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|--|------------------------------------|---|
| TITLE 800G OSFP SR8 Transceiver | DOC No. RFD-20240808013-002 | |
| | REVISION : 01 | AUTHORIZED BY : Albert Lin |
| | DATE : 2024.08.09 | CLASSIFICATION : Optics Transceiver |

1. Feature

- Hot-pluggable OSFP 800G SR8 multimode transceiver
- Compliant with OSFP MSA Type 2 flat top with dual MPO-12 connector
- Compliant with CMIS Rev 5.0 and above revision
- Maximum power consumption 17W
- Dual MPO-12 APC receptacles
- Up to 30m reach on OM3 and 50m reach on OM4.
- Case operating temperature 0°C to 70°C



2. Product Description

2.1. PRODUCT NAME AND SERIES NUMBER(S)

800G OSFP SR8 Transceiver

| Data Rate | Wavelength(nm) | Distance | Power(dBm) | Fiber type | Sen.(dBm) | Connector | Temp. |
|-----------|----------------|-------------------------|------------|------------|-----------|-----------|-------|
| 800G | 850 | 60m (OM3) 100m (OM4) | -1 ~ 3 | SMF | -4.6 | MPO-12 | C |

3. Dimensions, Materials, Plating and Marking

The module is designed to meet the package outline defined in the OSFP112 specification. See the package outline for details.

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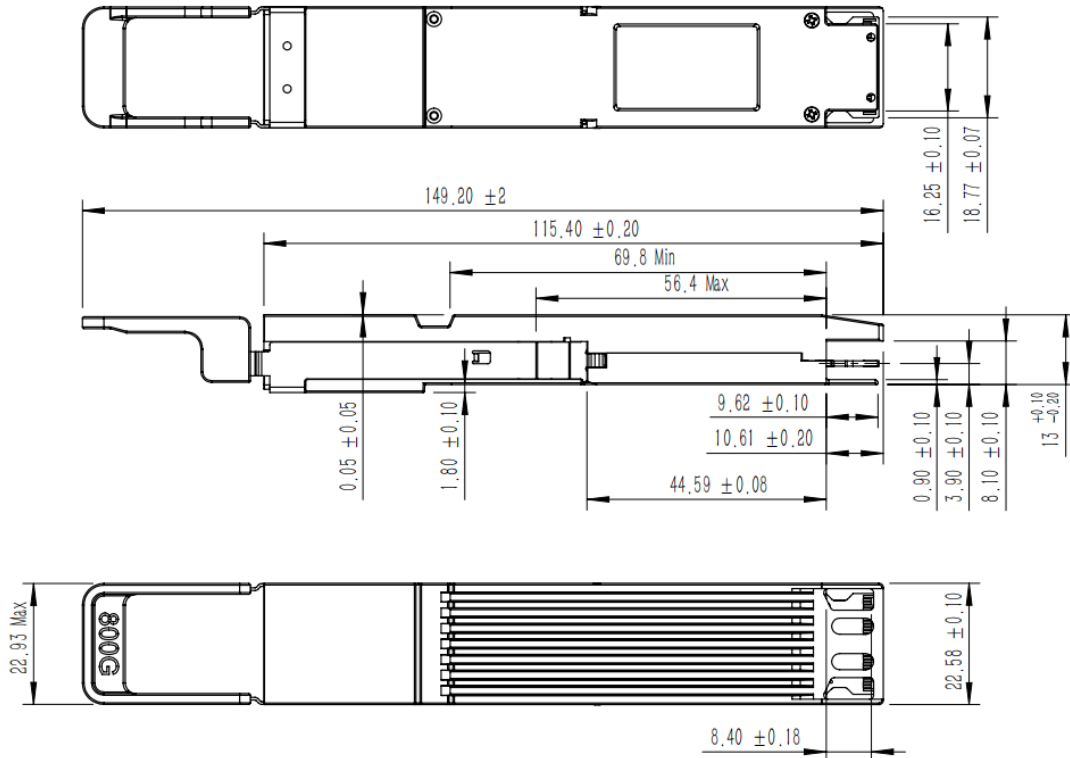
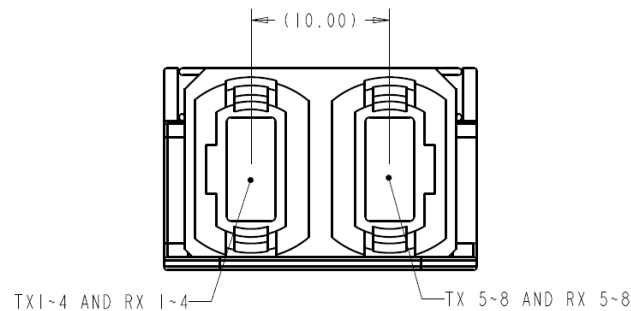


