSFP-RHS-800G-ACC-2635 | OSFP-RHS 800G Active Redriver Copper Cable, 26AWG-3.5M | ±60 | 26 |
| OSFP-RHS-800G-ACC-2640 | OSFP-RHS 800G Active Redriver Copper Cable, 26AWG-4.0M | ±60 | 26 |
| OSFP-RHS-800G-ACC-2645 | OSFP-RHS 800G Active Redriver Copper Cable, 26AWG-4.5M | ±70 | 26 |
| OSFP-RHS-800G-ACC-2650 | OSFP-RHS 800G Active Redriver Copper Cable, 26AWG-5.0M | ±70 | 26 |

Important Notice

The performance figures, data, and any illustrative material presented in this datasheet are typical and must be explicitly confirmed in writing by ZHAOLONG before they are deemed applicable to any specific order or contract.

By ZHAOLONG's policy of continuous improvement, specifications may change without prior notice. The publication of information in this datasheet does not imply exemption from patent or other protective rights held by ZHAOLONG or other parties. Additional details can be obtained from any ZHAOLONG sales representative.

4.0 Revision Record

| Rev. | Comments | Author | Date |
|------|-----------------|------------|------------|
| A01 | Initial Release | James Chen | 10/01/2023 |
| | | | |
| | | | |
| | | | |
| | | | |