Figure 3 – Active fiber ports in MPO12 connector on module side



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4. Product Specification

Absolute Maximum Ratings

| Parameter | Symbol | Min | Max | Units | Notes |
|--------------------------------------|--------|------|----------|-------|-------|
| Storage Temperature | TS | -40 | 85 | degC | |
| Power Supply Voltage | VCC | -0.5 | 3.6 | V | |
| Relative Humidity (non-condensation) | RH | 5 | 95 | % | |
| Control Input Voltage | VI | -0.3 | VCC+0.5- | V | |

Recommended Operating Conditions

| Parameter | Symbol | Min | Typical | Max | Units | Notes |
|---|--------------------|-------|---------|-------|-------|-------|
| Operating Case Temperature | T _{OPR} | 0 | - | 70 | °C | |
| Power Supply Voltage | V _{CC} | 3.135 | 3.3 | 3.465 | V | |
| Instantaneous peak current at hot plug | I _{CC_IP} | - | - | 6800 | mA | |
| Sustained peak current at hot plug | I _{CC_SP} | - | - | 5670 | mA | |
| Maximum Power Dissipation | P _D | - | - | 17 | W | |
| Maximum Power Dissipation, Low Power Mode | P _{DLP} | - | - | 1.5 | W | |
| Signaling Rate per Lane | SRL | - | 53.125 | - | GBd | PAM4 |
| Two Wire Serial Interface Clock Rate | - | -100 | - | 1000 | kHz | |
| Power Supply Noise Tolerance (10Hz - 10MHz) | - | - | - | 66 | mV | |
| Rx Differential Data Output Load | - | - | 100 | - | Ohm | |
| Operating Distance (OM3) | - | 2 | - | 30 | m | |
| Operating Distance (OM4) | - | 2 | - | 50 | m | |

General Electrical Characteristics Transmitter and Receiver

| Parameter | Symbol | Unit | Min | Typ | Max | Notes |
|--|--------|------|-----|-----|-----|-------|
| Transmitter | | | | | | |
| Differential pk-pk input Voltage tolerance | | mV | 750 | - | - | - |

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| | | | | | | |
|--|--|----|------|---|------|---|
| Differential termination mismatch | | % | - | - | 10 | - |
| Single-ended voltage tolerance range | | V | -0.4 | - | 3.3 | - |
| DC common mode Voltage | | mV | -350 | - | 2850 | - |
| Receiver | | | | | | |
| AC common-mode output Voltage (RMS) | | mV | - | - | 25 | - |
| Differential output Voltage (Long mode) | | mV | - | - | 845 | - |
| Differential output Voltage (Short mode) | | mV | - | - | 600 | - |
| Near-end Eye height, differential | | mV | 70 | - | - | - |
| Far-end Eye height, differential | | mV | 30 | - | - | - |
| Far end pre-cursor ratio | | % | -4.5 | - | 2.5 | - |
| Differential Termination Mismatch | | % | - | - | 10 | - |
| Transition Time (min, 20% to 80%) | | ps | 9.5 | - | - | - |
| DC common mode Voltage | | mV | -350 | - | 2850 | - |

Optical Characteristics of Transmitter and Receiver

| Parameter | Symbol | Min | Typ. | Max | Units | Notes |
|---|-----------------------|------|------|------|-------|-------|
| Transmitter | | | | | | |
| Wavelength | λ_c | 844 | 850 | 863 | nm | |
| RMS spectral width | $\Delta\lambda_{rms}$ | | | 0.6 | nm | |
| Average Launch Power, each lane | AOP _L | -1.0 | - | 3.0 | dBm | 1 |
| Outer Optical Modulation Amplitude (OMA _{outer}), each lane | T _{OMA} | -2.1 | | 3.5 | dBm | 2 |
| Transmitter and Dispersion Eye Closure for PAM4 (TDECQ), each lane | TDECQ | - | - | 4.4 | dB | |
| Average Launch Power of OFF Transmitter, each lane | T _{OFF} | - | - | -30 | dBm | |
| Extinction Ratio, each lane | ER | 2.5 | 3.5 | - | dB | |
| RIN _{21.4OMA} | RIN | - | - | -148 | dB/Hz | |
| Optical Return Loss Tolerance | ORL | | - | 14 | dB | |

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| | | | | | | |
|--|----------------------|------|-----|------|-----|---|
| Transmitter Reflectance | T _R | - | - | -26 | dB | 3 |
| Receiver | | | | | | |
| Wavelength | λ _c | 842 | 850 | 863 | nm | |
| Damage Threshold, average optical power, each lane | AOP _D | 5 | - | - | dBm | |
| Average Receive Power, each lane | AOP _R | -6.3 | - | 4.0 | dBm | |
| Receive Power (OMA _{outer}), each lane | OMA _R | - | - | 3.5 | dBm | |
| Receiver Reflectance | RR | - | - | -20 | dB | |
| Receiver Sensitivity (OMA _{outer}), each lane | S _{OMA} | - | - | -4.6 | dBm | 4 |
| Stressed Receiver Sensitivity (OMA _{outer}), each lane | SRS | - | - | -2.0 | dBm | 5 |
| Stressed eye closure for PAM4 | SECQ | | 4.4 | | dB | |
| OMA _{outer} of each aggressor lane | OMA _{outer} | | 3.5 | | dBm | |

Notes:

1. Average launch power, each lane (min) is informative and not the principal indicator of signal strength.
2. Even if max (TECQ, TDECQ) < 1.8dB, OMA_{outer} (min) must exceed this value.
3. Transmitter reflectance is defined looking into the transmitter.
4. Receiver sensitivity (OMA_{outer}), each lane (max) is informative and is defined for a transmitter with TDECQ<=1.8 dB
5. Measured with conformance test signal at TP3 for the BER = 2.4x10⁻⁴

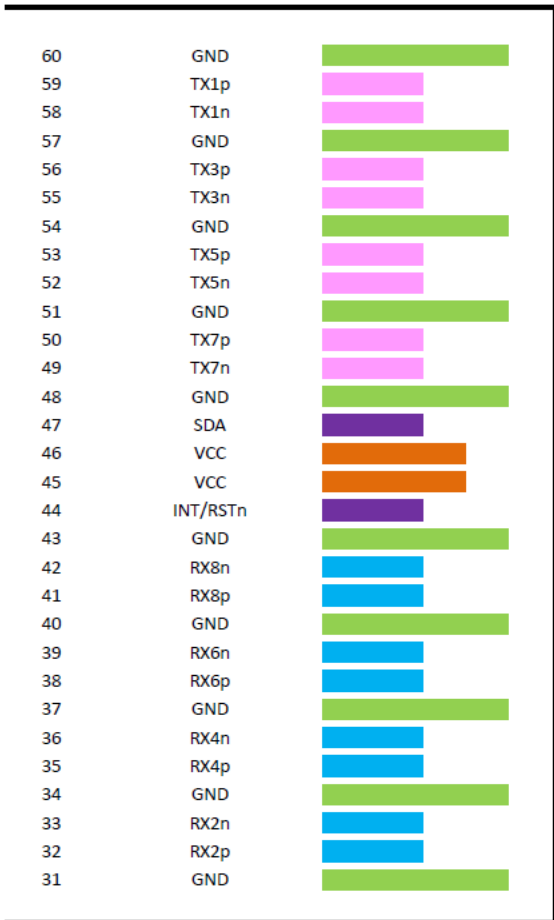
Electrical Specification Low Speed Signal

| Parameter | Symbol | Min | Max | Unit | Notes |
|---------------------------|-----------------|----------------------|----------------------|------|-------|
| Module output SCL and SDA | V _{OL} | 0 | 0.4 | V | - |
| | V _{OH} | V _{CC} -0.5 | V _{CC} +0.3 | V | - |
| Module Input SCL and SDA | V _{IL} | -0.3 | V _{CC} *0.3 | V | - |
| | V _{IH} | V _{CC} *0.7 | V _{CC} +0.5 | V | - |

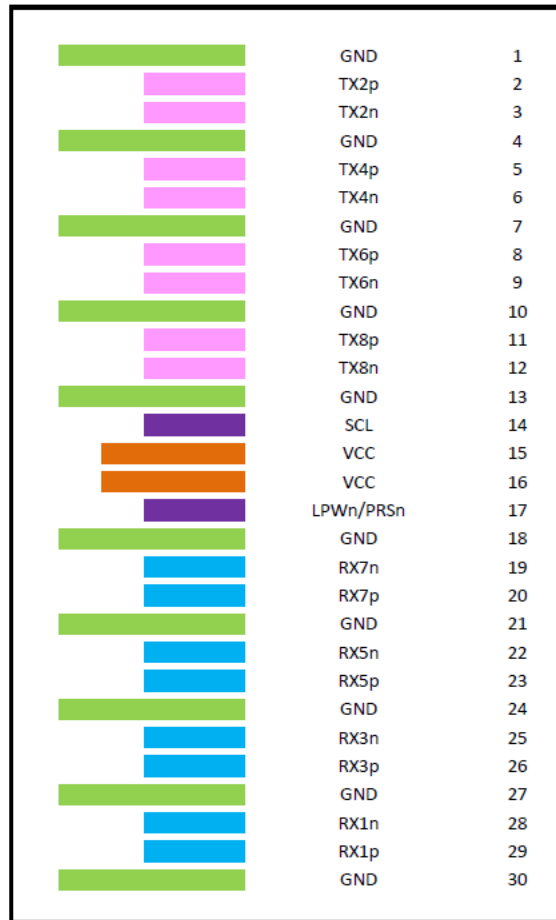
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5.Pin Assignments

Top Side (viewed from top)



Bottom Side (viewed from bottom)



----- Module Card Edge -----

OSFP Pad Function Definition

Electrical Pin Definition (OSFP)

| Pin | Logic | Symbol | Description | Plug Sequence | Notes |
|-----|-------|--------|-------------------------------|---------------|-------|
| 1 | | GND | Ground | 1 | 1 |
| 2 | CML-I | Tx2p | Transmitter Data Non-Inverted | 3 | |
| 3 | CML-I | Tx2n | Transmitter Data Inverted | 3 | |
| 4 | | GND | Ground | 1 | 1 |

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| | | | | | |
|----|-------------|-----------|-------------------------------|---|---|
| 5 | CML-I | Tx4p | Transmitter Data Non-Inverted | 3 | |
| 6 | CML-I | Tx4n | Transmitter Data Inverted | 3 | |
| 7 | | GND | Ground | 1 | 1 |
| 8 | CML-I | Tx6p | Transmitter Data Non-Inverted | 3 | |
| 9 | CML-I | Tx6n | Transmitter Data Inverted | 3 | |
| 10 | | GND | Ground | 1 | 1 |
| 11 | CML-I | Tx8p | Transmitter Data Non-Inverted | 3 | |
| 12 | CML-I | Tx8n | Transmitter Data Inverted | 3 | |
| 13 | | GND | Ground | 1 | 1 |
| 14 | LVC MOS-I/O | SCL | 2-wire Serial interface clock | 3 | 2 |
| 15 | | VCC | +3.3V Power | 2 | |
| 16 | | VCC | +3.3V Power | 2 | |
| 17 | Multi-Level | LPWn/PRSn | Low-Power Mode/Module | 3 | |
| 18 | | GND | Ground | 1 | 1 |
| 19 | CML-O | Rx7n | Receiver Data Inverted | 3 | |
| 20 | CML-O | Rx7p | Receiver Data Non-Inverted | 3 | |
| 21 | | GND | Ground | 1 | 1 |
| 22 | CML-O | Rx5n | Receiver Data Inverted | 3 | |
| 23 | CML-O | Rx5p | Receiver Data Non-Inverted | 3 | |
| 24 | | GND | Ground | 1 | 1 |
| 25 | CML-O | Rx3n | Receiver Data Inverted | 3 | |
| 26 | CML-O | Rx3p | Receiver Data Non-Inverted | 3 | |
| 27 | | GND | Ground | 1 | 1 |
| 28 | CML-O | Rx1n | Receiver Data Inverted | 3 | |
| 29 | CML-O | Rx1p | Receiver Data Non-Inverted | 3 | |
| 30 | | GND | Ground | 1 | 1 |
| 31 | | GND | Ground | 1 | 1 |
| 32 | CML-O | Rx2p | Receiver Data Non-Inverted | 3 | |
| 33 | CML-O | Rx2n | Receiver Data Inverted | 3 | |
| 34 | | GND | Ground | 1 | 1 |
| 35 | CML-O | Rx4p | Receiver Data Non-Inverted | 3 | |

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|----|-------------|----------|-------------------------------|---|---|
| 36 | CML-O | Rx4n | Receiver Data Inverted | 3 | |
| 37 | | GND | Ground | 1 | 1 |
| 38 | CML-O | Rx6p | Receiver Data Non-Inverted | 3 | |
| 39 | CML-O | Rx6n | Receiver Data Inverted | 3 | |
| 40 | | GND | Ground | 1 | 1 |
| 41 | CML-O | Rx8p | Receiver Data Non-Inverted | 3 | |
| 42 | CML-O | Rx8n | Receiver Data Inverted | 3 | |
| 43 | | GND | Ground | 1 | 1 |
| 44 | Multi-Level | INT/RSTn | Module input/Module Reset | 3 | |
| 45 | | VCC | +3.3V Power | 2 | |
| 46 | | VCC | +3.3V Power | 2 | |
| 47 | LVC MOS-I/O | SCL | 2-wire Serial interface Data | 3 | 2 |
| 48 | | GND | Ground | 1 | 1 |
| 49 | CML-I | Tx7n | Transmitter Data Inverted | 3 | |
| 50 | CML-I | Tx7p | Transmitter Data Non-Inverted | 3 | |
| 51 | | GND | Ground | 1 | 1 |
| 52 | CML-I | Tx5n | Transmitter Data Inverted | 3 | |
| 53 | CML-I | Tx5p | Transmitter Data Non-Inverted | 3 | |
| 54 | | GND | Ground | 1 | 1 |
| 55 | CML-I | Tx3n | Transmitter Data Inverted | 3 | |
| 56 | CML-I | Tx3p | Transmitter Data Non-Inverted | 3 | |
| 57 | | GND | Ground | 1 | 1 |
| 58 | CML-I | Tx1n | Transmitter Data Inverted | 3 | |
| 59 | CML-I | Tx1p | Transmitter Data Non-Inverted | 3 | |
| 60 | | GND | Ground | 1 | 1 |

Note

1. OSFP uses common ground (GND) for all signals and supply (power). All are common module voltages are referenced to this potential unless otherwise noted.
2. Open-Drain with pull up resistor on Host.

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6. Modification History

| Rev. | Comments | Date | Originator | Approval |
|-------------|-------------------|-------------|-------------------|-----------------|
| 01 | Preliminary Draft | 2024.08.09 | Albert Lin | Mike Sun |
| | | | | |